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STATIONÄRE NEUROLOGISCHE REHABILITATIONSMEDIZIN IN DEUTSCHLAND. FALLBEISPIEL EINER FODROYANT VERLAUFENDEN MULTIPLEN SKLEROSE (MARBURGER VARIANTE)

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Zusammenfassung

Je nach Schweregrad der Erkrankung und des funktionellen Defizites werden die Patienten in definierten Phasen (A–F) in der neurologischen Rehabilitation behandelt

Zuordnung zur Phase der neurologischen Rehabilitation

Entscheidend für die Zuordnung ist der Schweregrad und das Ausmaß des funktionellen Defizites. Es muss in jedem Fall ein Rehabilitationspotential erkennbar und definierbar sein; der allgemein-körperliche Zustand des Patienten muss Rehabilitationsfähigkeit zulassen.

Wir verwenden die nachfolgende Einteilung. Diese Einteilung wird in sämtlichen neurologischen Rehabilitationskliniken Deutschlands angewandt.

Nach der in Deutschland gebräuchlichen und als von den Kostenträgern als Grundlage verwendeten Einteilung der Bundesarbeitsgemeinschaft Rehabilitation (BAR) des Verbandes Deutscher Rentenversicherungsträger (VDR) lassen sich die folgende Rehabilitationsphasen auch in der neurologischen Rehabilitation differenzieren:

Phase A:
Akutbehandlungsphase (Behandlungsphase im Akutkrankenhaus)

Phase B:
Phase, in der intensivmedizinische Behandlungsmöglichkeiten vorgehalten werden müssen. Diese Phase ist in Brandenburg eine Krankenhausbehandlung und erfolgt im Fachkrankenhaus für Frührehabilitation.

Phase C:
Phase, in der Patienten aktiv in der Therapie mitarbeiten können, aber noch kurativ-medizinisch und mit hohem pflegerischem Aufwand betreut werden müssen.

Phase D:
Phase nach Abschluss der Frühmobilisation (Mobilität mit oder ohne Hilfsmittel, kein wesentlicher pflegerischer Betreuungsaufwand).

Phase E:
Phase nach Abschluss einer intensiven medizinischen Rehabilitation - im Sinne einer nachgehenden Rehabilitationsleistung - und berufliche Rehabilitation.

Phase F:
Phase, in der dauerhaft betreuende und/oder zustanderhaltende Leistungen erforderlich sind.

Rehabilitationsziele in den verschiedenen Phasen der Neurologischen Rehabilitation

Das übergeordnete Behandlungsziel besteht darin, dem akut versorgten Patienten mit verbleibenden Funktionsstörungen oder dem chronisch erkrankten Menschen mit Funktionseinbußen zu einem möglichst selbstbestimmten und zufriedenstellenden Leben in seinem gewohnten sozialen Umfeld zu verhelfen.

Das Hauptziel der ***Phase B*** der neurologischen Frührehabilitation besteht darin, Patienten in das bewusste Leben zurückzuholen, die Kommunikationsfähigkeit wiederherzustellen und die Grundlage für eine weitere kooperative Mitarbeit am Rehabilitationsprozess zu schaffen, Akutkomplikationen schnell zu erkennen und sekundäre sowie tertiäre Komplikationen zu vermeiden.

In der ***Phase C*** der neurologischen Rehabilitation steht vor allem das Wiedererlangen der Mobilität

und der Selbstständigkeit im Alltag im Vordergrund. Wesentlich ist hierfür die unterstützte Wiedererlangung von grundlegenden Funktionen des Gehirns wie Antrieb, Orientierung, Aufmerksamkeits- und Gedächtnisleistungen. Eine verbesserte Kommunikationsfähigkeit wird angestrebt. Weiter soll die Verbesserung der Bewegungs- und Gefühlsfunktionen sowie der Geschicklichkeit (Koordination) erreicht werden.

Ziel der ***Phase D*** der neurologischen Rehabilitation ist die Restitution und ggf. notwendige Kompensation gestörter Funktionen (kognitive und sensomotorische Funktionen) bzw. die Hilfe bei der Adaptation der beruflichen oder psychosozialen Umgebung der Patienten, um Partizipationshindernisse im Beruf, der Familie und der Gesellschaft zu verringern.

Notwendige medizinische Diagnostik (z.B. EKG, Notfall-Labor, Röntgen, Computertomogramm, EEG und Broncho- sowie Gastroskopie) kann in den neurologischen Kliniken Beelitz-Heilstätten, auch in Verbindung mit Konsiliaren, jederzeit bei akuten Fragestellungen durchgeführt werden.

Mit speziellen diagnostischen Verfahren lassen sich weitere therapeutische Maßnahmen in ihrer Effektivität erfassen und kontrollieren. So dienen beispielsweise neurophysiologische Untersuchungen der diagnostischen Einordnung bestehender Schädigungen des Gehirns, Rückenmarks und der Nerven und ermöglichen Rückschlüsse über Funktionsverbesserungen.

Darüber hinaus wird von den spezifischen Therapiebereichen eine spezielle, auf den jeweiligen Fachbereich bezogene Diagnostik durchgeführt. Diese dient als Grundlage für die Planung und Durchführung der einzelnen Behandlungsschritte und der Erfolgskontrolle der Rehabilitationsbemühungen.

Die ***Krankengymnastik ist ein wesentlicher Teil stationären Rehabilitations-Behandlung***. Sie hilft einerseits die Rückbildung von Ausfällen zu beschleunigen, andererseits können verbliebene Störungen durch Training der Willkürfunktion oder von ausgleichenden Mechanismen verbessert werden. Dadurch kann es auch bei schwerwiegenden Funktionsstörungen noch zu erstaunlichen Besserungen kommen.

Je nach Art der Störung können verschiedene krankengymnastische Behandlungsverfahren zum Einsatz kommen. Es gibt keine Form der Krankengymnastik, die prinzipiell für alle Menschen mit MS geeignet ist, sondern diese muss jeweils in Abhängigkeit von den vorliegenden Störungen auf jeden einzelnen Betroffenen abgestimmt werden.

Unter ***Ergotherapie*** versteht man eine besondere Form der Aktivierungs- und Beschäftigungstherapie, bei der unter Anleitung eines Ergotherapeuten Tätigkeiten des täglichen Lebens praktisch geübt und (wieder) erlernt werden.

Ergotherapie ist darauf ausgerichtet, neben der Bewegungsfähigkeit, Körperwahrnehmung und Sensibilität auch Körperfunktionen wie Gedächtnis und Konzentrationsvermögen oder Leistungsfähigkeit und Ausdauer zu trainieren und zu fördern.

Das Behandlungsziel besteht darin, krankheitsbedingt eingeschränkte oder sogar verloren gegangene Bewegungsabläufe und Funktionen zu üben, auszugleichen oder durch Hilfsmittel zu ersetzen und damit die Handlungsfähigkeit der Betroffenen in ihrem Umfeld zu erhöhen.

Die ***Logopädie*** diagnostiziert und behandelt Sprach- und Sprechstörungen, Störungen des Schluckaktes und des Schluckvorganges, bietet zielgerichtet Atemtherapie sowie Atemtraining an, erarbeitet kompensatorische und Triggermechanismen, um eine orale Ernährung wieder zu erreichen – häufig in Verbindung mit einem gezielten Facialistrainig. An Testverfahren werden neben den Aphasietests auch bildgebende Verfahren der Schluckdiagnostik angewendet (fieberendoskopische Schluckdiagnostik).

Im Rahmen der ***Psychologie/ Neuropsychologie*** werden eine Reihe von möglichen Beeinträchtigungen der geistigen (kognitiven) Leistungen diagnostiziert und behandelt. Diese Leistungseinschränkungen können nur vorübergehend oder auch länger bestehen. Am häufigsten sind Beeinträchtigungen der Aufmerksamkeit, der Gedächtnisleistung, des Planens und Handelns und visuell-räumlichen Leistungen.

Eine Aufmerksamkeitsstörung wirkt sich erschwerend auf das Lernen von Neuem aus und somit auf den Therapiefortschritt in allen Therapien. Daher sollte ein Aufmerksamkeitsdefizit durch entsprechendes Training behoben oder minimiert werden. Manchmal kommt es in Folge der Aufmerksamkeitsstörung zur Vernachlässigung einer Körperseite, einer Raumseite oder eines Teiles der unmittelbaren Umgebung (Neglect). Dies ist ein Umstand, der vielfältige Unfallgefahren birgt.

Gedächtnisdefizite können verschiedene Auswirkungen haben, so z.B. das Einprägen von Informationen, die Verschlüsselung und Speicherung von Informationen im Kurzzeitgedächtnis, das Übertragen von neu Erlerntem ins Langzeitgedächtnis oder das Abrufen dort gespeicherter Informationen. Gedächtnisdefizite sind, neben der Aufmerksamkeitsstörung, die zweithäufigste kognitive Leistungsstörung infolge einer erworbenen Hirnschädigung. Diese Störungen zu reduzieren bzw. aufzuheben stellt ebenfalls ein wesentliches Therapieziel dar. Defizite des Planens und

Handelns, auch Exekutive Funktionen genannt, bewirken u.a. Probleme im Planen von zeitlichen Abfolgen und / oder von Handlungsabfolgen und/oder in der Verhaltenssteuerung und kontrolle.

Diese "unsichtbaren", von außen nicht wahrnehmbaren Folgen neurologischer Erkrankungen werden oft erst nach Besserung der motorischen Fähigkeiten bemerkt. Meistens deckt erst eine neuropsychologische Testuntersuchung das vollständige Bild der Beeinträchtigungen im kognitiven Bereich auf. Ein rechtzeitiges Erkennen dieser organisch verursachten Beeinträchtigungen hat ein besseres Verständnis dieser gestörten Verhaltensweisen zur Folge und ermöglicht frühzeitige gezielte therapeutische Interventionen
Als Reaktion auf die plötzlich dramatisch veränderte Lebenssituation können sich seelische (psychische) Probleme einstellen. Die Krankheit kann auf sehr unterschiedliche Weise verarbeitet werden.
Auf diesem Weg können sich Ängste, Mutlosigkeit, Erschöpfung, depressive Verstimmungen, Stimmungsschwankungen, Störungen im sexuellen Bereich sowie Schuld- und Schamgefühle einstellen.
Auch hier ist der Psychologe gefragt, um diesen Prozess der Krankheitsverarbeitung zu bewältigen.

Auf der Basis diese komplexen rehabilitationsmedizinischen Ansatzes wird das Beispiel einer 23-jährigen Patientin aus Rostov/Don diskutiert, die an einer rasch progredient verlaufenden MS (Marburger Variante) erkrankte, im Verlauf 2 x reanimationspflichtig wurde und in Russland keine vergleichbaren rehabilitationsmedizinischen Strukturen nutzen konnte. Im Rahmen eines zweimaligen Rehabilitationsaufenthaltes in einer neurologischen Spezialklinik in Deutschland konnten sowohl die Krankheitsakuität als auch die medikamentöse Therapie nachevaluiert und durch gezielte Rehabilitationsmedizinische Prozeduren die soziale Kompetenz und Teilhabe gestärkt und das psychosoziale Defizit abgebaut werden. EDSS zur Aufnahme 9,5; EDSS zur Entlassung 7,0.

FAZIT:

- Auch bei schwersten Verläufen partizipiert der Betroffene von der Rehabehandlung.
- Medikamentöse Behandlungsstrategien können optimiert und dem jeweiligen Erkrankungsstadium unter Nutzen- / Risikoabwägung angepasst werden.
- Funktionelle Defizite können teilweise durch neuronale Plastizität und neuronale Netzwerkaktivität teilkompensiert werden.
- Hilfsmittelversorgung erweitert den individuellen Aktionsradius)
- Die Teilhabe am täglichen Leben und die Partizipations- sowie Antezeptionsmechanismen im individuellen sozialen Netzwerk können optimiert , die psychosoziale Behinderung gemindert und die soziale Kompetenz gestärkt werden.
- Zum Erhalt der wiedergewonnen Fähigkeiten und Funktionen ist auch unter ambulanten Bedingungen die konsequente und kontinuierliche Fortführung krankengymnastischer, ergotherapeutischer und logopädischer Behandlung zwingend notwendig genauso wie die fachärztliche Überwachung der Krankheitsprogression.

REASON FOR AND THE MECHANISMS OF CARDIAC ELECTRICAL INSTABILITY. DEFIBRILLATION MECHANISM

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Abstract

The reason for development of life-threatening arrhythmias leading to sudden and total death provoked by cardiac diseases is still unclear, even though cardiologic research in this regard is being carried all over the word. A damaging of the connective insulation cover of the conductive heart path accompanied by ectopic nodes oxidation may result in life-threatening arrhythmias. Such reason for it as the cardiac electrical instability hasn't been examined by anyone before. The connective insulation cover prevents a defibrillating electric discharge from penetrating the myocardium. Simultaneously, nobody took the conductive nervous system into account.

Keywords

electric instability of heart; trembling; fibrillation; defibrillation; nervous system; syndrome WPW-CLC.

Cardiovascular diseases (CVDs) remain main causes of invalidity and death of working-age population all over the world. In Russia CVDs frequency is increasing, while our country is considered to be one of the world leaders in death caused by CVDs. All this makes us search for modern and efficient methods of diagnostics, treatment and prevention of the cardiac electrical instability (CEI).

At a young age patients with rheumatic disease, myocarditis, mitral valvular disease demonstrate flutter and fibrillation, while geriatric and older patients demonstrate it more often if they are diagnosed with ischemic heart disease (IHD), myocardial infraction (MI), chronic cardiac failure, mitral stenosis, hypertensive disease, cardiomyopathy, myocarditis, etc. [4].

The condition specifying lethal arrhythmias is structural cardiac pathology (SCP) turning into an instable substrate as affected by various functional factors. Such structural changes conditioning the development of life-threatening arrhythmias (LTA) may be as follows: express hypertrophy, dilatation, cardiac aneurysm, myocardial necrosis and sclerosis, inflammation accompanied by myocardial tissue edema, etc. According to the data of many researchers, these changes constitute the anatomical substrate with various LTA development mechanisms [9].

Many authors that conducted CEI research often concentrate only on myocardial necrotizing and cicatricial lesions (NCL) in IHD patients. Yet such authors ignore other patients with other CVDs that are exposed to total and sudden cardiac death (SCD), too, for no apparent reason.

It should be mentioned that practically all arrhythmias are easy to be analyzed, except for the reason and the mechanism for flutter and fibrillation development. Moreover, the definition of atrial fibrillation is misleading because of the contradictions contained in electrocardiography (ECG) textbooks.

According to the definition contained in ECG textbooks [4,5], atrial and ventricular flutter is regular rhythmical movement of a potent impulse following one and the same path with simultaneous re-entry mechanism development (the reason and the method of such macro-re-entry mechanism being unclear to the researchers at that moment). Atrial and ventricular fibrillation is irregular excitation and contraction of some groups of muscle fibers, each of them being a sort of ectopic impulse site (such definition in ECG textbooks does not seem to be too correct for students and young scientists). Having read the definition and returning back to the "automatism function" chapter one may read that the automatism function is pertinent to Sinoatrial Node cells (SAN) and the conductive system of heart: atrioventricular AV connection, the connective system of atriums and ventricles, the contractive ***myocardium being deprived of the automatism function*** [4,5]. All this testifies to the fact that in the event of atrial fibrillation "***some groups of***

muscle fibers" cannot be generated, even if the myocardium or cardiomyocytes change their properties. The "electric myocardial instability" is non-existent because the myocardium can only conduct electric impulses. Some may object that even though the myocardium is deprived of electrical activity, yet it may have a nonhomogeneity area associated with NCL that may prevent it from conducting electricity. Virtually, the electrical impulses avoid the area easily, even in the event of extensive MI, even if there are no serious problems of the cardiac conduction path (CCP). Atrial fibrillation itself is conditioned by multiple generations of ectopic focuses (EF) of a lesser power located in distal CCP and with the same number of colliding micro-re-entry waves. In fact, the myocardium cannot generate it and the ectopic focuses are not chaotically scattered along the myocardium, as some might believe. All EFs are placed along the CCP, as a string of beads, and have the same connective insulation cover (CIC) starting from the SAN. If this cover is intact, electric impulses cannot leave the myocardium. It's only Purkinje fibers that lack such cover and it's due to them that the myocardium is excitated.

First of all one should mention that CCPs are placed in the same manner as electric wires in walls of our houses are. They also have an insulation cover. Yet the wires located in walls are immovable and they almost do not wear out while a working myocardium with SCP causes them to wear out soon resulting in a block and/or damaging of CIC only.

In some cases of express SCP over-distension breaking or tearing of a CIC of one of the main proximal CCP may occur. It activates the nearest potent EF with flutter development. This causes a potent electrical impulse to reach the myocardium along the path of least resistance through such damaging and trigger the macro re-entry mechanism. This is how large F flutter waves are formed (besides, the same mechanism is described for Alzheimer disease when atherosclerosis damages the nerve's medullary sheath and nerve impulses diffuse into the surrounding tissue. Is CCP's atherosclerotic damaging also possible?).

One may wonder if the proposed mechanism of flutter development is correct. The fact is that the most potent ectopy source in supraventricular paroxysmal tachycardia and atrial flutter is located in the atrium (atrial fibrillation cannot be accounted for; it is conditioned by multiple ectopy). Yet ECG demonstrates a different picture. Why? It may be explained by the fact that in supraventricular paroxysmal tachycardia an electric impulse has to overcome many obstacles passing through a number of small conductive paths and ectopic nodes within the atriums and it reaches the myocardium as a not-so-potent impulse to spin a macro-re-entry wave. In atrial flutter a potent electric impulse reaches the myocardium prematurely, through a CIC damaging, encountering no obstacles and spins a macro re-entry wave. It's most probable that the lesser part of electric impulse that passes along the conductive paths and exits Purkinje fibres prevents the greater part of electric impulse that reaches the myocardium prematurely, through a CIC damaging, from entering the conductive paths of atriums, encountering a counter-propagating depolarization wave there. All this forms a macro re-entry wave. Such atrial pre-excitation with the macro re-entry mechanism results in a small difference in the cardiac rate between the supraventricular paroxysmal tachycardia and atrial fibrillation. In other words, most frequently paroxysmal tachycardia damages CIC CCP (the conductive paths of Venkenbach, Bakhman and Torel, and the Bundle of His and branches in the ventricles) and becomes flutter. Yet the ectopy source remains to be the same, so it's the same type of arrhythmia having different mechanisms of action. For example, I have mentioned the atrial process which is exactly the same as the ventricular process.

What is the cause for potent EF activation with flutter development in the event of CIC damaging? If CICs are intact, CCPs are not subject to oxidation. Purkinje, the famous researcher, described transitional T-cells located between the conductive B-cells (Purkinje cells) and the myocardium. He thought that their main function was to conduct electric impulses but their main function is more likely to consist in forming an antioxidative barrier for the conductive B-cells. Myocardial intercellular fluid shall not get into CCP, so the two conductors having a completely different structure have to have an "adaptor" among them that would prevent them from oxidation. If we eliminate the T-cells, the conductivity of electric impulses between B-cells and the myocardium shall remain the same for some time but Purkinje fibres would be exposed to oxidation. With the course of time oxidation would produce irrevocable consequences. Nature did not provide for transitional T-cells for emergency cases. It results in rapid oxidation of the nearest proximal EF with concomitant flutter development. Further the oxidation processes shall reach other distal EF and flutter will gradually turn into fibrillation.

In many cases flutter does not precede atrial fibrillation. It happens because in fibrillation CIC of mid-distal CCPs are to be damaged most frequently (atrial or ventricular Purkinje fibres and braches), especially in NCL. Multiple T-cells damaging is also possible and results in the oxidation of more than one less potent EFs and micro-re-entry mechanism's development.

Thus one may say that the reason for CEI development is the same for flutter and fibrillation.

Any sudden myocardial movements or lesions may trigger CIC CCP damaging in SCP: all types of tachycardia, extrasystoles, blocks, abrupt blood pressure (BP) increase, myocardial contractility increase (especially if accompanied with pathologically decreased contractility), NCL, etc.

As for the focalization, the most thin and easy-to-be-damaged ventricular segments are the right bundle and the left anterior bundle branch. Then main stem of the left branch, the Bundle of His and, finally, the right anterior bundle branch may be named in the descending order. Yet conductivity may be damaged in any segment or in a few segments simultaneously [5].

Other main factor in arrhythmia development is associated with the affected contractility and excitation, most frequently in SCP patients:

1. Organic or functional weakness of the ectopic node (I, II, III block – by AV block type) that result in weak electric impulses arriving to the distal node and its eventual activation.

2. Over-distension of the conductive path (especially in places where ectopic nodes are located) in express hypertrophies, dilatations, etc. lead to the extension of conductivity which also enhances a delay in electric impulses and activates EF.

3. Myocardial inflammation slows down the conductivity and results in ectopic activity development.

The example may be as follows: a city has been growing for 20–30 years because its suburbs (myocardial hypertrophy, dilatation) were growing, too. If the public utility network is lacking in the new districts, the inhabitants of such districts would complain of the lack of electricity. The same is true for the heart. The central nervous system tries to increase the cardiac rate and the potency of electric impulses to compensate for it. Sometimes it is enough. If not, ectopic arrhythmia tries to compensate for such insufficiency.

In some cases electric cardioversion may stop atrial fluttering and fibrillation at their early stages (paroxysmal, persistent). Powerful SAM stimulation suppressing other generation centers takes place. For some time the oxidative influence on EF becomes not important and minute CIC damaging is regenerated after a while. High doses of antyarrhytmic medicines at early stages of flutter and fibrillation are also capable of suppressing ectopic activity with gradual regeneration of minute CIC damaging and sinus rhythm restoration.

Preventive use of repairers in SCP patients may prevent CIC CCP damaging, such repairers being: potassium orotate, ATP and solcoseryl. It goes without saying that basic treatment of patients with atrial flutter and fibrillation shall remain at the previous level– cardioversion and antyarrhytmic drugs. Though additional alkalizing medicines and repairers, with the exception of aspirin and other acid-containing substances, for the period of flutter and fibrillation treatment may contribute into restoring cardiac electrical stability.

To continue CIC and the conductive system's issue, let me add a few speculations of my own. Electric defibrillation discharges are considered to influence the heart directly, but it's an error! In the course of defibrillation human anatomy prevents electric discharges from entering the myocardium and exiting from it because of the external epicardial and endocavitary endocardial cardiac layer that has CIC. Electric discharges are most likely to affect the heart in an indirect manner, through multiple nervous receptors. Electric impulses strive to reach the CNS and then brain activation concerning all its aspects, including the sympathic nervous system (SNS) of the heart, starting from and SAN and b-adrenoreceptors stimulation with catecholamines (adrenaline, noradrenaline) discharge. Nobody thought that external electric currents can also take nervous paths in the course of defibrillation.

Now I'm going to present a theory which would seem incredible to many scientists but it has a right to exist. It's still unknown where and how electric impulses are formed in the nervous system. Electric impulses seem more likely not to be generated by the nervous system but to be sent to it from all the nervous receptors, starting from the SAN and ending up with ventricular myocardium where the electric impulse comes to a dead end. Further electricity is conducted by the conductive (afferent) nerve fiber to various CNS divisions. One should understand that ECG and electroencephalogram (EEG) recording have nothing in common because they record excitation in different structures of the organism. Such circular relationship of the heart and the nervous system is more reasonable that two separate electric systems which would have inevitably come in conflict and lead to a short circuit in one and the same organism.

One may wonder why the nervous system needs electricity. Only for instant processing of the received information and for sending it back. Passive work of the nervous system may be performed without electricity, as it happens during heart transplantation when a patient remains on artificial blood circulation for a few hours. EEG records passive work of the brain which should give an impulse for the transplanted heart to start. In some cases it's not enough and defibrillation is implemented.

Further we are going to analyze literature sources and main views of the authors and researchers with

reference to the CEI issue. First of all one should mention that many authors write "electrical instability of myocardium" while in reality it's more correct to write "cardiac electrical instability".

Life-threatening LTA are caused by a combination of reasons predisposing to electrical instability of myocardium: a substrate (structural cardiac disease) modulating the dysfunction of the autonomous nervous system and LTA triggering factors. The morphologic substrate creating post-MI nonhomogeneity of impulse conductivity is a myocardial area adjoining the necrotized tissue formed by intertangled spots of healthy myocardial fibers and the connective tissue. In this place the impulse connective path is prolonged because the spots of connective tissue serve as barriers to the excitation wave and the conductivity is slowed down due to the affected parallel orientation of muscle fibers. Thus myocardial areas with delayed ventricular depolarization may be anatomic and physiological substrate for the re-entry – main mechanism of LTA development [1,3]. ***The author of this study was close to understand the real situation but the source of LTA development is not the borderline myocardium but CIC CCP necrotic damaging in the area with concomitant development of flutter and/or atrial fibrillation.***

Following the results of the work of J.D. Kramer et al., long impulse spin path is not necessary a small diameter of myocardial tissue with its electrophysiological properties altered by acute myocardial ischemia or with a heterogeneous structure resulting from fibrous and necrotizing changes is enough to trigger the re-entry mechanism [11]. ***Fibers of the conductive system with EF are more hypoxia-resistant and myocardial ischemia does not trigger the re-entry mechanism in them, while fibrous-necrotizing changes are capable of damaging CIC CCP and triggering arrhythmia with the re-entry mechanism.***

As a rule, in the course of the conducted study sudden ventricular tachycardia (VT) or ventricular fibrillation (VF) with the maintained ejection fraction was observed in patients with implanted cardioverters defibrillators; if the contractility is decreased before VT or VF attacks, normally gradual increase of ventricular ectopic activity is to be noted [7]. It goes without saying that cardiac failure is an essential arrhythmogenic factor and a risk marker of sudden arrhythmic death in IHD patients [12]. A Cardiac aneurysm, post-infarction cicatricial changes and clinical manifestations of cardiac failure make the adverse outcome more probable. Left ventricular contractility decrease increases SCD risk not only in IHD but also in patients with other cardiac diseases [8, 9]. Ejection fraction less than 40%, nonsustained ventricular tachycardia (VT) diagnosed by Holter monitoring and electrophysiological study in patients that had an acute MI in their medical history are remaining to be the main predictive markers of high SCD risk [10]. Such combination of two SCD risk factors as frequent ventricular arrhythmia and left ventricular dysfunction with an ejection fraction decrease <40% is especially unfavorable. According to the data of GISSI-2 research, a risk of sudden arrhythmic death in this case increases 16-fold [2, 15].

Besides that factors that were mentioned above, other sudden death risk factors are known, autonomic imbalance of the heart with prevailing sympathetic activity, in particular. The most important markers of the state is a decrease of the cardiac rate variability (CRV) and also such factors as a continued prolongation of the QT interval dispersion and late ventricular potentials (LVP) [13,14].

I can only add a few summarizing conclusion from the PhD thesis I defended with reference to CRV, QT interval dispersion and LVP. Initial degradation of CRV parameters in patients during the post-infarction period is associated with their anxious and depressive state after acute MI. Depression is diagnosed in 82% of patients in the post-infarction period [6]. Such patients are afraid of death and are anxious for their health, they do not perceive their environment with joy. On the contrary, they become reserved and their SNS becomes more active than the parasympathetic nervous system (PNS). As positive psycho-emotional state of the patients is activated, they start to overcome depression and PNS functioning becomes stable, too. This results in the sinus rhythm variations. One should note that a positive psycho-emotional state of a post-MI patient may become negative and even stress condition. This, in turn, leads to SNS hyperarousal. Combined with atherosclerotic changes in coronary arteries, SNS hyperarousal may result in a spasm of coronary arteries and appearance of new necrotic lesions in the myocardium. This is why SAN nervous regulation is more perfect due to the simultaneous operations of the sympathetic and the parasympathetic divisions of the autonomous nervous system.

LVP in the post-infarction period is improved less significantly than the QT interval dispersion parameters. This may be conditioned by the fact that LVP is more associated with the CCP block (His bundle branches and/or main stems of Purkinje fibres) that are completely blocked by the nonhomogeneous necrotized area and further cicatricial changes of the myocardium which make the electric impulse return and reach the myocardium through other CCPs.

As different from LVP, the regeneration processes of the QT interval are to a lesser extent associated with CCP pathological changes. In the acute MI, the QT interval dispersion is predominantly slowed down by necrosis and a reinfarction myocardial area having a nonhomogenious area which is 20-40% larger than in the cicatricial period. Further it improves re-polarization processes. In single cases of LVP improvement in the post-infarction period rare cases of the organism's capability to produce stem cells may be of importance. In such cases partial growth of new CCPs (bundle branch of the bundle of His or Purkinje fibres) is observed beyond the cicatricial area and results in the regenerated electric impulses conductivity and LVP elimination.

In conclusion I would like to mention that presently the knowledge about the conductive system formation is far from being complete. For example, progress in the study of additional conductive paths for electric impulses was made only due to ECG studies and is not probative. Nobody has ever seen these muscle bundles in a human body! To have a broad picture of all myocardial peculiarities one should know that there is a connective tissue frame between the atriums and the ventricles that prevents the ventricles from excitating together with the atriums. This frame has an innate opening defect of various sizes. It's this defect that is ablated and not the additional conductivity path (Kent bundle). Pressure increase in an atrium or in a ventricle, or both, makes this defect open and electric impulses pass from atriums to ventricular myocardium from time to time (WPW syndrome). CLC syndrome is also characterized by a lack of additional conductivity path (James bundle). It's an innate periodic violation of AV delay by electrical impulses node with their accelerated conductivity. In such a case the AV node itself is ablated, and then it is partially cicatrized and slows down the conductivity. So, one may observe that additional conductivity paths between atriums and ventricles are absent. If they did exist, electrical impulses would be permanently passing though them, from birth to death, as far as CCP has no valves, while these pre-excitation syndromes may be transitory.

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PHYSICAL DEVELOPMENT AND REPRODUCTIVE HEALTH OF TEENAGE GIRLS

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ACTUALITY

Close interrelation of gonads function and character of physical development is well known. Peculiar role in the formation of a teenage reproductive system is given to the amount of subcutaneous fat. Deficit as well as excess of body weight in puberty cause deviation from correct course of sexual development period. In literature there are researches confirming direct dependence of menarche age and frequency of menstrual function disorder on a teenage body weight. Excess body weight correlated with acceleration of growth and sexual development, early menarche. However, exactly in this category of teen-age girls progressive increase of frequency of menstrual function disorder was observed.

Deficit of body weight was accompanied by inverse tendencies: insufficient dynamics of secondary sexual characters development and late menarche.

The aim of the present research is to discover peculiarities of physical and sexual development of teen-age girls.

MATERIALS AND METHODS

We studied 38 teen-age girls with disorders of reproductive system (algodismenorrhea, juvenile metrorrhagia, oligo- and amenorrhea. Age of examined teenagers varied from 11 to 17 years. Diagnosis of examined diseased girls was verified by clinical and laboratory and instrumental methods of diagnostics.

For studied individual physical development of teen-age girls somatoscopy, somatometry, physiometry were applied. On the basis of the results of generally accepted anthropomorphic study with the basic data of height and body weight for the studied girls Index of Muscle Development (IMD) was defined. Control group consisted of 15 basically healthy teen-age girls.

For evaluating sexual development, sequence of occurrence and degree of intensity of secondary sexual characters compared with standards, were taken into account (J.Tanner, 1969; S.Frasier, 1980). Analysis of peculiar properties of sexual development included calculation of general grade of sexual development, which was calculated by formula: Ma+Pu+Ax+Me, taking into account intensity of secondary sexual characters and main characteristics of menstrual function.

Values of growth, body weight and indices were processed by means of the method of variation statistics defining average arithmetic value (M), average error of average arithmetic deviation (m), standard deviation (σ), Student's test.

RESULTS AND DISCUSSION

In the course of study it was defined that index of muscle development for girls with reproductive system disorders is 12,2 (in control group 14,5, $p \leq 0,05$).

Comparative analysis of IMD among the examined teenagers showed the following differences: among girls of 11–13 years age IMD is –12,8, whereas among girls of the control group IMD is 14,1. Analysis of IMD among the examined teenagers 13–15 years old and 15–17 years old with pathology of reproductive system is respectively 12,6 and

11,9 comparing with 14,3 and 14,7 of the control group.

Therefore the lowest indices of IMD were found for children of 15–17 years age (11,9, p<0,05). This indicates to change of physical development with chronization of disorders process, including also that of reproductive system. Hence 86,7% (p<0,05) of surveyed children have trophologic syndrome.

Trophologic disorders among teenagers with low IMD are surely accompanied by slowing rates of sexual development and as a results – later (13,6±0,1 years, p≤0,05). This also proves the role of fat tissue in initiation of sexual development process at the expense of extragonadal synthesis of steroids. It's worth noting that the highest age of menarche (13,9±0,4 years) is registered in teenagers group with obesity (IMD>25). Disappearing of parallelism in this case is most probably explained by pathology syndrome and insulin-resistivity, which often is connected with obesity (table 1).

Table 1. *Indices of physical and sexual development of teen-age girls*

Indices	Value
Average body weight	50,2±0,5*
Average height	160,2±0,5
Index of body weight	12,2±0,2*
Grade of sexual development	11,2±0,2
Average age of menarche	12,4±0,1*
Share of hypomenstrual syndrome in the structure of menstrual cycle disorder	65%*

** p≤ 0,05*

Therefore according to data of research trophologic syndrome is spread among teen-age girls. Deepening of functional disorders of reproductive system is expressed in real increase of average age of menarche, higher frequency of sexual development rates delay and increase of hypomenstrual syndrome frequency.

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THYROID PATHOLOGY TREATMENT WITH TRADITIONAL CHINESE MEDICINE METHODS

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Recently the growing number of researchers have paid attention to the problems of the thyroid diseases' etiology, it is indicative that the study of this widespread pathology hasn't approached a satisfactory level. Thus the progress in the field of the thyroid diseases' research hasn't yet resulted either in the decrease of the sickness rate or in the considerable increase of the prophylactic and treatment measures' efficiency. The epidemiological data give objective evidences of the thyroid diseases' morbidity extension.

About 10% of all children and 10–30% of the adult population suffer from endemic goitre. 12.1% of the children examined in Moscow have developed the hyperplasia of the 1st and the 2nd degrees. Recently the sickness rate of autoimmune thyroid diseases has become especially high, the most numerous are the cases of autoimmune thyroiditis (AT). According to the modern endocrinology data the most widespread thyroid diseases has the autoimmune pathogenesis. There are two main forms represented with autoimmune hyperthyroidism (AH) and autoimmune thyroiditis. Adult patients have shown the growth of the autoimmune thyroid pathology's morbidity [Volpe 2000].

Hormonal thyroid dysfunctions cause autoimmune diseases. Thyroid hormones are essential for the normal growth and development of an organism. Practically all processes related to metabolism – immunity, thermogenesis and also many systems' and organs' functioning depend upon thyroid hormones.

Modern studies performed under the guidance of such competent scientists as L.I. Braverman (Thyroid Diseases, 2000) and N. Lavin (Endocrinology, 1999) have offered only medication treatment of thyroid diseases. However the practices of such diseases' treatment have shown that medication methods are not always positively effective so far. That's why enlarged research of the non-medication thyroid diseases' therapy and, primarily, of the treatment methods that have been developed by Chinese traditional medicine are of the barest necessity.

In Europe thyrotoxicosis was described by Roman scientists for the first time in the 2nd century AD, but in China it was done as early as in the 4th century BC, there existed a detailed description of the goitre and the methods of the illness' treatment. Only at the end of the 12th century AD in Europe Roger from Palermo prescribed iodine-containing sea plants for the treatment of the disease, and the cause of the illness i.e. the lack of iodine was discovered only in the 19th century. As early as in the 1st century BC Chinese pharmacology treatise "Shen Noon Ben Tsao Tsin" recommended the use of sea grass for thyroid diseases' treatment. An outstanding ancient doctor Ge Hoon advised to take the sea grass infusion in this case in the 4th century already. The connection of this illness with living in the mountain areas was found out in the 5th century AD.

Presumably the treatment with sea grass in Europe originated from China, because the Europeans got acquainted with compass, paper, scull and other Chinese inventions at the same period. The treatment of thyroid diseases with animals' thyroid glands was used in China in 15–16 cc. In China they had learnt how to distinguish malignant enlargement of the gland from thyrotoxicosis per se in the 7th century, i.e. one thousand years before they did it in Europe.

Ancient Chinese wizards believed that all natural phenomena are caused with the interaction of two opposite elements designated as In and Yan that are not only opposite but also are interconditional. Chinese traditional medicine considers thyroid pathology as the unbalanced In-Yan correlation with either In hyper function and Yan deficit or In hypo function with Yan surplus while Qi energy is stagnated. This principle has become the basis for the non-medication treatment of thyroid diseases.

Some Russian researchers [Zholondz 1997; Pesikov and Rybalko 1994; Oganova 1999; Vasilenko 2000] has written that acupuncture methods can be effective in thyroid pathology treatment. The method of reflex diagnostics worked out under the guidance of professor A.M.Vasilenko plays an important role in the acupuncture treatment since it allows to determine the functional status of different channels.

Y.S. Pesikov and S.Y.Rybalko (1994) developed the following treatment of thyrotoxicosis and hypothyroidism during 10 days.

When 16 years ago I started to treat my first patients suffering from this pathology, it turned out that I myself had two knot formations in the both thyroid lobes. It happened so that I became my first patient myself. That was why this illness' treatment caused not only my professional but my personal interest too. In the process of the investigations and special literature study I have found out that thyroid pathology induces dysfunctions of the main organs and systems which in turn provide for the development of the following illnesses:

- cardio diseases, as thyroid hormones increase both the frequency of systoles and miocardia contractions;
- bone illnesses since there are changes of osteosystem under the influence of thyroid hormones; there is growth acceleration in children; the catabolic action of the hormones results in the losses of the bone tissue albumin which induces osteoporosis (that is the cause of back and bone pains);
- pulmonary diseases, since hypothyroidism is connected with the obstructive dyspnea syndrome in sleep, snore and the grave course of bronchial asthma [Okampo 2000];
- psychic abnormalities; dysfunctions of the central nerve system;
- genital glands dysfunctions;
- autoimmune ophtalmopathy.

In course of pregnancy hypothyroidism increases the risk of an underweight and stillborn baby's birth, raises pre-eclampsia risk level [Okampo 2000].

Since 1990 105 patients with different autoimmune thyroid dysfunctions (95 women and 10 men, aged from 29 to 54) have been treated in the Centre of Chinese Medicine "Sin Ya Chju". In addition 8 patients with postoperative hypothyroidism have received treatment.

The complex of the obligatory check-up for all patients included: thorough examination and anamnestic records, all patients passed ultrasound examination of thyroid at least twice – before and after the treatment, the pituitary thyrotrophin hormone level (TTH), serum triiodothyronin (T3) and thyroxin (T4) levels were determined simultaneously. The TTH level was tested with immunoferment and radioimmune methods, the T3 and T4 levels were checked with radioimmune method using standard test-kits. All patients were consulted by an endocrinologist, and besides all women were examined by a gynecologist.

More than one half of the patients also were examined with the method of variation thermoalgometre [Vasilenko A.M., Demin C.A. and others 2000].This method of reflex diagnostics is based on the measuring of the latent pain feelings' period while effecting 40 acupuncture points located near fingernails and toe-nails beds' corners with fixed power infra-red radiation. The initial and final points of all 12 conjugate acupuncture channels are included into the points tested. The software of this method allows to make a conclusion about the functional condition of each channel and also to get the spectrum index of pain levels in 40 tested points. This index can be used for the integral assessment of the regulatory systems' status of an organism.

The test of anxiety-depression [Polyakova A.G and others 2003] was used to estimate the psycho-emotional condition of the patients. This test is represented in form of a questionnaire and comprises the scale of anxiety and depression. The result was calculated with the simple addition of the points marked by the patients themselves. The conclusion about the patients having correlated psycho-emotional dysfunctions was made at the total number of 9 points and more on the scale of anxiety and at the total number of 8 points and more on the scale of depression.

All patients had an average number of 20 acupuncture sessions during 1-1.5 months. The choice of the location, method and moment for the effect on the corporal acupuncture points was made according to the rules of traditional chjen-tsu therapy on the basis of the thorough anamnestic records, the analysis of the prevalent complaints and symptoms. Along with the meridian points the needles were put in the frontal-lateral projection zones of thyroid gland on the neck without acupuncture effect on the gland itself. In addition with corporal points the following auricular points were used: 45 – thyroid gland; 22 – internal secretion glands; 28 – pituitary gland; 55 – shen-men; 51 – sympathetic nerves system; 34 – cerebral cortex; 23 – ovary; 97 – liver; 95 – kidney. The duration of the catamnestic observation lasted from 1 (10 patients) to 7 years (23 patients).

The levels of thyroid hormones in patients suffering from euthyroidism didn't differ from the admitted normal values, however the patients had

complaints that were characteristic of AT, there were typical moderately manifested symptoms too. The patients suffering from cardiovascular, skin, neurologic, gastroenterologic and gynecologic diseases, who asked for medical aid, showed the symptoms of subclinical hypothyroidism. Abnormalities of thyroid status in the patients were determined in the process of the additional check-up. A veracious rise of the TTH level in blood (up to 6.29 ME/l) was found along with an insignificant decrease of the T4 level. In patients with clinically manifested hypothyroidism the TTH level increased reaching sometimes the amount of 22.5 ME/l, the T3 and T levels significantly decreased to 1.25±0.14 and 59.04±5.87 respectively.

The manifestation of hypothyroidism was determined and the degree of its compensation was indicated not only with the hormones' concentration tested in blood but also with the combination of the characteristic pathognomic and associate clinical symptoms.

It is necessary to tell the case histories of a few patients in detail to show the main principles of the developed technique. The patient K is a woman, aged 42. The diagnosis of occidental medicine: autoimmune thyroiditis. Complaints: getting easily tired, drowsiness, fast changes of mood, a tendency to tearfulness, tachycardia, night sleep dysfunction, constant feeling of cold in hands and feet.

The results of the lab tests: the decrease of the T4 level, which intensifies thyroliberin secretion; the decrease of LH and FSH secretion; ultrasound examination showed ovary polycystosis along with the increase of the LH level. The results of the thyroid ultrasound examination: the volume of the lobes has enlarged, the size has increased, the hypoechogenic pattern is diverse, two knot-like formations have been found. The results of the reflex diagnostics: the stomach channel E is deficient, deficiency of the renal channel R, the gall bladder channel G is excessive, the surplus of the large intestine. ***The tactics of treatment***: a) the impact on the auricular points shen-men, the points of the internal secretion glands, pituitary points, ovary points (as the patient suffers from ovary polycystosis), hypothalamus; b) effecting the thyroid projection points in accordance with su jok system; c) moxibustion according to the method of "immunity strengthening" (the points tsui-qi, vai-guan, chjun-chju, he-gu, yan-lu-chen, tsu-lin-qi); d) effecting corporal points: tonic method – the points vai-guan and tsu-lin-qi (20 minutes), sedative method – nei-guan, chjo-hai (30 minutes), the points tsu-san-li, tai-chun, tsui-qi were also effected; e) putting needles in the frontal-lateral thyroid projection zones on the neck without puncturing the thyroid itself (30 minutes); f) in course of treatment the patient complainted of dizziness and also of paints in the area of the right blade-bone and wrist joint along the small intestine meridian (the above symptoms are stipulated with the liver meridian lesion), that was why the first point of the liver meridian "da-doon"(3 min.) and the point of the small intestine meridian "nau-shu" (pains in the right scapula area were indicative of this organ's lesion) were chosen for the acupuncture effect; g) the gynecology zone was effected with the method of scalp acupuncture once a week, in addition the treatment of the ovary and pituitary corresponding points was carried on too; h) during 7 days the patient took iodine drops with yoghurt which is prescribed in case of autoimmune thyroiditis; i) in connection with the hypostasis in the patient's cervical spine the treatment according to the kua-sa method was carried on; j) in course of the treatment the "open" point of the small intestine channel was effected; k) according to the su jok technique (in which the first point is considered to signify "dryness", the second point is considered to be "cold", the third – "wind", the fourth – "warmth", the fifth – "humidity") the corresponding corporal points were found: shao-tse – "dryness", chen-gu - "cold", hou-si - "wind", yan-gu – "warmth", shao-hai - "humidity", just these points were acupunctured – tonic method on the hou-si point (10 minutes), transitive method on other points – 20 minutes each; l) the first course of the treatment was performed in spring, the second – in September, the third – in December, according to the season the choice of the corporal points changed depending on the bad or well feeling of the patient in each season.

Let's consider the case history of the patient A., a woman, aged 52. The western medicine diagnosis: thyrotoxicosis – a diffuse goitre and also a cyst in the right thyroid lobe. Complaints of the constantly congested pipes, spontaneous pinching of the throat and choking sensation caused with strong emotions, hyperexcitability and nervousness, unreasonable fits of anger, sweatiness of the hands and feet, tinnitus; the associate illnesses – hypertonic disease of the 2nd stage, hemorrhage, arrhythmia. ***The lab tests results***: insignificant increase of the T3 level, thyrolibrin level was decreased. The results of the thyroid ultrasound examination: a cyst in the right lobe and the enlargement of both lobes were found. ***The results of the reflex diagnostics***: the surplus of the gall bladder, liver and stomach channels, the deficiency of the renal, heart and lung channels. ***The treatment tactics***: a) effect on the auricular points shen-men, the internal secretion glands, pituitary, ovary, hypothalamus, thyroid points; b) effect on the points corresponding thyroid according to the su jok system; c) moxibustion of the points tsui-qi, vai-guan, chjun-chju, he-gu,

yan-lu-chen, tsu-lin-qi according to the "immunity strengthening" method; d) blood-letting and vacuum therapy (cups); e) effect on the corporal points; f) putting needles in the frontal-lateral thyroid projection zones on the neck without puncturing the gland itself (30 min.); g) effecting the stomach zone according to the scalp-acupuncture method once a week, in addition the points corresponding thyroid were treated too; h) during seven days the patient took iodine drops in yoghurt, which was prescribed for thyroid diseases; i) in connection with the hypostasis in the patient's cervical spine the treatment according to the kua-sa method was carried on; j) in course of the treatment on the "open" point of the small intestine channel was effected; k) according to the su jok technique (in which the first point is considered to signify "dryness", the second point is considered to be "cold", the third – "wind", the fourth – "warmth", the fifth – "humidity") the corresponding corporal points were found: shao-tse – "dryness", chen-gu - "cold", hou-si - "wind", yan-gu – "warmth", shao-hai - "humidity", just these points were acupunctured – tonic method on the hou-si point (10 minutes), transitive method on other points – 20 minutes each; l) the first course of the treatment was performed in summer, the second – in autumn, the third – in winter, in accordance with the season the choice of the corporal points changed depending on the bad or well feeling of the patient in each season.

The patient I., a postoperative hypothyroidism case, aged 38. ***The western medicine diagnosis***: diffuse goitre, knots, Basedow's (Graves's) disease. Complaints of constant fear, claustrophobia, extreme weakness, menstrual cycle's dysfunction and sterility, anxiety. The patient takes elethyroxin regularly. ***The lab tests results***: T3 and T4 level increased, increased level of antibodies, according to the biopsy results – a histology test showed a benign tumour. ***The results of thyroid ultrasound examination***: numerous benign knot formations of both lobes after a thyroid operation. ***The results of the reflex diagnostics***: excessive heart, liver and gall bladder channels, deficient lung, stomach and urinary bladder channels. ***The treatment tactics***: a) effect on the auricular points shen-men, the internal secretion glands, pituitary, ovary, hypothalamus, cerebral cortex, thyroid points; b) effect on the points corresponding thyroid according to the su jok system; c) moxibustion of the points tsui-qi, vai-guan, chjun-chju, he-gu, yan-lu-chen, tsu-lin-qi according to the "immunity strengthening" method; d) blood-letting and vacuum therapy (cups); e) effect on the corporal points; f) putting needles in the frontal-lateral thyroid projection zones on the neck without puncturing the gland itself (30 min.); g) effecting the liver zone according to the scalp-acupuncture method once a week, in addition the points corresponding thyroid were treated too; h) during seven days the patient took iodine drops in yoghurt and valerian decoction at night interchanging with motherwort decoction; i) in connection with the hypostasis in the patient's cervical spine the treatment according to the kua-sa method was carried on; j) in course of the treatment on the "open" point of the liver channel; k) according to the su jok technique (in which the first point is considered to signify "dryness", the second point is considered to be "cold", the third – "wind", the fourth – "warmth", the fifth – "humidity") the corresponding corporal points were found: shao-tse – "dryness", chen-gu - "cold", hou-si - "wind", yan-gu – "warmth", shao-hai - "humidity", just these points were acupunctured – tonic method on the hou-si point (10 minutes), transitive method on other points – 20 minutes each; l) the first course of the treatment was performed in spring, the second – in summer, and the last, the third – in autumn.

The patient's I. son, teenager, 15 years old. ***The western medicine diagnosis***: autoimmune thyroiditis. ***Complaints*** of inability to concentrate attention at school lessons, poor memory, frequent dizziness, weakness, drowsiness in daytime, nausea and headaches round the temples. ***The lab tests results***: T4 level decreased, T4 enhances the thyroliberin secretion; increased secretion of LH and FSH. ***The results of the thyroid ultrasound examination***: a knot formation in the left thyroid lobe. The results of the reflex diagnostics: the gall bladder and triple energizer meridian dysfunctions (headaches around the temples indicate it), the liver and pericardium meridian dysfunctions (the indications are headaches in the vertex irradiating to the temple area). ***The treatment tactics***: a) effect on the auricular points shen-men, the internal secretion glands, pituitary, ovary, hypothalamus, cerebral cortex, thyroid points; b) effect on the points corresponding thyroid according to the su jok system; c) moxibustion of the points tsui-qi, vai-guan, chjun-chju, he-gu, yan-lu-chen, tsu-lin-qi according to the "immunity strengthening" method; d) blood-letting in the points hou-din, tun-tyan; e) ffecting corporal points fen-qi, yan-fu, le-tsue, nei-guan, da-chjui, kun-lun, sa-in-tsiao, tsui-qi, bai-hui, hou-si, shen-mai and tsu-san-li with sedative method (30 min.); f) in connection with the "wind" syndrome manifestations (lacrimation) the points tsuan-chju, he-gu and sa-in-tsiao were acupunctured with sedative method (30 minutes); putting n eedles in the frontal-lateral thyroid projection zones on the neck without puncturing the gland itself; g) effecting the liver zone according to the scalp-acupuncture method once a week, in addition the points corresponding thyroid were treated too; h) during

seven days the patient took iodine drops in yoghurt, also the patient was recommended to rinse his throat with milk to treat rhinitis; i) in course of the treatment on the "open" point of the liver channel was effected; j) according to the su jok technique (in which the first point is considered to signify "dryness", the second point is considered to be "cold", the third – "wind", the fourth – "warmth", the fifth – "humidity") the corresponding corporal points were found: shao-tse – "dryness", chen-gu – "cold", hou-si – "wind", yan-gu – "warmth", shao-hai - "humidity", just these points were acupunctured – tonic method on the hou-si point (10 minutes), transitive method on other points – 20 minutes each; k) the first course of the treatment was performed in summer, the second – in autumn, the third – in winter.

After the treatment all patients began feeling much better, they stopped to complain or decreased their complaints of weakness, fatiguability, drowsiness, the rhythm of sleep and vigil was fixed, the sensation of cold in skin stopped, the voice timbre improved. Some women's menstrual cycle normalized. The patients' looks transformed too – there appeared brilliance in their eyes, their hair became glossy, their complexion improved, the skin dryness decreased, edema and face puffiness vanished in 100% of the cases.

There were definite positive transformations found out in course of palpation of the thyroid projection on the neck (painful and discomfort feelings during palpation disappeared). The patients suffering from cardiovascular system's dysfunctions began to feel much better. In case of hypertonic syndrome the arterial tension fell significantly, angio heart pains lessened or disappeared, the pulse normalized.

The indications of the hormonal status in the first group of the patients (euthyroidism) practically didn't changed. There were positive changes of the thyroid hormone status in the patients of the second group (subclinic hypothyroidism) and of the third group (clinically manifested hypothyroidism).

The tendency to the normalization of the thyroid hormonal status as the result of the acupuncture treatment was observed immediately after the end of the course. However considerable changes of the three thyroid hormones' levels in the patients suffering from subclinical hypothyroidism took place only a month later. Veracious decrease of the TTH level in the patients suffering from clinically manifested hypothyroidism was found out immediately after the treatment and it kept falling within one month but nevertheless the TTH level stood a little bit higher the top limit of the normal number. There was a considerable rise of the T4 level in a month after the treatment had finished, although it never reached the normal amount.

Basing on the results of the biochemical tests and the changes of health condition, the thyroid medicaments prescribed before were revoked for 20% of the patients, 77% of them could lessen the dose of the medicines three times. 3% of the patients took the same dose of the prescribed medicines, but their tolerance for the medicaments improved.

The results of the biochemical tests represent a clear evidence of the positive influence of acupuncture treatment on the recovery of the thyroid hormonal function. However in grave cases of clinically manifested hypothyroidism one course of the acupuncture treatment is usually not enough for the normalization of thyroid hormonal status. In such cases it is inadvisable to stop vicarious hormonal therapy and we should take repeated courses of the acupuncture treatment. The visual picture of thyroid was performed with ultrasound scanning for all patients before the treatment and, repeatedly in different terms after the treatment.

All the examined patients showed considerable positive changes of the thyroid morphometrics after the treatment.

Special attention should be drawn to originally some more explicit enlargement of the right lobe, which coincides with the facts given in special literature. According to the opinion of some researchers the lobe's volume under 7 ml is considered to be a variant of the normal size. But our observations do not confirm the correctness of this statement. We failed to find the correlation between the thyroid volume and the explicit character of the clinical manifestations for the autoimmune dysfunction. Moreover in one case well-marked AH symptoms were found in a woman having 4 and 6 ml volume of the left and right thyroid lobes respectively.

There were explicit positive changes in the patients suffering from AT with knots. The most vivid example is the results of treatment in case of the patient Z. Before the treatment a knot in her thyroid gland had been increasing gradually, the woman was recommended to undergo a surgery, but she refused. In March–April, 1997 she took the full course of the acupuncture treatment which resulted in the vanishing of practically all clinical manifestations of the disease, the thyroid dimensions lessened significantly, but the "knot's" size didn't change. In August and September of that year the patient took a repeated course of acupuncture, regardless of the satisfactory condition of her health. That time the size of the knot decreased after the treatment. On the 21 of October, 1998 the knot in the left lobe of the gland practically wasn't seen, the patient had no complaints, she was able-bodied and she has been followed up until now. There were the same results of the other AT patients' follow-up.

Catamnestic follow-up of 15 patients aged under 10, 22 patients aged under 7 and 32 children under 5 hasn't shown a single case of developing complications in our patients, including 12 sick persons who refused to undergo a surgery prescribed for them. On this ground we can consider acupuncture as an effective and safe organ-friendly method of recovery treatment for thyroid dysfunctions both of the diffuse and knot hypertrophy of the organ.

At the same time catamnestic follow-up shows that approximately 50% of the patients under treatment had recurrent diseases within 6-12 months after the treatment. The recidivism percentage reduced twice in case of excluding provocative factors. Recidivism usually is connected with pregnancy, women are often in worse condition before or during menses, in menopause period.

Persistent urogenital infections are matters of importance too, although there is no specific clinical manifestation of the infection. About 20% of the patients followed up stopped suffering from recurrent autoimmune thyroid dysfunctions after treatment of bacterial, viral or fungal urogenital infections that the patients had been unaware thereof before. Exacerbations of chronic skin diseases are also important in provoking secondary manifestations of thyroid dysfunctions. Typical triggers are stresses especially when psycho-emotional lesions dominate in the ailment's development. The identification and well-timed elimination of the associate diseases result in considerable enhancement of acupuncture efficiency in course of the recovery treatment for thyroid dysfunctions.

On the other hand both hypo and hyper thyroidism significantly burdens the process of some bodily diseases. AT increases the contingency of recidivism and recurrent frequency of some chronic pain syndromes, hypertonic disease, vertebro-basal deficiency, gastroenterologic and broncho-pulmonary diseases. Inclusion of corporal and auricular points, which are effected to normalize the dysfunctions mentioned above, into acupuncture prescription list boosts the efficiency of the treatment for thyroid dysfunctions and diminish the frequency of their recidivism.

The represented results prove that the acupuncture application is safe and expedient to treat thyroid dysfunctions developing as the result of both diffuse and knot forms of this organ's hyperplasia. Despite the lack of my own data about the autoantibody identification there are all the reasons to presume that the most part of the treated and followed up patients suffered from autoimmune thyroid dysfunctions. The analysis of the possible sanogenetic mechanisms of the acupuncture effect is beyond the limits of this research. However some of these factors seem to be obvious.

Firstly, we are aware about the stress-induced factor in the development of autoimmune diseases in general and AT in particular. It has been proved that the stress-limiting effect of acupuncture [Vasilenko A.M. 1985, 1987] is likely to be the basis of the acupuncture treatment for AT that is stipulated with pathogenesis. Secondly, the normalization of neuro-endocrine-immune interactions (their dysfunctions has much influence on the phenomenon of autoimmunity [Vasilenko A.M. 2002] is very important in the effective mechanisms of acupuncture.

TTH receptors antibodies appear in thyroid cells in AT cases. Under the conditions of normal interactions thyroid and pituitary gland producing TTH, there exist relations based on the principle of "feedback regulation": high level of the thyroid hormone suppresses TTH secretion. The auto antibodies interacting with TTH receptors break this balance. AT is generated with the antigenospecific defect of suppressive T-lymphocytes. In case of AT suppressive T-lymphocytes are activated with corresponding antigens more weakly, but they keep being capable for normal activation with another antigene.

Being partial this defect per se is not enough for inducing an autoimmune disease. There must be some additional unfavourable influences on the immune system from "outer environment". Such influences reduce the general activity of regulatory cells which is superimposed on the T-suppressors' dysfunction that is stipulated genetically.

Besides acupuncture increases the efficiency of the natural vicarious mechanism of primary hypothyroidism through the activation of the sympathoadrenal system. The enhancement of sympathic tonus stimulates the production of the thyrotropin-releasing hormone TRH and through this – the TTH production, promotes TTH sensibility of a thyroid gland and also boosts T4 and T3 utilization in periphery tissues.

It is worth mentioning that immediately after the end of the acupuncture treatment T4 and T3 levels in blood raised first of all while TTH index practically didn't change. Within a month after the treatment there was a veracious reduction of TTH level and further increase of T3, T4 levels reaching complete normalization in almost a half of the patients. Our Chinese colleagues [Shen et al 1999] observed the same suspended recovery of the thyroid hormonal function under an experiment's conditions, and also A.Y.Izvanova (2003) received analogous results in course of manual therapy for the patients suffering from cervical osteochondritis complicated with AT.

We can come to the conclusion that:

Acupuncture is an efficient alternative organ-friendly approach to the treatment of non-malignant thyroid diseases especially for the patients who are contraindicated to take hormones for some reasons.

Acupuncture contraindications have not been found out in the groups of the patients under examination. Acupuncture can be applied as a complement of the vicarious hormonal therapy. At the same time the medicament doses are reduced substantially and the therapeutic effect is enhanced.

As the result of the treatment course the characteristic clinical manifestations of hypo and hyper thyroidism have diminished significantly in 100% of the patients. The explicitness and resistance of the resulting clinical effect largely depends on the existence of associate diseases and provocative factors. The exclusion of these factors provides for the double decrease of the recidivism risk level.

Acupuncture effectively normalizes both hypo and hyper functional thyroid gland conditions. The recovery of the thyroid hormonal status takes place in case of both diffuse and knot forms of thyroid hyperplasia.

Repeated ultrasound examinations have shown well-marked positive changes in thyroid gland: normalization of the size and volume, the organ's structure improvement, diminishing and in some cases even disappearing of knot formations.

The results of the research in the aggregate with the existing data from special literature lay the grounds for the consideration that acupuncture is such an approach to the recovery treatment of autoimmune thyroid diseases that has been fully reasoned from the pathogenetic point of view.

PRACTICAL RECOMMENDATIONS

Acupuncture is indicated for the recovery treatment of the non-complicated hormonal thyroid dysfunctions inducing diffuse and knot forms of this organ's hyperplasia which is usually consequent on an autoimmune process. The acupuncture treatment includes the usage of auricular and corporal points.

The effect on the following auricular points is recommended: 45 – thyroid gland; 22 – internal secretion glands; 28 – pituitary; 55 – shen-men; 51 – sympathic nerve system; 34 – cerebral cortex; 23 – ovary; 97 – liver; 95 – kidney. The choice of the points is determined on the basis of the existing symptoms and the pain sensibility of the representative points on the ear conch.

in brief...

Alzheimer: Protein bremst Neurotransmitter

Forscher berichten nun davon, wie krankhafte Proteinablagerungen im Gehirn von Alzheimer-Patienten die Signalübertragung zwischen den Nervenzellen stören könnten.

Originalpublikation:
The APP family members are key players in S-adenosylmethionine formation by MAT2A and modify BACE1 and PSEN1 gene expression – relevance for Alzheimer's disease
Thorsten Müller et al.; Molecular and Cellular Proteomics,
doi: 10.1074/mcp.M112.019364; 2012

Gehirnleistung: Gute Vernetzung als A und O

Sprache, Sinneswahrnehmung, Gedankenbildung und Bewegung sind komplexe Aufgaben, die das Gehirn nur bewältigt, wenn die Neuronen gut vernetzt sind. Forscher haben jetzt ein molekulares Schaltersystem entdeckt, das diese Vernetzung der Nervenzellen reguliert.

Originalpublikation:
Neocortical dendritic complexity is controlled during development by NOMA-GAP-dependent inhibition of Cdc42 and activation of cofilin
S. Schuster et al.; Genes Dev.;
doi: 10.1101/gad.191593.112; 2012

Epileptische Anfälle: Mehr als bloss Leim

Epileptische Anfälle sind wie Gewitterstürme – Nervenzellen schaukeln sich auf und elektrische Entladungen breiten sich über die Hirngebiete aus. Neurobiologen zeigen nun, dass Gliazellen das Gehirn vor epileptischen Anfällen schützen.

Originalpublikation:
CNTF-mediated preactivation of astrocytes attenuates neuronal damage and epileptiform activity in experimental epilepsy
Matthias Bechstein et al.; Experimental Neurology,
doi: 10.1016/j.expneurol.2012.04.009; 2012

EXAMINATION AND PRENATAL CONSULTATION OF PREGNANT WOMEN WITH UROLOGICAL PATHOLOGY OF FETUS

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Apart from obstetricians and gynecologists, prenatal diagnostics of the urinary system disease in fetus needs to be supervised by the pediatric urologist to decide upon diagnosis and tactics. Cooperation of these experts in prenatal diagnostics determines the approaches which became the basis of the urological pathology diagnostics.

Despite cordocentesis and amniocentesis being very informative, they still remain dangerous and complicated and not popular in the regions of Russia; that is why our approach to prenatal diagnostics of the urinary system pathology is based on the none-invasive examination which practically has no limitation for use, – sonography.

The aim of the investigation is to improve the efficiency of prenatal detection of the urinary system pathology, and to ground the differentiated tactics of medical-diagnostic follow-up of postnatal babies using the developed methods and systematic approach to the evaluation of the urodynamics and renal blood-flow disorders in fetus.

TASKS:

- to define fetal urinary system failure and register urodynamic and hemodynamic disorders;
- to monitor detected changes at different gestation periods;
- to detect fetus with incurable development disorders to decide upon suitability of pregnancy prolongation;
- development of optimal postnatal treatment strategy depending on prenatal diagnosis and severity of defined functional disorders.

Considering sonography being the basic method for prenatal screening and fetus control, we proposed original ways of examination and data interpretation for clarification of development disorders, prognosis or renal function, and disease outcome.

Such position determines simplicity and availability of proposed principles of antenatal diagnostics of the urinary system pathology for wide range of experts including pediatric urologists, without application of invasive diagnostics and associated complications.

To solve these tasks, we applied the developed methods of ***prenatal urodynamic examination and Doppler ultrasound examination of renal blood flow.***

The developed methods of fetal urodynamic assessment is based on evaluation of the functional state of upper and lower urinary tracts with the use of volumetric and temporal data of the urine passage during "filling – emptying" period, with micturating cycle monitoring with sonography.

The volumetric examination of the urinary bladder activity during micturating cycle with its natural filling became the base of a new approach to study fetal urodynamic. With this purpose we have developed methods of ***antenatal ultrasonic cystometry at natural filling*** and ***antenatal ultrasonic dynamic pyelo-cystometry.***

The ***ultrasonic cystometry at natural filling*** is the basic method of studying of the lower urinary tracts urodynamic. The use of this method is indicated at presence of ultrasonic markers of the urinary system pathology to detect detrusor disorder, and also to examine the complications impact on the fetus during pregnancy and antenatal period.

This method presumes the urinary bladder size registration at longitudinal and transverse scan and its volume measuring. The urinary bladder volume was measured each 3–5 minutes during the whole micturating cycle.

This method resulted in protocol presenting diagram of micturating cycle of the fetus analyzed with developed qualitative and quantitative indicators

that facilitate assessment the functional state of the fetal detrusor – the reservoir function of the urinary bladder, its evacuation function, effectiveness and character of urination, and fetal diuresis. Assessment of interrelations between the urinary bladder volume and micturating cycle parameters gave the ground to determine variants of urodynamic disorders in fetal period. The worst were the variants of small volume urinary bladder dysfunctions which developed on the background of intrauterine development delay, chronic intrauterine hypoxia, and presence of morphofunctional immaturity symptoms.

It has been therefore defined that development of the urinary bladder dysfunction is determined by the influence of pregnancy complications. This gives the reason to consider them as intrauterine-formed states.

The ***antenatal ultrasonic dynamic pyelocystometry*** suggests synchronic registration of dilated pelvis of the fetus, ureter, and urinary bladder volume within micturating cycle. The latter facilitated to identify the variant of urodynamic disorders and presence of combined urodynamic disorders of the upper and lower urinary tracts. Thus, "stable" pyeloectasia due to organic obstruction of the ureter, "unstable" pyeloectasia due to functional disorders, and "fatal" pyeloectasia presenting hazardous urodynamic disorders, have been defined.

An important part of the prenatal diagnostics is evaluation of function of the affected kidney in fetus from the point of view of hemodynamics. ***Dopplerography*** allows to detect angioarchitecture changes and degree of hemodynamic disorders depending on the present pathology and gestation period. Evaluation of anatomic state and the character of renal blood flow in fetus is applied with B-mode Doppler, color and power Doppler imaging (CDI, PDI) and pulse Doppler. With the latter, we examined parameters of the Doppler curves spectrum – the highest and the lowest blood flow and resistance indices in magistral, segment, and interlobular arteries. This job demanded identification of normative parameters of the blood flow of the normal kidneys in fetus which had not been done until that time. Comparison of normal data with those obtained from fetus with urinary tract obstruction and urodynamic disorder detected three stages of hemodynamics disorder: light, average, and severe. Then we could decide upon the appropriate way to correct disorders which arise in the postnatal period.

So, when defining dilatation degree of the upper urinary tracts according to presence and expression of atrophic processes in renal parenchyma correlating with present disorders of renal hemodynamics, it is possible to define the type of the upper urinary tracts disease, to predict the disease outcome, and to consider appropriate strategy of postnatal follow-up.

During prenatal consultation, it is recommended that pediatric urologist used the developed diagnostic program which allows to perform antenatal identification of disorder, to consider pregnancy perspective and postnatal diagnostics and treatment.

This position makes possible to outline three groups of perinatal observation:

- group of fetuses with incurable diseases which demand therapeutic abortion;
- group of fetuses that need earlier postnatal observation and treatment in specialized surgical unit;
- group of fetuses under hazard of anatomic and functional disorders and demanding hospitalization with monitoring of detected abnormalities, depending on which the following treatment will be considered.

The suggested system of the diagnostics of the urinary system pathology in fetus, prenatal observation, allow to increase reliability of the antenatal diagnosis and prognosis, to schedule terms, amount, and tactics of treatment performed immediately after birth on the stage of pre-clinical symptoms, which on the whole will determine the outcome of the diagnosed pathological state, prevent development of live-threatening complications, decrease probability of birth babies with incurable diseases.

The present investigation has been the first research in fetal urology dedicated to urodynamics and renal hemodynamics of fetus, their dysfunction at prenatal development stage. A new method based on volumetric monitoring of the urinary bladder activity during micturating cycle, and Doppler ultrasound assessment of renal blood flow at different gestation periods, was proposed. For the first time urination of fetus was studied, normative parameters of renal hemodynamics in fetal period were developed. It is proved that detected antenatal disorders of urodynamics and hemodynamics are predictors of the development of the urinary bladder dysfunction and renal parenchyma dysplasia in postnatal period. Objective criteria and algorithm of antenatal diagnostics of incurable diseases of the urinary system were developed.

Development of program on prevention, prenatal correction, reasonable earlier treatment in the postnatal period or interruption of life-incompatible incurable states will decrease the number of severe development failures and disability rate, increase of the quality of life. This direction becomes more popular in pediatrics and demand much contribution and active research in order to decrease mortality rate and prevention of chronic pathologies detected at earlier childhood. Information received at prenatal period will facilitate more clear determination of algorithm of the postnatal observation and treatment which will result in decrease amount of expensive examination methods and terms of hospitalization.

GENE IL-8-251A / T AS A PROGNOSTIC TEST OF PROBABILITY OF DUODENAL ULCER IN CHILDREN

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Abstract

We had studied allelic polymorphism of the gene IL-8 and found that heterozygote mutant genotype of IL-8-251A/T may be prognostic criteria probability of duodenal ulcer in children. The bearer of the homozygous mutant genotype of IL-8-251A / A is associated with the most severe inflammation.

Keywords

children, duodenal ulcer, the gene IL-8-251A / T.

BACKGROUND

A number of studies demonstrated the important role of strains of Helicobacter pylori (HP) in formation of ulcer [1, 2]. The second most important factor in the damage of the mucosa is a disturbance of the system of defense mechanisms that are implemented through changes in reparative processes. We observe heterogeneity in the inflammatory response to HP infection that is caused by individual genetic characteristics (allelic polymorphism of cytokine genes) that trigger and control inflammation in the mucosa of duodenum [3]. Leading role in the pathogenesis of HP infection plays interleukin-8 (IL-8), polymorphism which affects the severity of the immune response, thereby causing the clinical phenotype of the disease [1]. IL-8 (Chemokine CXCL8) – glycoprotein that is mapped on 4q12-q21 chromosome, is one of the major proinflammatory cytokines. The gene encoding IL-8 has several allelic variants that differentially affect gene expression. It is important to study regional molecular genetic mechanisms of ulcer duodenum in children in the Chernivtsi region in order to improve treatment results of disease.

MATERIALS

Under our supervision we had 62 children with duodenal ulcer (main study group) and 57 healthy children (comparison group) aged 6 to 18 years. Children in both groups were HP-positive. The studied groups were representative for age, sex and place of residence ($p > 0.05$). Criteria for inclusion of children in the study: residence (Chernivtsi-sity, Chernivtsi region); Helicobacter pylori; age: 6–18 years; signed informed consent for research. Exclusion criteria: antibiotic therapy during the last three months, bad habits.

METHODS

Instrumental methods included esophagogastroduodenoscopy using fiberoptic gastroduodenoscopy (Pentax FG-24P) to verify the diagnosis, assessment of morphological changes in the mucosa by visual analogue scale, a biopsy of the gastric mucosa (Antrum and body of the stomach) and duodenum. Samples of genomic DNA for the study of gene polymorphism of IL-8 were isolated from peripheral blood leukocytes, stabilized using EDTA anticoagulant, followed by amplification of polymorphic sites by polymerase chain reaction using individually selected temperature program and appropriate primers. The presence of allele A (IL-8-251A/T) forms a restriction site for Mfe I. Analyses of amplification products were performed by electrophoresis in 3% agarose gel with ethidium-bromide and visualized under UV light using computer video. Statistical analysis of the data was performed using software package «Statistica 6.0». To assess compliance with the distribution of genotypes expected value at equilibrium Kolmogorov-Smirnov test using Pearson (χ^2). In the absence of normal distribution criteria used *Mann–Whitney–Wilcoxon test*. Association of alleles and genotypes of IL-8-251A/T with a tendency to develop duodenal ulcer evaluated by analysis of contingency tables, 2×2, 3×2 with the expectation criterion χ^2 (df = 1) and the odds ratio (OR) with genotype calculator. To assess the impact of polymorphism of IL-8 -251A/T on manifestations of the disease was used criterion H (*Kruskal — Wallis one-way analysis of variance*) [4].

RESULTS

Analysis of the distribution of alleles of the gene IL-8-251A/T showed that children from the main group had significantly more common A allele in comparison to children from comparison group ($\chi^2 = 8{,}99$, $p < 0.01$). The frequency of the T allele in affected children was slightly lower than in healthy ($\chi^2 = 4{,}32$, $p < 0.05$). The distribution of genotypes of IL-8-251A/T in the studied groups is presented in Fig. Normal genotype IL-8-251T/T was found in 19.4% of patients, mutant heterozygotes (IL-8-251A/T) –

67.7% of children in the main group, homozygous (IL-8-251A/A) – in 12.9% of children. In the comparison group of children we observed a slightly different distribution of genotypes of the gene IL-8-251A/T. Thus, the genotype of the IL-8-251T/T was found in 49.1%, IL-8-251A/T – in 29.8%, IL-8-251A/A – 21.1% of children. Frequency of occurrence of genotype IL-8-251A/T in patients was significantly higher in comparison to the healthy individuals (χ^2 = 17,08, p <0.0001), which gives reason to evaluate this genotype as a risk criterion of ulcer duodenum in children. A genotype of IL-8-251T/T, which is significantly more often diagnosed in children of comparison group (χ^2 = 11,79, p <0.001), can be considered to have a protective effect.

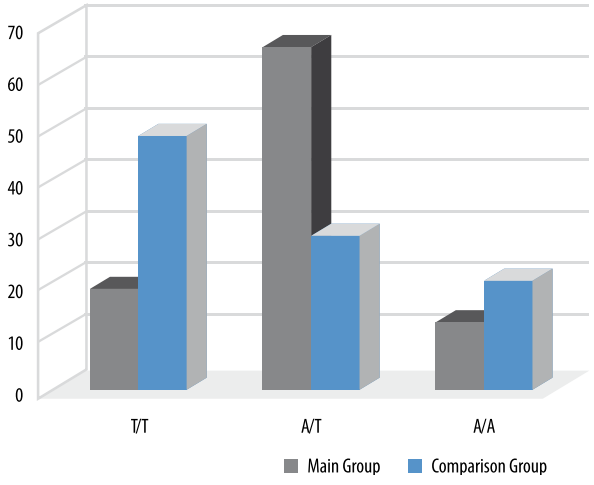

Fig. 1. *Frequency distribution (%) of gene genotypes of interleukin-8-251A / T in children of Chernivtsi region*

Between genotype IL-8-251A/T and the development of duodenal ulcer in children of the Chernivtsi region revealed a positive association (odds ratio (OR) = 4,94, χ^2 = 17,08, [2,27–10,76], p <0.0001). As shown in Table 1 data, OR greater than 1, indicating the importance of the risk allele A PROMOTER gene of polymorphism of IL-8-251A/T on ulcer duodenum in children. At the same time was shown a statistically significant negative relationship with genotype IL-8-251T/T, indicating perhaps a low risk of disease in carriers of this genotype (table 1).

Our results coincide with the data of other authors concerning the relationship between mutant heterozygous genotype of IL-8-251A/T with the development of duodenal ulcer in Caucasians. Analysis of clinical symptoms and the degree of inflammatory infiltration of the mucosa of the stomach and duodenum in children of the basic group showed significant difference in the intensity of symptoms depending on the distribution of genotypes of IL-8-251A/T. Thus, carriers of mutant A allele were observed with significantly more severe clinical symptoms and the greatest degree of inflammatory infiltration of the mucosa of the stomach and duodenum compared with native "wild" T allele (p <0.05). It is known that if A allele is present we observe increased expression of IL-8, which leads to a more pronounced inflammatory response to infection and persistence of HP.

Analysis of the associative relationship between genotypes of IL-8 and the clinical course of the disease was done (Table 2). We established positive correlative relationship of pain and dyspeptic syndromes, the degree of severity and the degree of active inflammation of the lining of the stomach and duodenum (Table 2).

CONCLUSION

Heterozygous mutant genotype of IL-8-251A/T may be used as prognostic criteria of probability of duodenal ulcer in children. Carriage of the homozygous mutant genotype of IL-8-251A/A is associated with the most severe inflammation. To develop prognostic criteria of risk, severity of duodenal ulcer in children and in order to highlight high-risk groups of the disease is needed further study of the combinations of polymorphisms of genes of various cytokines on more children.

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Table 1. *Association of gene genotypes of interleukin-8 with duodenal ulcer*

Gene, polymorphism	Genotypes	RR, 95%CI	OR, 95%CI	Log Odds	df=1 χ2 / p
ІЛ-8, (-251 A/T)	TT	0,47[0,29-0,78]	0,25[0,11-0,56]	-1,39	11,79/0,001
	AT	2,13[1,44-3,16]	4,94[2,27-10,76]	1,60	17,08/0,0001
	AA	0,73[0,42-1,29]	0,56[0,21-1,48]	-0,59	1,41/0,235

Table 2. *Association of gene genotypes of interleukin-8 with with clinical features and course of treatment of duodenal ulcer of children*

Sign	H (Kruskal – Wallis one-way analysis of variance)	p
Epigastric pain	7,38*	0,01
Pain in the pyloroduodenal area	7,25*	0,02
Diarrheal syndrome	6,27*	0,04
Intoxication syndrome	2,54	0,32
Hiperatsydnist	3,21	0,24
The frequency of exacerbations	3,07	0,56
severity	7,34*	0,02
The degree of progression	4,56	0,22
The degree of activity of inflammation of the mucous membrane	8,67*	0,001

Note: ** – Significant at p<0,05.*

in brief...

Dopamin: Ein Stoff mit vielen Botschaften

Nicht nur Kinder lernen schnell positive und negative Situationen zu unterscheiden – auch Fruchtfliegen sind dazu in der Lage. Im Insektengehirn ist Dopamin für die Bildung des Vermeidungs- als auch des Belohnungsgedächtnisses entscheidend.

Originalpublikation:
A subset of dopamine neurons signals reward for odour memory in Drosophila. H. Tanimoto et al.; Nature;
doi:10.1038/nature11304, 2012

Parkinson: Neuer Antikörper entdeckt

Erkrankungen wie Morbus Parkinson liegen krankhafte Proteinveränderungen zugrunde. Bei der derzeit unheilbaren Krankheit verändert sich das Protein Alpha-Synuclein und wird pathologisch. Forscher haben nun einen Antikörper entdeckt, der Abhilfe schaffen könnte.

Originalpublikation:
An antibody with high reactivity for disease-associated α-synuclein reveals extensive brain pathology Gabor G. Kovacs et al.; Acta Neuropathologica,
doi: 10.1007/s00401-012-0964-x; 2012

MDMA: Partydroge als Parkinson-Heilmittel?

Kann die illegale Partydroge Ecstasy, die Menschen zum Tanzen bringt, tatsächlich in einem Medikament Verwendung finden, das die unkontrollierten Bewegungen bei Parkinsonpatienten verhindert? Ein Forscherteam ist der Meinung, dass das möglich ist.

Originalpublikation:
A novel MDMA analogue, UWA-101, that lacks psychoactivity and cytotoxicity, enhances l-DOPA benefit in parkinsonian primates M.J. Piggott et al.; The FASEB Journal;
doi: 10.1096/fj.11-195016; 2012

TRINKEN IM HÖHEREN LEBENSALTER

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Das Trinkverhalten ist für jedes Lebensalter von entscheidender Bedeutung, da das Wasser lebensnotwendig ist und mehrere Funktionen für den Organismus übernimmt. So ist das Wasser Bestandteil aller Zellen und Körperflüssigkeiten, dient als Transport- und Lösungsmittel (z.B. Nährstoffe, Abbauprodukte) und erhält und regelt die Körpertemperatur (z.B. Schwitzen).

Da der Körper ständig Flüssigkeit über die Nieren, den Darm, die Haut oder beim Atmen über die Lungen ausscheidet, benötigt er regelmäßig Wasser. Normalerweise wird dies über ein entsprechendes Durstempfinden reguliert, das dann entsteht, wenn der Körper mehr als 0,5% seines Gewichtes in Form von Wasser verloren hat.

Bei älteren Menschen ist nun das Durstgefühl vermindert und es besteht die Gefahr einer Exsikkose (Dehydratation, Austrocknung).

Weshalb trinken gerade ältere Menschen zu wenig?

- reduziertes Durstgefühl
- Angst vor nächtlichen Toilettengängen
- Angst vor dem Trinken auf Grund von Inkontinenz bzw. Prostatabeschwerden
- Schluckstörungen
- Erziehung: „Beim Essen wird nicht getrunken!".

Die Folgen einer ungenügenden Flüssigkeitszufuhr sind Minderung der Leistungsfähigkeit, schlechtes Allgemeinbefinden, trockene Haut und Schleimhäute, Schwindel, Kopfschmerzen, Verstopfung, Verwirrtheitszustände, Kreislauf- und Nierenversagen (Tab. 1).

Untersuchungen in Krankenhäusern und Altenheimen haben gezeigt, dass zu wenig darauf geachtet wird, inwieweit die älteren Menschen regelmäßig und ausreichend trinken. Um einen ausgeglichenen Wasserhaushalt zu gewährleisten, sollte für den älteren Menschen täglich ca. 1,5 Liter Flüssigkeit angeboten werden. Es gibt auch relativ genaue Berechnungsvarianten für eine täglich notwendige Flüssigkeitsaufnahme:

Tabelle 1. *Folgen eines Wassermangels (Mann, 75 kg Körpergewicht)*

Wasserverlust in % des Körpergewichtes und in Litern	Symptome
ab 0,5	Durst, von älteren Menschen allerdings oft nicht wahrgenommen
bis 3 (2,5 l)	Durst, Gewichtsabnahme, Rückgang der Harnproduktion und Speichelsekretion, trockener Mund
ab 5 (4 l)	Nachlassende Gewebespannung der Haut, Anschwellen der Zunge, Schluckbeschwerden, beschleunigter Herzschlag, Temperaturanstieg, Bluteindickung
ab 10 (7 l)	Starke Abnahme der körperlichen und geistigen Leistungsfähigkeit, Verwirrtheit, Muskelkrämpfe, Kreislaufkollaps, ohne Flüssigkeitsersatz: Lebensgefahr!

- 30 ml pro kg Körpergewicht, bei der Berechnung ist jedoch das Soll-Gewicht zugrunde gelegt
- 1,500 ml + (15 ml x Ist-Gewicht-20) = Flüssigkeitsbedarf in ml.

Diese Orientierungsgrößen können jedoch vom tatsächlichen individuellen Bedarf abweichen, wenn etwa Grunderkrankungen, wie z.B. bei der Niereninsuffizienz oder Herzinsuffizienz, wo eine Flüssigkeitsrestriktion gefordert ist.

Bei starkem Schwitzen (im Sommer, bei Fieber, in überheizten Räumen, bei körperlicher Anstrengung) bei Durchfall, Erbrechen und Einnahme von Laxanzien oder Diuretika steigen die Wasserverluste an. Diese Verluste müssen durch vermehrte Flüssigkeitsaufnahme, d. h. über die o. g. Mengen hinaus, wieder ausgeglichen werden.

In diesen Fällen, aber auch bei chronischem Flüssigkeitsverlust sollten Trinkprotokolle geführt werden, um das Trinkverhalten zu kontrollieren und zu dokumentieren. Mit welchen Möglichkeiten ist nun ausreichende Flüssigkeitszufuhr zu erreichen:

- Zu allen Mahlzeiten Getränke anbieten und ggf. anreichen
- Morgens an häufig frequentierten Stellen der Wohnung bzw. des Zimmers die Getränke in Sicht- oder Reichweite bereitstellen
- In Senioreneinrichtungen Selbstbedienungsmöglichkeiten für Getränke (Trink-Oasen) einrichten oder Getränkeautomaten aufstellen
- Leere Gläser und Becher immer wieder auffüllen bzw. gegen gefüllte austauschen
- Trinkrituale einführen, z. B. den Nachmittagskaffee oder den „5-Uhr-Tee“
- Auf die Flüssigkeitsversorgung von (vermeintlich) selbständigen Senioren achten
- Je weniger jemand isst, desto mehr muss er trinken
- Hilfs- und pflegebedürftige Senioren benötigen adäquate Hilfestellung und Unterstützung beim Trinken. Spezielle Trinkgefäße nutzen
- Viele Senioren greifen eher zu, wenn es sich dabei um ein buntes und/oder süßes Getränk handelt
- Die Senioren zum Austrinken ermuntern (... damit nichts umkommt).

Vorteilhaft ist auch ein individuell zusammengestellter Trinkplan, der eine ausreichende Flüssigkeitsmenge sicherstellen soll (Tab. 2).

Sehr unterschiedlich wird auch die Frage von geeigneten bzw. ungeeigneten Getränken diskutiert.

Besonders geeignete Getränke sind Wasser, Kräuter- und Früchtetees, Säfte bzw. Saftschorlen. Auch Kaffee, schwarzer Tee sowie alkoholische Getränke werden entgegen häufig anderslautender aussagen zu den Getränken „dazugerechnet“. auf Grund ihrer anregenden Wirkung auf Herz und Kreislauf sind sie jedoch nicht zum Durstlöschen geeignet.

Gegen den täglichen Genuss von bis zu 4 Tassen Kaffee sowie gelegentlich einem Glas Bier oder Wein ist in aller Regel nichts einzuwenden. Gibt der gesundheitliche Zustand des Seniors Anlass zur Sorge, so sollte ein ärztlicher Rat eingeholt werden.

Immer wieder werden auch alkoholische Getränke z.B. täglich 1–2 Gläser Wein dem älteren Menschen verboten. Argumentativ kommen Suchtgefahr, Leberschädigung, Einschränkung der körperlichen

Tabelle 2. *Beispiel für einen Tages-Trinkplan für Senioren*

Frühstück	2 Tassen Kaffee oder Tee	250 ml
Zwischenmahlzeit	1 Glas Fruchtsaftschorle oder Buttermilch	200 ml
Mittagessen	1 Glas Mineralwasser 1 Teller Suppe	200 ml 150 ml
Zwischenmahlzeit	1 große Tasse Tee oder Kaffee	200 ml
Abendessen	2 Tassen Kräutertee	300 ml
später Abend	1 Glas Saftschorle, Mineralwasser oder gelegentlich 1 Glas Bier bzw. Weinschorle	200 ml
Gesamtmenge		**1500 ml**

und geistigen Leistungsfähigkeit zur Sprache. Deshalb einige Hinweise zu dem Problem „Wein und Gesundheit“.

Wein besteht zu 80–85% aus Wasser. Neben diesem Hauptbestandteil ist der Alkohol ein wesentlicher Inhaltsstoff. „Alkohol ist gefährlich“ - diese Aussage hat vor allem hinsichtlich der vielen Suchtkranken nach wie vor seine Berechtigung. Doch nach neuesten Erkenntnissen von Ernährungswissenschaftlern und Medizinern ist der im Wein enthaltene Alkohol nicht grundsätzlich ungesund. Im Gegenteil: Der Alkohol des Weines kann der Gesundheit durchaus förderlich sein. Dabei spielt allerdings die Mischung mit den anderen Inhaltsstoffen des Weines eine große Rolle.

Insgesamt hat Wein über eintausend verschiedene Inhaltsstoffe. neben Wasser und Äthylalkohol sind dies vor allem höhere Alkohole (z.B. Glycerin), Säuren, Zucker, Mineralstoffe, Spurenelemente, Aromastoffe und Vitamine. Vor allem die Spurenelemente Eisen, Magnesium und Kalium sowie die Vitamine des Weines tragen zu einer gesunden Ernährung bei. Doch die gesündesten Stoffe im Wein sind ohne Zweifel die „Polyphenole“. Dabei handelt es sich um vielfältige chemische Verbindungen, die vor allem in den Traubenstielen, -schalen und -kernen vorkommen.

Ihre Zusammensetzung ist je nach Rebsorte und Anbaugebiet sehr unterschiedlich. Die Polyphenole bilden das Immunsystem der Weinbeeren. Sie sorgen bei der Verletzung der Beerenhaut für eine schnelle Wundheilung und können Parasiten und Pilze abwehren.

Die Hauptbedeutung der Polyphenole liegt in ihrer Wirkung als Antioxidantien: Sie sind in der Lage, Reaktionen mit Sauerstoff (Oxidation) in den Körperzellen zu verhindern. Sauerstoff ist zwar lebensnotwendig, kann aber chemisch auch sehr aggressiv sein.

In den Körperzellen entstehen durch Oxidationsprozesse die gefürchteten „Freien Radikale", denen von Medizinern eine große Rolle bei der Entstehung von Krebs und Herzerkrankungen zugeschrieben wird. Mit ihrer zerstörerischen Kraft können sie sogar das Erbgut einer Zelle schädigen. Bis heute sind die Fähigkeiten, Freie Radikale zu neutralisieren, vor allem für vier Polyphenole wissenschaftlich nachgewiesen. Das wirkungsvollste Polyphenol ist ein Stoff mit dem Namen Resveratrol. Neben seiner antioxidativen Wirkung ist er auch in der Lage, den Cholesterinspiegel günstig zu beeinflussen. Am höchsten ist seine Konzentration in Cabernet-Sauvignon- und Spätburgunder-Trauben aus den kühleren Anbaugebieten.

Eine bahnbrechende Untersuchung zum Zusammenhang von Weinkonsum und Herzerkrankungen war die „Koppenhagen-Studie" von 1995. Danach verringert sich bei mäßigem Weinkonsum die Gefahr eines Herzinfarktes gegenüber entschiedenen Abstinenzlern um 60%, das allgemeine Sterblichkeitsrisiko immerhin noch um 50%. Und auch die Gefahren von Arteriosklerose und Angina pectoris bis hin zum Schlaganfall werden durch mäßigen Weinkonsum vermindert. Nach allgemeiner Überzeugung vieler Fachleute liegt die ideale Menge für Frauen bei 0,25 Liter, für Männer bei 0,4 Litern Wein täglich.

Bei höherer Dosierung des Alkohols verkehrt sich seine schützende Wirkung jedoch ins Gegenteil. Ab einem Liter Wein pro Tag wird die förderliche Wirkung des Alkohols auf Herz und Kreislauf aufgehoben. Nun treten wiederum andere Gefahren in den Vordergrund. Abgesehen von den Gefahren einer möglichen Alkoholabhängigkeit wird zunehmend die Leber belastet und bei dauerhaftem Alkoholmissbrauch auch geschädigt.

Bei der Betrachtung der Gesamtzufuhr von Flüssigkeit aus der täglichen Ernährung sind auch die Wassermengen aus den Lebensmitteln mit zu berücksichtigen. Das bedeutet, dass neben den notwendigen 1,5 Liter Flüssigkeitsangebot noch zusätzlich 750 ml Flüssigkeit aus den Lebensmitteln für einen ausgeglichenen Flüssigkeitshaushalt erforderlich sind, d. h. die Gesamtmenge an Flüssigkeitszufuhr pro Tag beträgt ca. 2,25 Liter (Tab. 3).

Bei konsequenter Einhaltung dieser Trinkregeln ist ein ausgeglichener Flüssigkeitshaushalt zu erreichen. Damit würden viele Krankenhauseinweisungen besonders bei sommerlichen Temperaturen vermeidbar sein und viele aufwendige Behandlung (z.B. Infusionen) reduziert werden.

Tabelle 3. *Wassergehalt von Lebensmitteln*

Lebensmittel	Wassergehalt
Brot:	
Graubrot, 1 Scheibe (40 g)	17 ml
½ Vollkornbrötchen (30 g)	11 ml
Milch und Milchprodukte:	
Trinkmilch, 1,5 % Fett, 1 Glas (200 g)	178 ml
Joghurt, fettarm mit Früchten 1,5 % Fett, 1 Becher (150 g)	119 ml
Gemüse:	
Gemüse, gedünstet, 1 Portion (200 g)	175 ml
Gurke, 1 Stück (100 g)	96 ml
Suppen und Eintöpfe:	
Klare Suppe, 1 Teller (250 g)	224 ml
Salate:	
Gemischter Salat mit Dressing, 1 Portion (150 g)	132 ml
Kartoffelsalat, 1 Portion (150 g)	121 ml
Tomatensalat mit Dressing, 1 Portion (130 g)	116 ml
Obst:	
Apfel, 1 Stück (125 g)	106 ml
Apfelsine, 1 Stück (150 g)	129 ml
Banane, 1 Stück (140 g)	103 ml
Erdbeeren, Himbeeren, Stachelbeeren, 1 Portion (100 g)	87 ml
Nachspeisen:	
Pudding, 1 Portion (150 g)	108 ml
Kompott, Apfelmus, 1 Portion (125 g)	99 ml
Fleisch- und Fischgerichte:	
Putenschnitzel, 1 Stück (125 g)	104 ml
Gulasch, Ragout, 1 Portion (125 g)	92 ml
Fischkonserve, 1 Dose (180 g)	115 ml
Beilagen und Aufläufe:	
Klöße, Knödel, 1 Portion (80 g)	61 ml
Kartoffelpüree, 1 Portion (150 g)	119 ml
Aufläufe (Kartoffelauflauf, Nudelauflauf...), 1 Port. (300 g)	227 ml
Spaghetti mit Tomatensoße, 1 Portion (250 g)	178 ml

ERNÄHRUNG IM ALTER

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Eine zweckmäßige Ernährung fördert nicht nur die Gesundheit, sondern beeinflusst das gesamte Wohlbefinden, die Lebensqualität und die Lebensfreude. Deshalb sollten die Qualitätsansprüche an die tägliche Kost bestimmten Grundsätzen genügen:

- ausgewogener Energie - und Nährstoffgehalt
- hoher Genusswert
- kulturvolle Speiseneinnahme.

Die täglich zugeführte Ernährung soll den Energiebedarf des Organismus decken, verbrauchte Körpersubstanzen ersetzen und ein Regenerationspotenzial aufbauen. Der ältere Mensch hat gleiche Bedürfnisse hinsichtlich des Genusswertes wie Jüngere.

Das leckere Aussehen, der appetitanregende Duft, der arteigene Geschmack und die Konsistenz der Speisen bestimmen den Genusswert. In dieser Hinsicht spielt auch der Abwechslungsreichtum der Kostgestaltung eine wichtige Rolle. Auserlesene, üppige Gerichte, ständig angeboten, bekommen wir über. Der Organismus verlangt naturgemäß eine stetige Vielfalt beim Speisenangebot. Die passende Verzehrtemperatur ist ebenfalls entscheidend für den Genusswert der Speisen.

In der heutigen Gesellschaft hat sich infolge von Stress, Zeitmangel und Hektik eine mangelnde Esskultur verbreitet. Diese negativen Einflüsse sind nicht zuletzt unter der immer knapper werdenden personellen Situation auch bei der Nahrungsreichung und -aufnahme in medizinischen- und Pflegeeinrichtungen zu beobachten. Gerade ältere Menschen benötigen mehr Zeit und Zuwendung, d. h. sorgfältig zubereitete Speisen sollten auch mit Bedacht gegessen werden.

Es kommt also nicht allein auf die Zusammenstellung der Speisen an, sondern gleichermaßen auf die Art, wie sie verzehrt werden. Dazu gehören die sorgfältig oder sogar liebevoll gedeckte Tafel, das gepflegte Aussehen der Essenteilnehmer oder auch die pünktliche Speiseneinnahme.

Es gibt nun ernährungsrelevante physiologische Veränderungen im Alter, die die Nahrungsaufnahme ungünstig beeinflussen. Dazu gehören beispielsweise:

- Abnahme des Seh-, Geschmacks- und Geruchsvermögens
- Zahnverlust oder Kaubeschwerden
- Mundtrockenheit und Schluckbeschwerden
- Reduzierung des Appetits
- Früher Eintritt von Sättigung während der Nahrungsaufnahme durch erhöhte Aktivität vom Sättigungshormon
- Verminderung des Durstempfindens
- Abnahme der Magensäureproduktion
- Abnahme der Muskelmasse
- Allgemeine Verminderung der Stoffwechselrate
- Abnahme der Fähigkeit, Zucker zu verstoffwechseln.

Des Weiteren ist der Energiebedarf im höheren Lebensalter geringer, so dass auch ein geringeres Kalorienangebot notwendig wird. Nicht selten sind auch andere Faktoren präsent, die eine gestörte Nahrungsaufnahme im Alter nach sich ziehen, wie beispielsweise:

- Psychische Probleme (z. B. einschneidende Lebensereignisse)
- Geistige Beeinträchtigungen (z.B. Vergesslichkeit)
- Eingeübte Ernährungsgewohnheiten
- Soziale Probleme (z.B. Einsamkeit)
- Krankheit (z.B. der Verdauungsorgane)
- Multiple Medikamenteneinnahme.

Der normale Nährstoffbedarf ist altersabhängig und beträgt bei älter als 75-jährigen Menschen ca. 1500–1700 kcal pro Tag (s. Tabelle 1).

Dabei ist der Grundsatz zu beachten, dass im Nahrungsangebot ausreichend Kohlenhydrate und Eiweiß sowie sparsame Fett beinhaltet sind. Als allgemeine Faustregel für die tägliche Ernährungszusammensetzung gilt 50% Kohlenhydrate, 20% Eiweiß und 30% Fett. Empfehlenswert sind dabei:

Kohlenhydrate:	Getreideprodukte, Kartoffeln, Obst, Gemüse, Zuckerprodukt
Eiweiß (ca. 50–70g/Tag):	mageres Fleisch, Fisch, Milch und Milchprodukte, Eier, Wurst
Fette:	Pflanzenöle, Butter, Pflanzenmargarine (Achtung: scharf gebratenes Fleisch, versteckte Fette)

Soll man allgemeine Grundsätze für eine bekömmliche Alterskost definieren, so gelten folgende

Tabelle 1. *Nährstoffbedarf des gesunden alten Menschen*

bis 30 Jahre	ca.	2200 kcal/Tag
33–55 Jahre	ca.	2000 kcal/Tag
55–75 Jahre	ca.	1800 kcal/Tag
> 75 Jahre	ca.	1600 kcal/Tag

Regeln: Altersentsprechende Ernährung sollte:
- verträglich sein
- gut schmecken
- eingeschränkte Funktionen berücksichtigen
- Verdauungsvorgänge fördern
- Organfunktionen unterstützen
- auf den geringeren Energiebedarf abgestimmt sein
- alle für den Körper notwendigen Nährstoffe in ausreichender Menge enthalten
- die Widerstandskräfte stärken
- die körperliche und geistige Leistungskraft stärken
- von höchstmöglicher Qualität sein „Qualität statt Quantität"

Dabei ist besonders empfehlenswert:
- Einschränkung tierischer Fette, mehr pflanzliche Fette und Öle
- Vollkornprodukte bevorzugen (Reis, Teigwaren, Brot)
- täglich Obst und Gemüse
- täglich Milchprodukte
- pro Woche 2–3 × Fleisch, 2 × Fisch und sonst vegetarisch
- 1,5–2 Liter Flüssigkeit am Tag
- Normalgewicht anstreben (altersabhängiger BMI)

–zusätzliche Nahrungsergänzungsmittel (z.B. Vitamin- und Mineralstoffe, Hefeprodukte, Eiweißkonzentrate, Weizenkleie, Leinsamen) (Tab. 2).

Zusätzlich sollten kleine Zwischenmahlzeiten zwischen Frühstück und Mittag sowie am Nachmittag eingenommen werden (z.B. Joghurt, Obst, Gebäck, Kuchen). Aus der Erfahrung heraus hat sich gezeigt, dass 5 Mahlzeiten besser für den älteren Menschen verträglich sind als nur 3 Hauptmahlzeiten.

Tabelle 2. *Lebensmittelauswahl bei der Ernährung im Alter*

Lebensmittelauswahl	+ empfehlenswert	- nicht empfehlenswert
Brot, Backwaren	weiche Brotsorten und Brötchen, Vollkornprodukte aus feingemahlenem Korn, Brot ohne Rinde, Kuchen, Kekse	fettreiche Backwaren, dicke Zuckerglasuren
Kartoffeln	Kartoffelbrei, Salz- und Pellkartoffeln, Kartoffelklöße, Kartoffelsuppe	fettreiche Zubereitungen z. B. Pommes frites
Reis, Teigwaren	Reisgerichte, Vollkornreis, Teigwaren aller Art besonders auch Tortellini, Lasagne, Nudelgerichte mit verschiedenen Soßen als Hauptgericht	Scharf gewürzte Reisgerichte, fettreiche Zubereitungen
Gemüse, Salate	weiche Gemüse und daraus hergestellte Suppen, Eintöpfe und Salate	keine blähenden Gemüse wie Kohl, Rettich, grobe Rohkostsalate, große Mengen Zwiebeln Lauch, Paprika
Obst, Säfte, Nüsse	Kompotte, weiches Obst wie Bananen, Melonen etc.	große Mengen Trockenobst, Fruchtsaftgetränke, Nüsse
Fleisch	alle Zubereitungen aus Brät und Hackfleisch aus verschiedenen Fleischsorten, zarte saftige Fleischteile	fettreiche Fleischarten und Zubereitungen, mit Speck gebratene und stark gewürzte Speisen
Wurst	streichfähige Wurstsorten, Wurst ohne grobe Fleischanteile, Schinken und Braten dünn geschnitten	fettreiche Wurstsorten, scharf gewürzte Wurstarten
Fisch	alle, fettere Fische in kleinen Mengen (günstige Fettsäuremuster), Fischklößchen	fettreiche Fischzubereitungen, fette Fischsalate
Eier, vegetarische Gerichte	Eierspeisen, Mehlspeisen, Soufflé, Gemüseterrinen,	fettreiche Zubereitungsarten
Milch und Milchprodukte	alle, Kräuterquark auch als Hauptmahlzeit	in großen Mengen fettreiche Käsesorten und Sahneprodukte, Käse mit Nüssen,
Getränke	Kaffee, Malzkaffee, Tee aller Art, verdünnte Obst- und Gemüsesäfte, Wasser, Gemüsebrühe	zuckerhaltige Getränke, Alkohol
Brotaufstriche	Butter und Margarine in kleinen Mengen, Marmelade, Gelee, Honig, vegetarische Pasteten	./.
Sonstiges	Haferflocken mit Milch Breikost mit Kompott auch als Hauptmahlzeit	grobes Körner- und Früchtemüsli

Tabelle 3. *Ernährung im Alter – Tagesbeispiel*

Frühstück			kcal	kj	EW/g	F/g	KH	Bst (g)
7,5	g	Kondensmilch	9,13	38,34	0,23	0,75	0,30	
200	ml	Kaffee, Tee		0,00				
10	g	Zucker	40,92	171,86	0,00	0,00	9,98	
60	g	Vollkornbrot	130,70	548,93	4,80	0,96	24,90	5
60	g	Weizenbrötchen	167,30	702,68	5,22	1,14	33,00	1,8
40	g	Wurst/ Käse	71,86	301,83	6,60	4,80	0,04	
25	g	Marmelade	70,21	294,89	0,13	0,00	17,00	0,1
15	g	Butter (Joghurtbutter)	98,57	414,00	0,23	10,50	0,00	
Zwischenmahlzeit								
150	g	Obst	70,11	294,46	0,00	0,00	17,10	
Mittagessen								
120	g	Rindfleisch, mager	134,04	562,97	26,16	2,88	0,00	
100	g	Braune Rahmsoße	88,60	372,12	1,00	6,00	7,00	
160	g	Kartoffeln	115,63	485,65	3,20	0,16	24,64	2,7
150	g	Gemüse	40,31	169,28	4,95	0,30	4,20	3
150	g	Dessert,fettarm	72,14	302,97	5,40	2,40	6,75	
Zwischenmahlzeit								
100	g	Obstkuchen	179,74	754,91	3,90	3,50	32,00	3
Abendessen								
200	ml	Tee		0,00				
10	g	Zucker	40,92	171,86	0,00	0,00	9,98	
60	g	Vollkornbrot	130,70	548,93	4,80	0,96	24,90	5
60	g	Mischbrot	140,39	589,63	4,68	0,60	28,20	2,8
90	g	Wurst/Käse	161,69	679,11	14,85	10,80	0,09	
15	g	Butter (Joghurtbutter)	98,57	414,00	0,23	10,50	0,00	
150	g	Salatgemüse	40,31	169,28	4,95	0,30	4,20	3
Zwischenmahlzeit								
150	g	Milchprodukt,fettarm	72,14	302,97	5,40	2,40	6,75	
Gesamtsumme			**1.974**	**8.291**	**97**	**59**	**251**	**26**

Eiweiß	93,8g	20%
Fett	55,5g	28%
Kohlenhydrate	236,1 g	52%

Wird von den älteren Menschen eine sogenannte leichte Kost bevorzugt, so haben sich für die Speisezubereitungen einige Regeln bewährt, die eine gute Verträglichkeit garantieren, z.B.

- Weiche Speisen wie Omelette, Soufflé, Terrine bevorzugt anbieten
- Pürierte Speisen vermehrt in die Kost aufnehmen, ohne dass das Essen unappetitlich wirkt - Abwechslung durch Formen und Farben einbringen
- Passiertes Fleisch von verschiedenen Tierarten anbieten
- Gemüse weich kochen
- Fisch grätenfrei anbieten oder als Fischklößchen
- Fleisch als zart-saftige Mahlzeiten zubereite, Fleischteile mit Knochen meiden
- Soßen und Cremesuppen dürfen nicht zu dünnflüssig sein und keine groben Stückchen enthalten
- Bei Teigwaren darauf achten, dass sie leicht mit dem Löffel oder mit einer Gabel gegessen werden können, d. h., keine langen Spaghetti sondern kurze Gabelspaghetti und ähnliche Sorten auswählen
- Keine harten Salatsorten anbieten, Blattsalate klein gerupft servieren
- Keine sauren Speisen anbieten
- Keine spitzkantigen Speisen servieren, z.B., keine

ganzen Körper auf Brötchen und Salaten, kein grobes Knäckebrot
- Keine Verpackungen wählen, die schwer zu öffnen sind
- Fingerfood als Buffetangebot zu allen Mahlzeiten bereitstellen

Ganz wichtig ist auch eine regelmäßige Trinkmenge von 1–2 Liter/Tag. Bei Erkrankungen können Abweichungen notwendig werden (z.B. Herzkrankheiten, Erkrankung der Nieren). Ansonsten sind keine bestimmten Getränkearten speziell für den älteren Menschen vorzugeben. Als Richtwerte kann man jedoch empfehlen:

Morgens	1–2 Tassen Kaffee/Tee/Kakao
Vormittags	1 Glas Saft / Buttermilch
Mittags	1 Tasse Brühe / Suppe + 1 Glas Mineralwasser
Nachmittags	1–2 Tassen Milchkaffee
Abends	1–2 Tassen Frucht-/Kräutertee, 1 Glas Wein, Bier oder Saft

Oft herrscht die Meinung, dass die Speisen für ältere Menschen salzarm, gewürzarm oder sogar fade sein sollen. Das ist nicht richtig, denn diese Zutaten verbessern den Geschmack, fordern den Appetit und machen die Speisen bekömmlicher.

Für die tägliche Ernährungspraxis kann man letztlich noch folgendes zusammenfassen:
- je kleiner der Bissen, desto leichter sind die Speisen verdaulich, sie belasten kürzere Zeit den Magen-Darm-Trakt
- ein intaktes Gebiss begünstigt den Verdauungsprozess und letzten Endes die Gesundheit der Verdauungsorgane
- Aromastoffe tragen zur besseren Bekömmlichkeit der Speisen bei
- häufig kleinere Mahlzeiten verträgt der Organismus besser als wenige große, die Verdauungsorgane werden durch kleinere Mahlzeiten gleichmäßiger belastet und nicht überstrapaziert
- vor dem Essen sollten keine größeren Flüssigkeitsmengen aufgenommen werden, um die Verdauungssäfte nicht zu verdünnen
- Ballaststoffe sind unentbehrlich für die Darmperistaltik
- schwerverdauliche Speisen am Abend belasten den Organismus übermäßig
- mit übervollem, aber auch mit leerem Magen sind keine geistigen Höchstleistungen zu erwarten

in brief...

Schlüsselproteine im Labor isoliert

Es besteht eine Wechselwirkung mit dem Protein SERF, welches zum Zusammenklumpen bestimmter Proteine führt. Damit ist die Forschung der Entwicklung von Therapien bei Parkinson und Alzheimer einen Schritt näher gekommen.

Originalpublikation:
SERF protein is a direct modifier of amyloid fiber assembly.
Falsone et al.; Cell Reports;
doi: 10.1016/j.celrep.2012.06.012; 2012

Mikroglia: Die STASI des Gehirns

Es ist die größte Einsatztruppe im Gehirn. Sie kontrollieren ihre Umgebung, spähen jeden Gang aus und wenn sie etwas finden, schlagen sie zu. Hirnforscher nennen sie Mikroglia. Und langsam beginnt man zu verstehen, wie sie arbeiten.

Dipl. Humbiol. Nicole Simon
http://news.doccheck.com/de/article/210167-mikroglia-die-stasi-des-gehirns/

Autoantikörper: Verantwortlich für Alzheimer

Forscher haben nachgewiesen, dass bestimmte Abwehrstoffe des Immunssystems Blutgefäße im Gehirn schädigen können. Die Erkenntnisse sind vor allem für die Entstehung und das Fortschreiten von Alzheimer und Demenz von Bedeutung.

Originalpublikation:
Antibodies to the α1-Adrenergic Receptor Cause Vascular Impairments in Rat Brain as Demonstrated by Magnetic Resonance Angiography.
P. Karczewski et al.; PloS ONE,
doi:10.1371/journal.pone.0041602, 2012

DIE UMFASSENDE REHABILITATION VON ZIRKUSARTISTEN MIT FIBROMYALGIE LUMBOSAKRALEN WIRBELSÄULE

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Abstrakt

Zeigte die Anwesenheit von Fibromyalgie im Zirkus, insbesondere aus Akrobaten und Turner, wegen Verletzung und Stress-Situationen in ihrer Arbeit. In dem Experiment wurde festgestellt, dass Patienten mit FMA pathologischen Veränderungen und Abweichungen in der psycho-emotionalen Bereich sind. Ergebnisse der Forschung und Lehre auf unserem Experiment gezeigt, dass die entwickelten umfassenden Rehabilitationsprogramm signifikant ($p < 0,05$) Verbesserung in allen Indikatoren zeigt: Volumen Bewegungen der Wirbelsäule, für alle Indikatoren (Gesundheit, Aktivität und Stimmung) statistischen Unterschiede zwischen EG und KG war positiv Lautsprecher.

Tags

Fibromyalgie, Zirkusartisten, komplexe Rehabilitation, Bewegung, lumbosakralen Wirbelsäule.

EINFÜHRUNG

Fibromyalgie (FMA) bezieht sich auf die häufigste Form der Pathologie – 2–6%, was eine chronische diffuse Schmerzen im Bewegungsapparat, das Vorhandensein von Schwachstellen, Depression, Schlafstörungen, Morgensteifigkeit, Müdigkeit zeigt [5].

Die Erfahrung unserer professionellen Arbeit im Zirkus, und eine Reihe von literarischen Quellen weisen auf das Vorhandensein dieser Krankheit in der Zirkuskünstler unter anderem, Akrobaten und Turner, wegen Verletzung und Stress-Situationen in ihrer Arbeit. Das Fehlen eines integrierten Ansatzes in der Rehabilitation von Personen, die unter dieser Krankheit mit der Verwendung als pharmakologische, psychotherapeutische und physische Rehabilitation der Gewichtung führt zu Erschwerung der Krankheit bei.

Nach einigen Autoren [3, 5], bis dato ist keine der bekannten Methoden der Rehabilitation erlauben, anhaltende therapeutische Wirkung zu erzielen. In diesem Zusammenhang ist es sinnvoll, ein Programm der kombinierte Einsatz verschiedener Mittel der physischen und psychischen Rehabilitation von Zirkusartisten auf ihre Fähigkeit, für jeden Zeitraum von FMA arbeiten erholen entwickeln

METHODEN UND FORSCHUNGSORGANISATION

Ziel der Arbeit: Entwicklung eines wirksamen komplexen Programms zur Rehabilitierung von Zirkuskünstlern mit Fibromyalgie des lumbosacralen Wirbelsäulenabschnitts Ausgehend vom Ziel waren folgende Aufgaben gestellt:

1. Erstellen einer Studie von morfo-funktionalen Besonderheiten und psychose-emotionaler Zustände der Patientinnen mit Fibromyalgie des lumbosacralen Wirbelabschnitts.
2. Entwicklung eines Programms zur komplexen Wiederherstellung der Arbeitsfähigkeit der Künstler der sportlichen Genres.
3. Verdeutlichung und Hervorhebung der Effektivität des entwickelten Programms zur Rehabilitierung im Laufe des pädagogischen Experimentes.

Methoden der Forschung:

1. Befragung: 1) Allgemeines 2) Fragebogen FiRST (Fibromyalgia Rapid Screening Tool).
2. Psychologische Prüfung: Fragebogen EMÜS.
3. Medizinisch-biologische Methoden (neuroorthopädische Untersuchung): 1)Einschätzung des nervösen-Muskelsyndroms. 2) Anthropometrische Methode der Forschung des Umfanges der Bewegungen im Bereich der lumbosacralen Wirbelabschnitte. 3)Palpatione Untersuchung der fibromialgischen Punkte.
4. Die Instrumentalmethoden der Forschung: 1) Röntgenstudie der lumbosacralen Abschnitte. 2) Magnetresonanztomographie (MRT). 3)Elektromyografie (EMG).

5. Pädagogisches Experiment
6. Methoden der mathematischen Statistik

Organisation der Forschung: An dem Projekt haben 20 Zirkuskünstler der sportlichen Genres teilgenommen, Turner und Akrobaten (Männer und Frauen) im Alter zwischen 19–36 Jahre.Von 20 Patienten waren 10 Menschen für die Kontrollgruppe (KG) und 10 – für die experimentelle Gruppe (EG) bestimmt. Die Zirkuskünstler unterscheiden sich von den Sportlern durch die Pathophysiologie merklich. Deshalb wird die Rehabilitierung bei ihnen mit speziellen Übungen und Methoden der Rehabilitierung, wie Massage, Physiotherapie, psychologische Korrektur und mit Elementen der manuellen Therapie durchgeführt .

Ein Hauptziel der Rehabilitierung bei Fibromyalgie ist die schnellste Wiederherstellung des optimalen motorischen Stereotypes-charakteristisch für Zirkuskünstler der sportlichen Genres.

Stufenprogramm der komplexen Rehabilitierung der Künstler des Zirkus der experimentellen und Kontrollgruppe:

Die Rehabilitierung der Patientinnen FMA wird auf 3 Etappen je nach Phasen der Entwicklung des pathologischen Prozesses unterteilt: ***akute Phase*** FMA – die Etappe der Muskelentspannung, ***subakute Phase*** FMA – die Etappe der Muskelentspannung, ***wiederaufbauphase*** FMA – die Etappe des Muskelaufbaus.

1. Etappe – akute Phase FMA (die Muskelrelaxation – Muskelentspannung).

Diese Etappe der komplexen Rehabilitierung wird vorzugsweise im Krankenhaus unter der Beobachtung des Arztes, Physiotherapeuten und mit Hilfe des Methodikers Heilgymnastik, des Masseurs ca. 5–7 Tage durchgeführt. So erklärt sich die vorliegende Etappe aus dem Vorhandensein der Schmerzpunkte (TP), der Ausgeprägtheit des Schmerzsyndroms sowie der motorischen Verstöße.

Hauptaufgaben während der Etappe der Muskelentspannung sind: Senkung des Schmerzsyndroms, Schwächung der Verkrampfung der Muskeln in der Schmerzzone, Normalisierung des psychoemotionalen Zustandes.

Für die Lösung dieser Aufgaben in EG wurden folgende Mittel verwendet: Entspannung der Wirbelsäule (unter anderem im Bereich der lumbosacralen Abschnitte) mit der strenger Bettruhe; Inaktivierung von Tender- Points (TP) mit Hilfe von Elementen der Manualtherapie: Methode der ischämischen Kompressionen, postisometrische Muskelentspannung; Atmungsübungen; Entspannungsübungen; Heilmassage; psychologische Korrektur: neuromuskuläre Entspannung , positive Visualisierung (wie autogenes Training).

Für die Kontrollgruppe wurden folgende Mittel verwendet : Entlastung der Wirbelsäule mit strenger Bettruhe; Atmungsübungen; klassische Massage.

Motorisches Regime: Bettruhe (5–7 Tage).

2. Etappe – subakute Periode FMA (Myokorrektur).

Das pädagogische Experiment wurde bei Patienten mit der vorliegenden Pathologie je nach der Senkung der Ausgeprägtheit des Schmerzsyndroms und des Übergangs von der Bettruhe zum schonenden motorischen Regime mit seiner allmählichen Erweiterung begonnen. Gewöhnlich fing diese Etappe am 5. bis 7. Tag des Krankenhausaufenthaltes an und dauerte 25 Tage.

Ein Ziel dieser Etappe war die Bildung des optimalen statokinematischen Stereotypes.

Hauptaufgaben dieser Etappe sind: weitere Senkung des Schmerzsyndroms; Entspannung spastischer Muskulatur im betroffenen Gebiet; Inaktivierung von Tender- Points (TP); Korrektur der Wirbelsäulendeformationen ; Stimulierung der Blutlymphe in der betroffenen Zone des SMS der Wirbelsäule; Beseitigung pathobiomechanischer Veränderungen der Wirbelsäule; psychologische Korrektur.

In unserer Forschung für die Kontrollgruppe der Patienten wurde die komplexe Rehabilitierung mit dem Entschluss, folgende Mittel einzusetzen, durchgeführt: Heilgymnastik; spezielle Übungen, die auf die Muskelentspannung des Rückens und der unteren Gliedmaßen gerichtet sind; klassische Massage; Physiotherapie (Elektrophorese, Monoforez); Atmungsübungen.

Außer den aufgezählten Rehabilitationsmitteln für die Kontrollgruppe unserer Forschung haben wir für die Patientinnen der experimentellen Gruppe folgende Mittel aufgenommen und verwendet wie: Methodik ischämischer Kompressionen, gerichtet auf die Inaktivierung TP; spezielle Übungen, die auf die Extension der Wirbelsäule gerichtet sind; KB in den isometrischen und isotonischen Regimes; Methode postisometrischer Relaxation; Korrektur der Lage, Platzieren des Patienten unter Verwendung einer Walze; Korrektur der Lage mit Hilfe des Trainergerätes für den Rücken BACK2LIFE; Physiotherapie (thermische Prozeduren: Pflaster, Gürtel, Cremes, heiße Bäder); autogenes Training: atmungs- meditative Übungen, positive Visualisierung.

Motorische Regime: Halbbettruhe, ungebunden (25 Tage).

3. Etappe – Wiederaufbauperiode FMA (Myotonie).

Diese Phase der Rehabilitation wurde ambulant einige Wochen vor Beginn der Etappen von Zirkusvorstellungen des Künstlers durchgeführt. Dauer:

3 Wochen in der Ambulanz ,täglich 60 Minuten

2–3 Wochen während der Aktionen im Zirkus, täglich 15 Minuten vor Beginn der Show während einer Szene (in der Zirkusmanege) und 30–40 Minuten nach der Zirkusnummer.

Aufgaben der Etappe: Festigung des Muskelkorsetts (vorzugsweise der Lendenmuskulatur ,der unteren Gliedmaßen und im abdominalen Bereich); Schwächung spastischer Muskeln im betroffenem Gebiet nach den Belastungen in der zweiten Hälfte der Wiederaufbauperiode; Wiederherstellung des optimalen motorischen Stereotyps, charakteristisch für den Beruf des Zirkuskünstlers des sportlichen Genres.

Mittel der komplexen Rehabilitierung der gegebenen Etappe für die EG waren: hygienische Morgengymnastik; KB im isometrischen Regime, gerichtet auf die Festigung der Muskeln der Lende und der unteren Gliedmaßen; KB im isotonischen Regime zwecks der Wiederherstellung der Beweglichkeit und der Hyperelastizität; KB, gerichtet auf das Dehnen der langen Muskeln des Rückens; KB, gerichtet auf Selbstentspannung der langen Muskeln des Rückens, des quadratischen Muskels der Lende, der tiefenparavertebralen Muskeln; spezielle Übungen, die auf die Korrektur der pathobiomechanischen Veränderungen der Wirbelsäule gerichtet sind; klassische Massage.

Für die Kontrollgruppe wurden folgende Mittel der Rehabilitierung verwendet: KB im isometrischen Regime, gerichtet auf die Festigung der Muskeln der Lende und der unteren Gliedmaßen; Atmungsübungen für die Entspannung aller Muskelgruppen, die während der Arbeit,während einer Szene oder den Proben beansprucht wurden; klassische Massage.

Motorisches Regime: Wiederaufbautraining (bis zur vollen Wiederherstellung der Arbeitsfähigkeit).

ERGEBNISSE UND IHRE ERÖRTERUNG

1.Während des Experimentes bei den Personen mit FMA wurde festgestellt, dass pathologische Veränderungen auftraten und mindestens 11 von 18 möglichen, in Frage kommenden Punkten (laut den Kriterien des amerikanischen Kollegiums der Rheumatologen) [1] zutrafen, wie z.B.: myofaszialer Hypertonus; Schäden an Befestigungsstrukturen der Lendenwirbelsäule; Verstoß des optimalen motorischen Stereotypes. Abweichungen in der psychoemotionalen Sphäre: herabgesetzte Stimmung; Senkung der motorischen Aktivität, des allgemeinen Tonus und des Befindens; Ermüdbarkeit.

2.Das komplexe, von uns entwickelte Programm der Rehabilitierung schließt die wirksamsten Methoden und die Mittel für Patienten mit Fibromyalgie der lumbosakralen Wirbelsäule ein.

3.Ergebnisse der Prüfung nach dem Fragebogen FiRST (Fibromyalgia Rapid Screening Tool). Zahl der Schmerzkennziffern bis zur und nach der Rehabilitierung-ausgewertet nach dem Fragebogen FIRST (Tabelle 1).

Das Ergebnis der Prüfung nach dem Fragebogen FiRST zeigt, dass 88% der Testpersonen das Ergebnis M= 5.5 bis zur Rehabilitierung aufweisen. Bemerkenswerte Verbesserungen nach der Rehabilitierung M = 0 (die Tabelle 1). M– die Zahl der positiven Antworten „ja", auf die Fragen der Prüfung, gebend von den Zirkuskünstlern, % – der Prozentausdruck des Fortschritts.

4. Die Ergebnisse der Forschung der Charakteristik des Muskelsyndroms (nach Chabirow F.A.).

Nach den Ergebnissen der neuro-orthopädischen Untersuchung (Tabelle 2) ist festzustellen, dass meistens bemerkenswerte Verbesserungen ($p < 0,05$) nach der Rehabilitierung in den experimentellen- und Kontrollgruppen sichtbar sind.

In den EG ist die positive Dynamik viel höher als in den KG, was eine Effektivität des komplexen, von uns entwickelten Programms der Rehabilitierung der Zirkuskünstler mit Fibromyalgie der lumbosakralen Wirbelsäule aufweist.

5. Untersuchungsergebnisse der Schmerzdynamik

Die Daten der Tabelle 3 zeugen davon, dass sich die Zahl schmerzhafter Punkte (Trigger Point) infolge der Nutzung von Methoden der physischen Rehabilitierung in beiden Gruppen verringert hat. Gleichzeitig

Tabelle 1. *Die Ergebnisse der Prüfung nach dem Fragebogen FiRST der Zirkuskünstler der EG und KG (in den Graden)*

Kennziffer	Gruppe	n	Anzahl der Schmerz-Indikatoren (positive Antworten „ja")					
			Vor der Rehabilitation	Nach der Rehabilitation	Fortschritt (Besser – die Verbesserung der Kennziffer)			
			M	%	M	%	M	%
Das Vorhandensein des Schmerzes	ЭГ	6	5.5	91.6	0	100	6	100
	КГ	6	5.5	91.6	4	66.6	2	25

Tabelle 2. *Die Ergebnisse der neuroorthopädischen Überprüfungen der Muskeln der Lende an Zirkuskünstlern der EG und KG bis vor und nach der Rehabilitierung (n=20), in den Graden*

Zeichen muskulärer-Syndrom	Gruppe	Testergebnisse		Differenz	Unterschiedezwischen EG und KG
Der Schweregrad der spontanen Schmerzen	EG	2	0	2	0**
	KG	2	0	2	
Muskeltonus	EG	3	1	2	0.5*
	KG	3	1.5	1.5	
Muskelschwund	EG	2	0.5	1.5	0**
	KG	2	1	1	
Muskelschmerzen	EG	2	0.5	1.5	0.5*
	KG	2	1	1	
Anzahl Knoten miofibroza	EG	2	0	2	2*
	KG	2	2	0	
Dauer der Schmerzen	EG	3	0	3	0**
	KG	3	0	3	
ausstrahlende Schmerzen	EG	3	0.5	2.5	0.5*
	KG	3	1	2	

Tabelle 3. *Das Vorhandensein der betroffenen Punkte bei den Patienten EG und KG - bis zur und nach der Rehabilitierung (n =20)*

Kennziffer	Grup-pe	n	Die Zahl der kränklichen Punkte					
			Vor der Rehabilitation		Nach der Rehabilitation		Fortschritt	
			n	%	n	%	n	%
Schmerzpunkte	EG	10	11	100	2	18.2	9	81.8
	KG	10	11	100	7	63.6	4	36.3

wurde in der experimentellen Gruppe ein höherer Prozentsatz (81.8 %) der Fälle ($p < 0,05$) mit positiver Dynamik bemerkt. So sind wir von der Effektivität der Nutzung des von uns entwickelten Programms der physischen Rehabilitierung zur Inaktivierung der Triggerpunkte überzeugt.

6. Ergebnisse des Bewegungsumfanges (in cm) im Bereich der Lendenwirbelsäule EG (n = 10) und KG (n = 10) (Tabbelle 4).

Die Forschungsergebnisse nach der Rehabilitierung beweisen, dass bei den Zirkuskünstlern der experimentellen Gruppe die Kennziffern des Bewegungsumfanges der Wirbelsäule zugenommen haben, die glaubwürdig ($p < 0,05$) höher als die in der Kontrollgruppe sind.

Für die Messung der Gelenkbeweglichkeit wurden lineare Messungen mit Hilfe von Winkelmessern verwendet. Wie in Tabelle 4 erkennbar ist, wurde bei den Zirkuskünstlern der EG und KG bis zur Rehabilitierung eine asymmetrische Beschränkung der Beweglichkeit im Lendenwirbelsäulenbereich beobachtet: (beim Heben mit der Hand des rechten Beines rückwärts : EG=38 ± 5,2 cm und KG=40,1 ± 2,8 cm; beim Heben mit der Hand des linken Beines rückwärts: EG=30,2 ± 4,3 cm und KG=28,4 ± 5,2 cm).

Das Heben mit der Hand eines Beines rückwärts in der Artistik heißt "Beinzug rückwärts".

Nach der Durchführung der komplexen Rehabilitierung des Zirkusartisten verschiedener sportlicher Genres haben sich die gegebenen Kennziffern der Beweglichkeit im Lendenwirbelsäulenbereich verbessert: das Heben mit der Hand des rechten Beines rückwärts in EG 12 ± 5,7 cm und in KG 20 ± 3,3 cm; das Heben mit der Hand des linken Beines rückwärts in EG 7,4 ± 3,5 cm und in KG 17,3 ± 3,7 cm. Diese Angaben beweisen die erfolgreiche Korrektur der Asymmetrie im Bereich der Lendenwirbelsäule in der experimentellen

Tabelle 4. *Ergebnisse des Bewegungsumfanges (in cm) im Bereich der Lendenwirbelsäule EG (n = 10) und KG (n = 10)*

Art des Tests	Gruppe	Messergebnisse			t	p	Unterschied zwischen EG und KG	
		Vor der Rehabilitation	Nach der Rehabilitation	Diffirenz				
		M±d	M±d	M±d			t	p
Beugung des Rumpfes nach rechts im stehen	EG	31,9±5,1	20,3±3,6	11,6±1,5	28	**	18,8	**
	KG	30,7±5,4	24± 4,7	6,7±0,7	9,3	**		
Beugung des Rumpfes nach links im stehen	EG	44,9±4,5	28,2±3,8	16,7±0,7	12	**	8,7	**
	KG	42,2±4,6	33,6±4,8	8,6±0,2	4,3	**		
Oberkörper vorbeugen nach vorne	EG	20,1±5,5	0±2,2	20,1±3,3	8,2	**	2,8	**
	KG	19,5±2,6	5,8±3,5	13,7±0,9	11	**		
Oberkörper nach hinten aus dem Stand beugen	EG	60,2±8,3	8,1±5,5	52,1±2,8	14	**	8.7	**
	KG	58±5,4	35,4±7,7	22,6±2,3	5,3	**		
Heben mit der Hand rechtes Bein nach hinten	EG	38±5,2	12±5,7	26±0,5	33,5	***	2 2.1	* **
	KG	40,1±2,8	20±3,3	19,9±0,5	11,4	***		
Heben mit der Hand linkes Bein nach hinten	EG	30,2±4,3	7,4±3,5	22,8±0,8	22.5	***	1.7	* **
	KG	28,4±5,2	17,3±3,7	11,1±1,5	44.2	***		

Legende: *** – sind die Unterschiede – p <0,05; t – das Kriterium Stjudenta glaubwürdig.*

Gruppe, die glaubwürdig (p <0,05) höher ist, als die in der Kontrollgruppe.

7. Ergebnisse der Röntgen- und MRT Forschungen (Tabelle 5).

Verbesserungen in der EG (9 Künstler des Zirkus – 90 %) beobachtet werden, als nach dem Programm, das in der KG verwendet wurde (4 Künstler des Zirkus – 40%).

Tabelle 5. *Die vergleichende Charakteristik der Deformation im Bereich der Lendenwirbelsäule bei den Zirkuskünstlern EG und KG (n=20)*

Art der Verformung	Gruppen	Vor der Rehabilitation	Nach der Rehabilitation	Fortschritt
Lendenkyphose	EG	2(20%)	0	2(20%)
	KG	2(20%)	1(10%)	1(10%)
lumbale Hyperlordose	EG	2(20%)	0	2(20%)
	KG	3(30%)	2(20%)	1(10%)
Die fixierte Glattheit der Lendenlordose	EG	6(60%)	1(10%)	5(50%)
	KG	5(50%)	3(30%)	2(20%)
im Ganzen	EG	10(100%)	1(10%)	9(90%)
	KG	10(100%)	6(60%)	4(40%)

Gemäß der Röntgen- und MRT Untersuchungen, in Tabelle 5 sichtbar, ist eine Wiederherstellung der normalen Form der Lendenwirbelsäule nach einem durchgeführten Kurs der komplexen Rehabilitierung sichtbar, wobei nach dem komplexen, von uns entwickelten Programm eher deutliche

8.Die Ergebnisse der EMG Untersuchung, dargestellt in der Tabelle 6, haben nach der Durchführung einer umfassenden Rehabilitierung von Zirkusartisten gezeigt, dass sich in beiden Gruppen die bioelektrische Aktivität der Muskeln im Bereich der lumbosokralen Wirbelsäule gesenkt hat. In der EG sind die Verbesse-

Tabelle 6. *Kennziffern der EMG der Forschung der Zirkuskünstler der EG und KG bis zur Rehabilitierung in mV*

Aufgabe	V	EG (n=10) RMS (mV)		KG (n=10) RMS (mV)					
Seite		links		rechts		links		rechts	
		vorher	naher	vorher	naher	vorher	naher	vorher	naher
1	1	0.078	0.030	0.179	0.032	0.072	0.059	0.075	0.062
	2	0.070	0.030	0.196	0.035	0.070	0.055	0.080	0.068
2	1	0.074	0.021	0.064	0.020	0.078	0.048	0.070	0.057
	2	0.032	0.018	0.030	0.020	0.050	0.040	0.045	0.041
3	1	0.032	0.016	0.082	0.018	0.035	0.030	0.077	0.068
	2	0.029	0.010	0.086	0.013	0.030	0.028	0.078	0.061
4	1	0.039	0.020	0.111	0.034	0.039	0.033	0.105	0.097
	2	0.038	0.021	0.123	0.064	0.039	0.032	0.115	0.098
5	1	0.055	0.018	0.082	0.022	0.053	0.048	0.078	0.053
	2	0.050	0.015	0.093	0.020	0.050	0.045	0.091	0.055
6	1	0.011	0.001	0.014	0.001	0.010	0.007	0.014	0.009
7	A	0.538	0.302	0.335	0.245	0.555	0.506	0.335	0.322
	E	0.008	0.002	0.010	0.002	0.010	0.006	0.012	8

1. Handstand im Spagat, 2. Beinzug rückwärts, 3. „Die Mexikanerin" mit den gebogenen Beinen, 4. „Die Mexikanerin" mit einem Bein, 5. „Das Tröpfchen", 6. Entspannung, 7. Entspannung – Anspannung – Entspannung
Wo, Seite – die Seite im Bereich der Lendenwirbelsäule
A – Anspannung, E – Entspannung, V – Versuch.
RMS – Root mean square (mini Volt) glaubwürdige Unterschiede – p <0,05.

rungen dieser Kennziffern in allen Aufgaben wesentlich höher , als die Kennziffern in der KG.. Folglich ist festzustellen, dass der erhöhte Tonus der untersuchten Muskeln gesunken ist. Die einseitige Dominanz und Kontraktion der einzelnen Muskelbereiche (in mV) im lumbosakralen Wirbelsäulenbereich zeigt vor der Rehabilitierung eine nahezu normale oder vollständige Symmetrie, so wie bei gesunden Muskeln und eine Eliminierung der Tenderpoints in den Muskeln. Das befestigte Band-Muskelkorsett der Wirbelsäule nach der Rehabilitierung hat symmetrische Belastungen auf der rechten und linken Seiten des Körpers zugelassen, was etwas über die Wiederherstellung des normalen motorischen Stereotypes bei Zirkusartisten aussagt. Die Trick-Übungen , die in den Aufgaben für die Analyse der EMG -Daten verwendet worden sind, wurden schmerzlos und mit einer größeren Amplitude ausgeübt.

9. Ergebnisse der psychologischen Prüfung nach dem Fragebogen « Ermüdungsmonotonie – Übersättigung – Stress» (EMÜS)

Die Ergebnisanalyse der psychologischen Prüfung wurde bei den Zirkuskünstlern der EG und KG nach dem Fragebogen von EMÜS bis zur Rehabilitierung durchgeführt.

Ausgeprägt sind dabei die Komponenten der Ermüdung, Monotonie und der Übersättigung .

Der höchste Koeffizient war die Komponente des Stresses (33 Grad), was von einem instabilen psychoemotionalen Zustand der Zirkuskünstler der sportlichen Genres und dem Vorhandensein des erhöhten Stresses zeugt.

In Abb. 1 sind die Verbesserungen aller psychologischen Komponenten sichtbar: Ermüdung, Monotonie, Übersättigung, Stress nach der Durchführung der komplexen Rehabilitierung.

In der experimentellen Gruppe war die Vergrößerung der gegebenen Kennziffern im Vergleich zu den Koeffizienten dieser Kennziffern in der Kontrollgruppe stabil.

Diese Ergebnisse zeugen davon, dass die von uns durchgeführte komplexe Rehabilitierung der Zirkuskünstler mit FMA im Bereich der lumbosakralen Wirbelsäule wesentlich wirksamer ist, als das Programm für die KG.

SCHLUSS

Die Ergebnisse unserer Forschungen und des durchgeführten pädagogischen Experimentes haben gezeigt, dass das entwickelte Programm der komplexen Rehabilitierung von Zirkuskünstlern mit FMA im Bereich der lumbosakralen Wirbelsäule glaubwürdig ($p < 0,05$) zu Verbesserungen aller Kennziffern führt: wie eben zur Verbesserung des Bewegungsumfanges der Wirbelsäule sowie des Schmerz- und Muskelsyn-

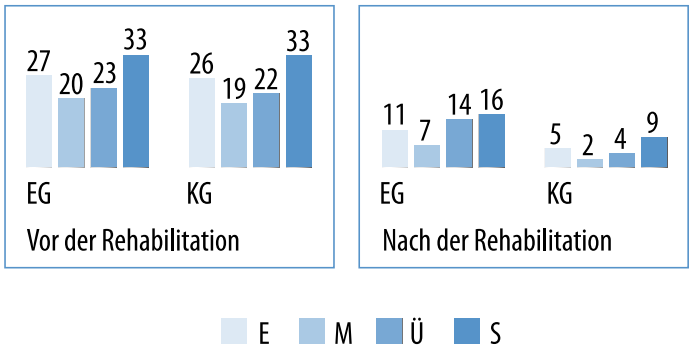

Abb. 1.
E – der Koeffizient der Ermüdung, M – Monotonie, Ü – die Übersättigung, S – des Stresses.

droms. Nach allen Kennziffern der psychologischen Prüfung sind die statistischen Unterschiede zwischen der EG und KG sichtbar und es ist eine positive Dynamik zu erkennen. Die Kennziffern der Forschungen in der EG sind viel höher, als die in der KG. Aussagekräftig über den Erfolg des entwickelten Programms sind auch die Kennziffern der Instrumentalmethoden (Röntgenapparat, MRT, EMG). Sie ermöglichen, den Zustand des nervösen Muskelapparates der Wirbelsäule als auch den psycho-emotionalen Zustand des Kranken zu verbessern und Schmerzsyndrome zu verringern. Bisher genannte Kriterien tragen ebenfalls zur schnellsten Wiederherstellung des optimalen motorischen Stereotypes und zur Rückführung in den Arbeitsalltag bei. Die Ergebnisse des pädagogischen Experimentes zeigen jedoch auch, dass das entwickelte Programm der komplexen Rehabilitierung für die Wiederherstellung der Zirkuskünstler mit dem Syndrom FMA im Bereich der Lendenwirbelsäule wirksamer ist, da sich die Wiederherstellung auf die neue Kombination der physischen Übungen, der Mittel der psychologischen Korrektur sowie auf die Elemente der Manualtherapie sowie Physiotherapie stützt. So kann man das von uns entwickelte Programm zur komplexen Rehabilitierung für die Wiederherstellung der Zirkusartisten der sportlichen Genres (der Akrobaten, der Turner und der Künstler des Genres "Contortion") mit Fibromyalgie im lumbosakralen Wirbelsäulenbereich weiterempfehlen.

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in brief...

Blitzreaktion: Gesprächige Neuronen

Wissenschaftler haben aufgedeckt, welche biophysikalischen Vorgänge eine blitzschnelle Reaktion ermöglichen. Die Zusammenarbeit von Ionenkanälen in der Zellmembran macht hierbei das einzelne Neuron zum „Schnellsprecher".

http://news.doccheck.com/de/article/210585-blitzreaktion-gespraechige-neuronen

Ganglienzellen: Kooperatives Netzhaut-Doppel

Forscher entdecken in der Netzhaut spezielle Nervenzellen, mit deren Hilfe das Auge zwischen kleinen, kontrastreichen und großen, kontrastarmen Objekten unterscheiden kann.

Dr. Thorsten Braun, DocCheck News: Ganglienzellen: Kooperatives Netzhaut-Doppel

MICROBIAL COLONIZATION OF REMOVABLE ORTHODONTIC APPLIANCES MADE OF DIFFERENT BASE MATERIALS IN CHILDREN AND ADOLESCENTS

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TOPICALITY

One of the acute problems in modern pediatric dentistry and orthodontics is the relationship between tissues and organs of the oral cavity and the construction materials used while manufacturing of laminar prostheses and orthodontic appliances [2].

According to many authors, the most common method of child dentures (tooth replacement) and orthodontic treatment is making of removable appliances and plate denture of acrylic plastic because of their low cost, availability, mechanical strength and technological effectiveness [4]. It was authentically proven that the appliances made of plastics based on hot and cold-cured acrylates, may cause inflammatory and allergic changes in tissues and organs of the mouth because of the impossibility of complete polymerization of the monomer, which is a highly toxic and allergenic. The role of allergens in the acrylates can be played by dyes, opacifiers, plasticizers, catalysts, which are washed out or by saliva or get into the mouth as a result of erasing plastic during functional loads [6]. Negative results that accompany the use of acrylic plastic, show that up-to-date basic materials are needed in the practice of children and adolescents orthodontic treatment [10].

Currently a considerable interest is focused on the microbial contamination of the base materials used for manufacturing of orthodontic appliances [1,5]. The received data concerned colonization and adhesion of microorganisms on the base surfaces of removable appliances in adults [8,9]. However, similar studies of microbial colonization of the basic materials in the pediatric population are rare and not systematic. Virtually there is no comparative data on the bacterial and fungal flora colonizing children orthodontic appliances made of different basic materials.

Comprehensive evaluation of base materials' microbial contamination will provide meaningful data for pediatric dentistry, and individualized evidence-based selection of the plastic base for orthodontic appliances will contribute to the active protection of prosthetic bed tissues [3]. This will improve the overall hygiene status of the oral cavity, provide the long-term stability of treatment results, and retain the structural integrity along with the prolonged life of orthodontic appliances.

THE AIM: Improving efficiency of orthodontic treatment in children and adolescents on the basis of comparative analysis of base materials microbial contamination.

MATERIALS AND METHODS OF RESEARCHING

Three groups of basic materials used for the manufacture of orthodontic appliances (according to the current international classification ISO 1567:1999 (Dentistry – Materials for denture), were under consideration [11]. In Group 1, basic fast cold-cured plastic based on polymethylmethacrylate (PMMA) Triplex cold (Ivoclar-Vivadent, Liechtenstein) was studied, which is a copolymer based on acrylic resins. The powder was a fine suspension of PMMA containing initiator – benzoyl peroxide, and activator – disulfanil; the liquid was a methyl ester of methacrylic acid containing activator – dimetilparatoluidin. Orthodontic appliances were produced by method of gypsum based hydropolimerization in Ivomat IP3 (Ivoclar-Vivadent). In Group 2, basic hot polymeriza-

tion plastic based on PMMA Prothyl Hot (Zhermack, Italy) was studied, which belongs to the group of graft copolymers based on acrylic resins. The powder was a fine suspension graft copolymer of methyl methacrylate acid; the liquid was a methyl ester of methacrylic acid, containing diphenylolpropane dimethacrylic ester as a cross-linking agent. Orthodontic appliances were produced by method of compression molding in water polymerize Acrydig 4 (F. Manfred). In the third group the base material Triad Denture Base (Dentsply, USA) was studied, which is a cross-linked acrylic resin structured as interpenetrating polymer network not containing PMMA. Orthodontic appliances were made by the technology of gypsum based light cure in Triad 2000 VLC Unit (Dentsply). All the materials were polymerized in accordance with the cycle parameters specified by the manufacturer. After removal of the plaster, each orthodontic device was machined and polished at first with a muslin polishing wheel using pumice and water, and then with polishing paste to the glossy shine. All constructions were placed in distilled water for 50 hours at 37° C.

The study of qualitative and quantitative composition of microflora present on base materials were in 43 children and adolescents with satisfactory and good indices of oral hygiene, who were provided with 49 orthodontic appliances (14 units of materials from Group 1, 17 units of materials from Group 2, and 18 units from the materials from Group 3). The appliances studied in children (teenagers) had been in constant use for 6 months. All respondents were trained in standard methods of cleaning teeth, adapted to their age and the rules of care for orthodontic appliances. Hygiene skills monitoring was held in children aged 7–11 years by means of hygiene index (Fedorov-Volodkina, 1972), 12–16 years old – a simplified hygiene index OHI-S (Green J.C., Vermillion J.K., 1969; Kuzmina E.M., 2001).

In the study of bacterial contamination test materials from the surface of orthodontic appliances were taken from an area of 1 cm^2 with a sterile cotton swab and then put into 1 ml of transport medium. Intake area was isolated from the rest of the surface with a special pattern-stopper. Specimens were taken from the apparatus of the upper jaw in the projection of the palatal torus, from the devices of the lower jaw – in the projection mylohyoid torus.

In the study of microbial colonization of the deep layers of orthodontic appliances the shaving was obtained using specially calibrated cylindrical boron with depth 1.0 mm (weight of chips 50.0±1.0 mg). Before the intake of the material the surface was carefully wiped with a sterile cotton swab moistened with isotonic sodium chloride solution followed by washing with sterile distilled water. The test material was delivered to the laboratory within 1 hour, where the dilutions were held in isotonic sodium chloride solution to 10^{-2}, 10^{-4}. Inoculation on solid culture media was made from each dilution by conventional methods, in accordance with applicable regulatory microbiological orders. [7] Cultivation of microorganisms was consistently performed in aerobic, anaerobic and microaerophilic conditions in an incubator at 37°C for 24 h and 25–30° C for 48 h to select the fungi.

In a comprehensive study of aerobic and anaerobic microorganisms the inoculations were performed using domestic growth media and media produced by the company BBL® (USA): vitelline-salt agar to select Staphylococci, Endo's medium for Enterobacteriaceae, Sabouraud Dextrose Agar (BBL®) to culture yeast-like fungi, Schaedler Agar (BBL®) with blood and MRS Agar (BBL®) to select anaerobic bacteria, modernized Columbia Agar (BBL®) with blood for the cultivation of H. pylori.

Identification of Enterobacteriaceae was performed using identification systems Enterotube II and Oxi/Ferm Tube (BBL®), and fungi – using Mycotube (BBL®). Identification of the anaerobic bacteria was performed with API systems (Bio Mérieux, (France)) (API 20 A), Streptococci with API 20 Strept, and Staphylococci with API 20 Staph. Schaedler Agar and Columbia Agar were used to study hemolytic activity, and vitelline-salt agar to study lecithinase activity. The ability of bacteria to inactivate lysozyme, produce catalase, ribonuclease, caseinase and urease was also studied.

In a quantitative study of bacteria and evaluation of colonization degrees (based on the number of colonies grown in primary inoculations) the content of each species of bacteria per 1 cm^2 of adhesive films for the collection of material (CFU/cm^2) were measured. For the convenience of calculation, the values of microbial contamination were converted into decimal logarithms (lg CFU/cm^2).

RESULTS AND DISCUSSION

Identification of the species colonizing the surface of orthodontic appliances from cold-cured base plastics showed 16 genera of microorganisms: Staphylococcus, Streptococcus, Lactobacillus, Bacillus, Peptococcus, Peptostreptococcus, Porfiromonas, Bifidobacterium, Veillonella, Micrococcus, Leptotrichium, Fusobacterium, Prevotella, Actinomyces, yeast-like fungi of the genus Candida and Enterobacteriaceae, five of which can be of etiological importance (Staphylococcus, Bacillus, Peptostreptococcus, Fusobacterium, Prevotella). In the depth of cold-cured plastics four kinds of opportunistic or etiologically important

bacteria with lecithinase, ribonuclease, and proteolytic activity were revealed.

In the study of surface microbial contamination of the orthodontic appliances made of hot polymerization base materials 14 genera of microorganisms were identified: Staphylococcus, Streptococcus, Lactobacillus, Bacillus, Peptococcus, Peptostreptococcus, Porfiromonas, Bifidobacterium, Veillonella, Micrococcus, Leptotrichium, Actinomyces, yeast-like fungi of the genus Candida and Enterobacteriaceae, including three etiologically significant (Staphylococcus, Bacillus, and Peptostreptococcus). In the depth of hot-cured plastic three kinds of opportunistic bacteria with lecithinase, ribonuclease, and proteolytic activity were found.

In the study of surface microbial contamination of the orthodontic appliances made of light-cured base materials 7 genera of microorganisms were identified: Staphylococcus, Lactobacillus, Bacillus, Peptococcus, Peptostreptococcus, yeast-like fungi of the genus Candida and Enterobacteriaceae; there were not any pathogens found. In the depth of a light-cured plastic prosthesis there was only one etiologically significant bacterium with ribonuclease and proteolytic activity

The quantitative data concerning the colonization of base materials Triplex cold, Prothyl Hot, and Triad Denture Base (surface and depth) are represented in Table 1.

Quantitative analysis of the surface/depth bacterial contamination of orthodontic appliances showed that quick cold-cured base plastics are the most susceptible to microbial colonization, exceeding the corresponding figures of the hot polymerization base materials 2,4±0,2 (2,3±0,2) times, and exceeding the parameters of microbial contamination of the light polymerization base plastic 3,8±0,3 (3,6±0,3) times.

FINDINGS

1. The proposed method of in vitro comparative evaluation of the different base plastics' microbial colonization helps to assess the level of bacterial contamination of orthodontic appliances in children and adolescents fairly and precisely.
2. The number and frequency of revelation of various microorganisms, including etiologically significant, depend on the chemical class of the base material from which the orthodontic appliance is made and its type of polymerization (cold-, hot-, or light-cured).
3. Adhesion of stabilizing resident bacterial species can be detected in the study for all the base materials for orthodontic appliances in children and adolescents, although microbial contamination in light-cured plastic base Triad Denture Base was significantly lower than on plastics of hot and cold polymerization types.
4. Microbial colonization of the appliances made of light-cured plastic Triad Denture Base is characterized by absence of the majority of opportunistic microorganisms in the prosthetic biofilms,

Table 1. *Colonization of the surface/depth of base materials Triplex cold, Prothyl Hot, and Triad Denture Base (lg CFU/cm²)*

	Base material					
	Triplex cold		Prothyl Hot		Triad Denture Base	
	Surface	Depth	Surface	Depth	Surface	Depth
Staphylococcus	7	6	5	4	2	1
Streptococcus	9	9	6	5		
Lactobacillus	18	17	12	11	5	3
Bacillus	7	7	4	3	2	1
Peptococcus	17	15	11	9	5	4
Peptostreptococcus	6	5	4	3	2	1
Porfiromonas	6	5	3	3		
Bifidobacterium	7	7	4	4		
Veillonella	6	6	4	3		
Micrococcus	7	6	4	4		
Leptotrichium	6	5	3	3		
Fusobacterium	5	4				
Prevotella	6	5				
Actinomyces	4	3	2	1		
Candida	11	10	7	6	3	2
Enterobacteriaceae	12	12	9	8	4	4

creating optimal conditions for the microecological balance maintenance in a mouth cavity, while improving its overall hygiene. This helps to prevent complications and improve the quality of orthodontic treatment in children and adolescents.

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in brief...

Schlaganfall: Im Zweifel pro Lyse

Deutlich mehr Schlaganfall-Patienten als bisher sollten eine Lyse-Therapie erhalten. Das ist die Kernaussage der weltweit größten Thrombolyse-Studie IST-3 und einer Meta-Analyse mehrerer kürzlich veröffentlichter wissenschaftlicher Arbeiten.

„Diese Daten untermauern unsere Empfehlung, die Lyse noch mehr in der Routine-Therapie zu verankern", kommentiert Professor Martin Grond, Vorstandsmitglied sowohl der DGN (Deutsche Gesellschaft für Neurologie) als auch der DSG (Deutsche Schlaganfall-Gesellschaft).Bisher sucht man eher nach Gründen, die Lyse nicht durchzuführen – wir sollten aber eher die Lyse als Standard betrachten, statt die indizierten Patienten zu selektieren."

Originalpublikationen:

Recombinant tissue plasminogen activator for acute ischaemic stroke: an updated systematic review and meta-analysis

J.M. Wardlaw et al.; The Lancet Vol. 379; *doi:10.1016/S0140-6736(12)60738-7; 2012*

Depression: Klare Sicht voraus

Forscher haben nun eine Methode entwickelt, mit deren Hilfe in Zukunft der subjektive Zustand von Depressionen objektiv gemessen werden kann.

Grau und Schwarz sind die Farben, die für Melancholie oder Depressivität stehen. Im Englischen dagegen wird die niedergedrückte Stimmung mit der Farbe Blau in Verbindung gebracht, etwa, wenn ein deprimierter Mensch sagt: "I'm feeling blue". Dass sich hinter diesen Sprachbildern auch eine empirische Wirklichkeit versteckt, hat nun eine Arbeitsgruppe am Universitätsklinikum Freiburg mit Wissenschaftlerinnen und Wissenschaftlern aus Psychiatrie, Psychotherapie und Augenheilkunde herausgefunden.

Originalpublikation:

Effect of antidepressive therapy on retinal contrast processing in depressive disorder M. Bach et al.; Br J Psychiatry.; 2012

MODERN METHOD OF RECONSTRUCTIVE URETHEROPLASTY IN GIRLS WITH EPISPADIA

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Abstract

10 girls with epispadias aged 7–12 have been operated in our clinic since 2007. Urethroplasty as the method of Otto-Dranicin was the first stage of surgical reconstruction of lower urinary tracts. In all cases urethral anatomy was formed. In 8 patients the process of urine transportation through the lower urinary tracts has changed cardinally. Children began to store 150–300 ml of urine in every position, to hold urine up to 3 hours at rest, on strain totally evacuate urine with normal stream from the bladder. Total urine loss decreased in 10–15 times in 24 hours and was not more than 20–40 ml. The main clinical characteristics of urination disturbances after the operation was stress urine incontinence that appeared only with sudden and sharp increase of intraabdominal pressure (coughing, quick walking and so on). Urethroplasty according to Otto-Dranicin is very effective in epispadias in girls, both anatomically and functionally, and we consider it as the most effective surgical correction of this malformation.

Keywords

epispadias, girls, urethroplasty.

INTRODUCTION

Epispadias is the one of the rare malformations in children. Traditionally it is considered to be met in 1: 100000 of newborns, while the proportion of males and females is 1: 3,5. That's why epispadias is registrated nearly in one girl out of 350000 children. Every year 10–11 such patients are born in Russian Federation. All the above said data underline that this malformation is extremely rare in females.

Urine incontinence and absence of voluntary urination are the most clinically vivid expressions of epispadias. That is the reason for parents to go to the doctor with their child. During the latest 150 years all the doctors working on that problem tried to find the most effective procedure to restore the full functioning of urinary bladder in the regimen «filling/evacuating». Numerous publications show that a lot of surgeons work hard, correctly formulate the targets and invent different new methods of treatment, but still they tried to find, without a great number of evidences, the main mechanism in that complicated disease structure.

If the doctors were oriented on using only one method of operation, the results of malformation correction could not always be prognosticated, those operations were often a failure and that problem in children surgery was not solved.

We should state that the efficiency of time-proved surgical methods of treatment urinary incontinence in children was not more than 50%. Half of the children were operated several times. For example, in Savchenko clinic operations after Derzhavin and Yong-Dees were effective in 86,9% and 61,9% of cases, respectively, and 42% of patients were operated twice.

At first, all the unsatisfactory results of the operations were explained as not having been followed the authors recommendations of their fulfillment. Later on another reason of it was found. Epispadias was often followed by overactive bladder as well as by myelodisplasy with the disturbance of lower pelvic muscles innervation. While studying this malformation it was stated that the degree of diastasis of pelvic bones was the integral index of structural-functional deep changes in the lower urinary tract in girls with such malformation. The degree of diastasis correlates well with the severity of malformations, with urinary bladder disfunction, with disturbances of pelvic muscles innervation, while the results of classical operations were unsatisfactory.

Surgeons of the Department of Urology and Neurourology of Moscow Scientific Research Institute of Paediatrics and Children Surgery have been working on the problem of epispadias for 40 years. During this period of time operations, mainly plasties of urinary bladder neck out of the urinary bladder triangle muscles were made in more than 450 children of both sexes. But the results of treatment were not as effective as expected. That is why while studying the disturbances of urination pathophisiology we began to understand the nessessity of cardinal changing the traditional methods of epispadias treatment. First of all, it should have several stages. The first stage is to restore the urethra, the second – to think of sphincteroplasty, the third – to abolish the residual disturbances of urination with the help of noninvasive medical technologies and of pharmaco-therapy of urinary bladder disfunction.

This paper is dedicated to the first stage of epispadias surgical treatment in girls – that is to the results of reconstructive urethroplasty.

MATERIALS AND METHODS

During the latest 4 years we were studying epispadias in 10 girls aged 7–10. «Urine incontinence» in horizontal and vertical postures was the main complain and that incontinence grew with the increasing of abdominal pressure.

The malformation of the lower urinary tract development was stated on the bases of physical examination and special methods of investigation – excretory urography, cystography, cystoscopy, uroflowmetry and electromyography.

It is quite enough for an experienced surgeon to make only physical examination so that to disclose the malformation, but using special methods has another target. With the help of special methods we can diagnose concomitant malformations of kidney and urinary tracts, can estimate the condition of the urinary bladder and ureteropelvic junction, the degree of pelvic bones diaphysis, the length of urethra, the condition of sphincter apparatus and the innervation of pelvic muscles fundus. One can meet some difficulties while identifying this malformation in girls. There are some diagnostic characters typical for «women epispadias»: clitoris cleft and genital lips segregation, subsymphisal situs and funneling of the outer hole of urethra. Clinical picture is composed of the involuntary urination with strain (changing of the body position, coughing and so on). Cystoplasty showed the wide open neck of the urinary bladder. The urethra is short, its length is not more than 0,5–1,5 sm. Positive intraurethral pressure is decreased or is not registered at all. Diaphisis of pelvic bones can be seen. In some cases systometry gives the results of hyperreflected detrusor, and electromyography shows the disturbances of segmental somatic innervation.

The above described picture is composed on the basis of the so called «women epispadias», whish has been examined for many years and in which all the individual characteristics of this malformation have been included.

The girls in our study group had all the external signs of typical epispadias. In the supine and sitting position the capacity of the bladder varied from 30 to 200 ml. While changing the position into vertical urine incontinence emerged and increased with coughing and walking. The length of the urethra was 5–13 mm (normal 23–32 mm). Diaphisis of pelvic bones was 18,1–38,7 mm (normal 7–8 mm). In two cases cystography showed bladder-ureteral reflux of the 2d degree on both sides; in one of these two cases the reflux was complicated with returning pielonephritis. Electromyography showed the disturbances of the somatic innervation in 4 girls.

After the diagnosis of «epispadias» was stated the girls were operated on, the first stage of the operation – urethroplasty according to D.O. Ott. This method was described in 1894 for restoring urethra in women. In the same year Dranicin published the article about successful use of it in girls of 9 years old with total epispadias. The same operation to correct epispadias with good results was used in women by Atabekov. This operation is simple, quite effective and helps to solve the main problem of the first stage – to restore «urethral anatomy». After all this variant of urethroplasty in women epispadias should be called «the operation of Ott – Dranicin».

The essence of this operation is as follows (see Figures 1–5).

Fig. 1. *Total epispadias in a girl*

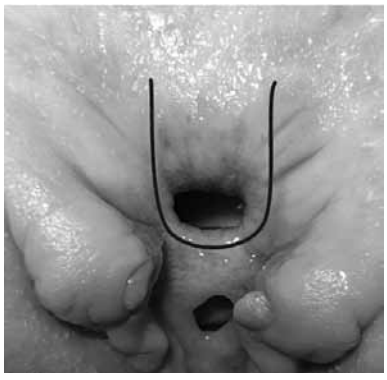

Fig. 2. *The shape of incision*

Fig. 3. *Urethral tube grafting*

Fig. 4. Tubularisation on the catheter

Fig. 5. The end of urethroplasty

After general anesthesia we made U-shaped incision of the skin and subcutaneous fat, the lower part of it is in between urethra and vagina (Figure 2). The back wall of the urethra is separated from the front wall of the vagina as far as 4 – 7 mm. This manipulation is necessary to make the connection between the proprious urethra and muco-cutaneous urethral tube easy. The urethral tube and the outer hole of the urethra are formed on the FOLEY catheter №10 with a thread PDS 5/0 (Figure 4). The front vagina wall and the surrounding tissues close the anastomosis between the proprious urethra and the urethral tube with the help of additional sutures (Figure 5). The urethral tube formed in such a way «is closed» with 2 suture layers out of the zones of U-shaped incision.

After the operation antibiotics were prescribed for prophylaxis of wound and urinary infection. Urinary bladder has been catheter drained for 7–8 days. The child was to get up and walk on the 3rd day after the operation.

RESULTS

With the help of Ott–Dranicin operation all the girls got the restored urethra. It was lengthened in 2–2,5 times, the outer hole was front and above shifted.

Nevertheless, 4 girls have got urethral fistulas. In 2 cases they were abolished with the help of sutures and repeated urethroplasty.

«Urethral anatomy» restoration in the following 3 years of investigation was accompanied by serious changers of urine transportation along the lower urinary tracts:

1. The premium stage of micturition – the storage of urine – was restored. Children began to store 150–300 ml of urine in every position.
2. They could hold store and hold urine up to 3 hours at rest.
3. The desire to micturate appeared after the bladder was filled; voluntary urination had normal stream without residual urine.
4 The main characters of urine incontinence have been changed: incontinence emerged only when sudden and sharp increase of intraabdominal pressure was registered (coughing, quick walking and so on). «General urine loss» decreased and was not higher than 20–40 ml – that was in 10–15 times less during the 24 hours.

The problem of the second stage – sphincteroplasty – is being solved individually. Proper limits of time were not defined. The main criteria are: physical development of a child and the condition of tissues where the intervention is to be done. Our experience showed that children «were ready» for this or that sphincteroplasty in 6–12 months after the first stage of operative intervention in order to treat epispadias.

DISCUSSION

In spite of numerous publications on that theme there are a lot of topics waiting to be discussed. Classification is one of them. The most comprised is the classification of epispadias made by Savchenko and Derzhavin (1976). However its practical value in choosing the method of treatment is not quite enough.

We suppose it will be right to cite the words of Derzhavin V.M. that clinically we should divide epispadias in two forms: with incontinence and without incontinence and «knowing that this division is very relative we still can not help recognizing that very characteristic being the definition for both the attitude of a patient to her disease and the tactics of a surgeon».

It is necessary to note that most girls and women, if they do not have incontinence, even do not suppose they have got epispadias. Low degrees of malformations simply are not being diagnosed and they are not included into statistics. There are some problems with the forms accompanying urine incontinence. Previously this complicated patophisiologic condition was not differentiated in forms. Nowadays we know imperative, stress, combined urine incontinence and paradoxal ishuria. All of them are met in epispadias and can serve as a criterion of for treatment choice. We had the evidence that the imperative incontinence, which had been by mistake regarded as a failure of sphincter apparatus reconstruction, was with ease treated pharmasutically. In these cases the question of the repeated operation was not on the agenda.

One should always be very careful regarding the results of the epispadias operation when formally the incontinence preserved. Before you decide to make the repeated intervention, you should classify the variant and all the reasons of incontinence. In some cases less invasive technics (paraurethral infusion of volume-forming agents) and pharmacotherapy might influence the total result of the treatment.

Before surgical treatment of epispadias the surgeon should solve the difficult task – he should choose the algorithm of correction of a very complicated malformation. What will he begin with? Urethroplasty or sphincteroplasty? Our experience showed that it is advisable, first of all, to restore the integrity of lower urinary tracts, that means to do only urethroplasty.

The surgeon should be experienced enough to choose the proper method of operation. As far as «women epispadias» is concerned we may say that the operation according to Ott–Dranicin, developed in 1893, is still popular among surgeons. Besides restoring the anatomy of urethra, this operation helps to restore voluntary urination. We can evidence that not only sphincter apparatus of urinary bladder , but urethra as well take part in the most complicated mechanism of urine holding.

While operating urethra, espessially correcting its inherent malformation, you should remember and bare in mind one more problem – spontaneous fistula forming. Fistulas are the acute angle of urethral surgery. To solve this problem or to lessen its severity we should use a complex of methods. They are: prophylaxis of wound infection, use of miniature instruments to treat the tissues carefully and of course use of modern suture materials.

Summing up we can conclude that surgical treatment of such rare malformations as epispadias in girls should be carried in special surgical clinics, where this problem is being worked at.

in brief...

Prenatal diagnosis of aortic arch abnormalities

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Objective. To assess the added value of 3/4-dimensional echocardiography in the diagnosis of aortic arch abnormalities in fetuses.

Materials and methods. 26 patients were examined between 20 and 36 weeks of gestation/ All fetuses (n=26) in the following groups were included in the study:

1) normal heart and great vessels (n=20),

2) isolated aortic arch abnormalities (n=6): coarctation of aorta (n=5) and interrupted aortic arch, Type A (n=1).

Volume data sets of 26 fetuses, examining by 2D US, were acquired by 3D and cine 4D using spatiotemporal image correlation (STIC) software. Various additional rendering tools were applied. Color and power Doppler were added to the volumes acquired. A retrospective offline analysis was performed. Neonatal echocardiography and pathological examination were performed to verify the prenatal diagnosis.

Results. 1 group of fetuses (normal heart and great vessels, n=20): In 18 cases 3/4D ultrasound volume did not add to the information in the 2D loop. Normality of the heart and great vessel was demonstrated by 2D and 3/4D too. In 2 cases obesity and a fetus with the spine toward the maternal abdomen were associated with unsatisfactory screening examination by 2D also 3/4D. 2 group of fetuses (aortic arch abnormalities, n=6): 3/4D ultrasound had added value in achieving or enhancing diagnosis in 2/6 of diagnosed cases and a definitive diagnosis was made only after 4D examination. This was 1 coarctation of aorta and 1 interrupted aortic arch, Type A. In 4/6 cases (4-coarctation of aorta) 2D and 3/4D ultrasound examination were equivalent. The resolution of three/four-dimensional systems is generally less good than that of high-quality two-dimensional systems.

Discussion. 3/4D features may work to extend the benefits of prenatal diagnosis of aortic arch abnormalities. However, no single module is sufficiently accurate for the diagnosis of aortic arch abnormalities, each case requires different and appropriate module of visualization. 3/4D addition enhances precision of diagnosis by providing planes and data that « flesh out » the 2D ultrasound examination.

HOW TECHNOLOGIES "ROFES" AND "COLOURPSYCHOSOMATIC-ROFES" WERE APPLIED WITHIN THE LIMITS OF PREPARING YOUNG HIGHLY QUALIFIED SPORTSMEN FOR TRAMPOLINE TUMBLING COMPETITIONS

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In order to enhance prestige of the Russian sport on international level, elaboration and implementation of measures for improving training system for preparing highly qualified sportsmen and sports reserve remain one of the highest priorities. (P.V. Bundzen, L.G. Unestal, 2004, L.V. Volkov, A.V. Alekseyev, A.M. Gonopolskiy, 2008).

In austronautics, medicine, psychology, wellness science, fitness science and sports practice such hardware-software systems as "Amsart", "Valeoscan", "Kantum-Pro", "Istoki zdorovya" have gained acknowledgement (N.N. Ozhug, G.R. Rusinov, 2004; S.D. Runenko, 2007; V.A. Gorbunov, O.I. Demidenko, 2007). Use of the above listed systems allows to make timely assessment of sportsmen's psychoemotional state and to control the possibility of providing rehabilitation means (G.Z. Karnaukhov, 2006; K.G. Korotkov, A.K. Korotkova, 2005–2008; E.M. Khekalov, 2004).

Use of such hardware-software systems as "ROFES" and "Colourpsychosomatic-techniques" is covered in scientific literature to a lesser extent (A.V. Karnyukhin, 2007; L.N. Sobchik, 2008).

In this research work experimental materials are presented regarding use of hardware-software systems such as "ROFES" (functional and emotional state assessment detector) and "Colourpsychosomatics" (CPS). These systems provide information not only about a sportsman's emotional state at the moment of testing but also about a number of peculiarities of the current state which allows to determine risk exposed organs and organ systems and to substantiate the necessity of corrective sessions.

OBJECTIVE OF THE RESEARCH

to determine functional state of the female sportsman who is specialized in two kinds of multiathlon: trampoline and double mini trampoline; to find out initial symptoms of mental disadaptation at different stages of training practice before competitions.

TASKS

1. To elaborate corrective techniques on the basis of the sportsman's personal peculiarities and psychofunctional state.
2. To make a comparative analysis of medical and psychological check-up results using hardware-software system "ROFES" within the limits of corrective measures.
3. To elaborate guidelines for corrective sessions and rehabilitation measures.

RESEARCH METHODS AND ARRANGEMENT

Research and corrective sessions were conducted in a laboratory within the limits of sports activity (since the year 2009 till present). The object of the research was a young promising female sportsman who within one year cycle participated in 16 and more important competitions.

According to the coach's decision within the limits of some of the competitions the sportsman did competition program in two specializations – trampoline and mini trampoline.

For diagnosis we used the following checkup methods: observation, structured interview, diagnosis with ROFES technique and Colourpsychosomatic-

technique. Besides that, stable, professionally important qualities of the sportsman were determined such as motives of behaviour, style of attitude to the environment, spheres of interest and mindset. Two-stage method for personal traits investigation consists of the stage one within which norm-characteristic traits are determined and the stage two within which patho-characteristic traits are determined.

Diagnosis includes several stages:

The first stage – functional state of organs and organ systems was registered with ROFES to get evidences of clinical diagnoses; along with the somatic data we also got psycho-emotional portrait of personality and psychological characteristics such as:

- Tonus of the vegetative nervous system and emotional tonus;
- Adaptative potential;
- Functional state;
- Psycho-emotional status.

Level of functional state (FS) and adaptative indicator (AI) describe to what extent person's structures and his/her inner states such as physiological state, psychological state and degree of readiness to perform vital functions are balanced; these are assessed according to five-point grading scale (excellent, good, satisfactory, unsatisfactory, rehabilitation required).

Psychoemotional status indicates the state of body compensatory mechanisms.

Tonus of the vegetative nervous system and emotional tonus indicators provide psychological characteristics such as trophotropic or ergotropic mechanisms indicators (need for expanding energy or reconstitution of energy stores).

The second stage – on the basis of the obtained data and "Correction module" we made up an individual program of colourcorrection.

The third stage – taking an individual colourcorrection course on the basis of "Colourcorrection module".

The fourth stage – state of the surveyed sportsman was analyzed with ROFES technique before and after competitions, also it was analyzed how efficient the individual course of compensation by method of colourcorrection and record of pathological frequencies on magnetic carrier is.

Colourcorrection sessions were prescribed upon agreement with the coach, mostly within precompetition period, and were conducted 2 times a week in the presence of the coach and psychotherapist, the rest of the days on sportsman's own.

Precompetition training was based on six-day microcycles. Training sessions included performing competition compositions 7–10 times, practicing elements and links for voluntary combinations. After practice on trampoline or mini trampoline, body conditioning and breathing exercises are obligatory. Two weeks before the competition started, "obligatory" and voluntary programs were performed in "competition" mode 7–10 times, body conditioning – in moderate load mode. After the competitions a lot of training time was dedicated to body conditioning and practicing elements of voluntary final program. At this period psychocorrective sessions and sessions of body functional state correction were conducted upon agreement with the sportsman and the coach.

RESEARCH RESULTS AND THEIR DISCUSSION

The results of the conducted research are presented in the summary tables 1–3 in which the following information is given: level and type of competitions, principal indicators of psychosomatic state such as emotional tonus and tonus of the vegetative nervous system (VET), adaptative capacity indicator (AP), psychoemotional status (PES) and functional state (FS).

Basing on the data presented in the table it can be noted that dynamic of such indicators as functional state (FS) and adaptative capacity state (AP) which reflect to what extent person's structures and his/her inner states such as physiological state, psychological state and degree of readiness to perform vital functions are balanced, is strongly interrelated with psychoemotional status and state of body compensatory mechanisms.

The analysis of the results of the sportsman's participation in the competitions and of the dynamic of adaptative potential, functional state and psychoemotional status (tables 1–3) shows that when the sportsman had low adaptative potential (from 15 to 31%), she was not a leader in the competitions and was in stressed conditions like "emotional exhaustion" and low level pre-start readiness. Total adaptative potential registered with ROFES reached the average of 75% by the end of the cycle and exceeded the normal level of a healthy human being (50–60%).

It also should be noted that tonus of the vegetative nervous system and psychoemotional status are interrelated. When their levels are below norm the sportsman feels "strong emotional tension close to exhaustion phase and distress".

Besides, no interconnection was detected between adaptative potential and psychoemotional status, while when tonus of the vegetative nervous system was below norm, adaptative potential, on the contrary, was quite high (58%, 63%, 74%).

Table 1. *Psychoemotional portrait of personality and psychological characteristics along with somatic data obtained in 2009*

Competition level (time when it took place)	Date of registering the values before and after competitions	1 Emotional tomus and tonus of the vegetative nervous system	2 Functional state	3 Adaptative potential	4 Psychoemotional status	5 Result of participation in the competition
April, 17–18, 2009 – Open city championship (Regional competitions)	15.04.2009 Before the competitions	+	+	42%	Relative equilibrium	Trampoline – 2nd place
June, 6–7, 2009 – Regional competitions	15.06.2009 Before and after the competitions	!	–	31%	Body compensatory mechanisms under stress	Trampoline and double mini trampoline – 1st place, 2 gold medals
July, 1–3, 2009 – All-Russian championship	03.07.2009 After the competitions	–	!	58%	Strong emotional tension (resistance phase, closer to exhaustion phase)	Trampoline – 7th place
	31.07.2009 Training process	+	–	34%	Strong emotional tension (resistance phase, closer to exhaustion phase)	
	25.08.2009 Before the competitions	!!	+	48%	Relative equilibrium	
September, 8–12, 2009 – All-Russian Championship	26.09.2009 Before and after the competitions	–	+	52%	Strong emotional tension (resistance phase, closer to exhaustion phase)	Trampoline – 5th place, double mini trampoline – 1st place

Note: *(–) – unsatisfactory functional state, (+) – satisfactory functional state, (!) – good functional state.*
Emotional status and status of the vegetative nervous system: (!!) – medium level closer to heightened, (!) – medium level, (+) – medium level closer to lowered, (–) – lowered level

CONCLUSIONS

1. Within the limits of the research it was found out that precise planning of training load on the basis of adaptative potential values and psychoemotional status values registered with ROFES gains more importance during preparation for the All-Russian championship and European championship. Within the limits of training for high sports achievements, structuring training sessions, combined with Colourpsychosomatic sessions, becomes more important than volume of physical load during the sessions.
2. Colourpsychosomatic method and ROFES diagnostics method allow to assess degree of adaptative processes tension and functional and emotional states dynamic quickly and fully, as well as to determine the sportsman's physical load tolerance and level of readiness for competitions. These methods also allow to prescribe individual corrective programs of psychofunctional imtervention.

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Table 2. *Psychoemotional portrait of personality and psychological characteristics along with the somatic data obtained in 2010*

Competition level (time when it took place)	Date of registering the values before and after competitions	1	2	3	4	5
		Emotional tomus and tonus of the vegetative nervous system	Functional state	Adaptative potential	Psychoemotional status	Result of participation in the competition
February, 8–11, 2010 – Championship of the Southern Federal District	05.02.2010 Before the competitions	–	–	15%	Distress (emotional exhaustion, pre-start readiness)	Trampoline – 6th place, double mini trampoline – 3rd place
March, 1–6, 2010 – All-Russian Championship – Voronezh city	18.02.2010 After the competitions	–	–	34%	Distress (emotional exhaustion, pre-start readiness)	Double mini trampoline – 3rd place
	07.03.2010 after the competitions	+	+	41%	Distress (emotional exhaustion)	
	26.03.2010 training process	!!	!	74%	Relative equilibrium	
(Hip and lower leg injury) intense corrective measures are taken	29.03.2010	+	!	72%	Relative equilibrium	
Intense corrective measures are taken	22.04.2010 Training process	–	+	50%	Body compensatory mechanisms under stress	
	24.04.2010 before the competitions	+	–	31%	Borderline state, closer to asthenia syndrome	
June, 5–6, 2010 – Regional competitions for Moskalenko's prize (Moskalenko is an Olympic champion)	17.06.2010 before and after the competitions	+	+	46%	Body compensatory mechanisms under stress	Trampoline – 1st place; Double mini trampoline- 1st place
June, 27–29, 2010 All-Russian competitions EINOSAL	30.06.2010 r. before and after the competitions	+	–	31%	Strong emotional tension (resistance phase, closer to exhaustion phase)	1st place – double mini trampoline 2nd place – trampoline, 1st place – synchronized trampoline tumbling
June, 2–4, 2010 – Regional competitions in Novorossiysk	5.07. 2010 after the competitions	+	+	50%	Relative equilibrium	Trampoline – 2nd place
	12.07.2010 training process	–	+	62%	Relative equilibrium	
	04.08.2010 training process	–	+	57%	Body compensatory mechanisms under stress	
	19.08.2010 training process	+	+		Body compensatory mechanisms under stress	
	13.09.2010 before the competitions	!	!	65%	Relative equilibrium	
September, 25–26 – Open championship of Krasnodar city						1st place – double mini trampoline
October, 5–10 – All-Russian championship in Ramenskoye, Moscow region						2nd place – double mini trampoline 7th place – trampoline
	13.10.2010 before and after the competitions	–	+	61 %	Relative equilibrium	

Note: *(–) – unsatisfactory functional state, (+) – satisfactory functional state, (!) – good functional state.*
Emotional status and status of the vegetative nervous system: (!!) – medium level closer to heightened, (!) – medium level, (+) – medium level closer to lowered, (–) – lowered level

Table 2. *Psychoemotional portrait of personality and psychological characteristics along with the somatic data obtained in 2010 (continued)*

Competition level (time when it took place)	Date of registering the values before and after competitions	1	2	3	4	5
		Emotional tomus and tonus of the vegetative nervous system	Functional state	Adaptative potential	Psychoemotional status	Result of participation in the competition
October, 29–30 – Open championship of the specialized school of the Olympic reserve for children and youth No. 2						1st place – trampoline 2nd place – double mini trampoline
	04.11.2010 before and after the competitions	+	+	69%	Body compensatory mechanisms under stress (stressed condition, post-stress phase)	
November, 13–20, 2010 - World championship, Metz, France	24.11. 2010 before and after the competitions	–	+	53%	Strong emotional tension (resistance phase, closer to exhaustion phase)	Double mini trampoline– 7th place
December, 4, 2010 – Open regional competitions in Bryukhovetskaya stanitsa						Trampoline – 1st place
December, 18 – Concluding Open championship of the specialized school of the Olympic reserve for children and youth No. 6						Trampoline – 1st place
Training process and intense corrective measures	16.01.2011 before the competitions	+	!	75%	Relative equilibrium	
February, 2–3, 2010 – Championship of Krasnodar region						Double mini trampoline– 7th place

Note: *(–) – unsatisfactory functional state, (+) – satisfactory functional state, (!) – good functional state.*
Emotional status and status of the vegetative nervous system: (!!) – medium level closer to heightened, (!) – medium level, (+) – medium level closer to lowered, (–) – lowered level

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Table 3. *Psychoemotional portrait of personality and psychological characteristics along with the somatic data obtained in 2011*

Competition level (time when it took place)	Date of registering the values before and after competitions	1 Emotional tomus and tonus of the vegetative nervous system	2 Functional state	3 Adaptative potential	4 Psychoemotional status	5 Result of participation in the competition
Training process and intense corrective measures	13.02.2011	+	!	71%	Relative equilibrium	
March, 1–4, 2011 – competitions of the Southern Federal District	Sick (intense corrective measures)					
(intense corrective measures)	21.03.2011 before the competitions	–	–	32%	Distress (emotional exhaustion)	
March, 26, 2011 – City championship						Trampoline – 1st place
Training process and intense corrective measures	27.03.2011 before and after the competitions	+	+	57%	Stressed condition, post-stress phase	
April, 3–7, 2011 – All-Russian championship	09.04.2011 after the competitions	medium	!	84%	Body compensatory mechanisms under stress (stressed condition, post-stress phase)	1st place – double mini trampoline 3rd place – trampoline 2nd place in team total

Note: *(–) – unsatisfactory functional state, (+) – satisfactory functional state, (!) – good functional state.*
Emotional status and status of the vegetative nervous system: (!!) – medium level closer to heightened, (!) – medium level, (+) – medium level closer to lowered, (–) – lowered level

in brief...

MS-Therapie: Verzerrte Vorauswahl

Interferonpräparate werden als Standardtherapie bei Multipler Sklerose (MS) eingesetzt. Forscher kamen nun zu dem Ergebnis, dass die Interferontherapie das Voranschreiten einer Behinderung nicht bremse.

Originalpublikation:
Association Between Use of Interferon Beta and Progression of Disability in Patients With Relapsing-Remitting Multiple Sclerosis Afsaneh Shirani et al.; JAMA,
doi:10.1001/jama.2012.7625; 2012

Neuroenhancement: Strom bringt Reaktion

Forschern gelang es erstmals, in einem Lernexperiment mit Testpersonen die Reaktionszeit in einem Merktest mittels transkranieller Wechselstromstimulation (tACS) deutlich zu verkürzen.

Originalpublikation:
The Importance of Timing in Segregated Theta Phase-Coupling for Cognitive Performance Rafael Polanía et al.; Current Biology,
doi: 10.1016/j.cub.2012.05.021; 2012

Kognitionspsychologie: Striatum bei Stress

Gestresste und nicht gestresste Personen nutzen unterschiedliche Hirnregionen und unterschiedliche Strategien beim Lernen. Zu diesem Ergebnis kam nun eine durch Kognitionspsychologen durchgeführte Studie.

Originalpublikation:
Stress modulates the engagement of multiple memory systems in classification learning
Lars Schwabe et al.; Journal of Neuroscience,
doi: 10.1523/JNEUROSCI.1484-12.2012; 2012

BOTULINUMTOXIN IN DER BEHANDLUNG DER MS-INDUZIERTEN SPASTIK

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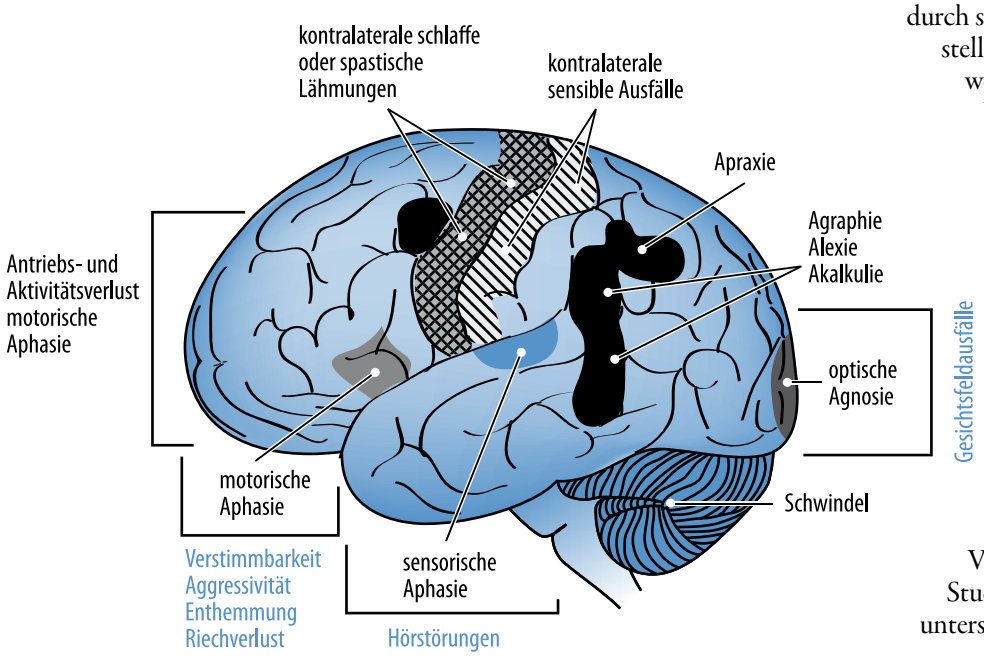
Die Spastik ist eines der häufigsten und behinderndsten Symptome der Multiplen Sklerose. Sie ist gekennzeichnet durch eine inadäquate und überschießende Muskelaktivität, die auf eine Unterbrechung der supraspinalen Kontrolle der spinalen Reflexaktivität beruht.

Eine spastische Muskeltonuserhöhung findet sich hauptsächlich in den Muskeln, die der Schwerkraft entgegenwirken, das heißt den Armbeugern und den Beinstreckern.

Die spastische Tonuserhöhung von Muskeln kann eine Reihe von sekundären Komplikationen und Beeinträchtigungen zur Folge haben. So kann der spastische Spitzfuß Stürze verursachen und der gebeugte spastische Arm ist zumeist ein großes Hindernis beim An- und Auskleiden.



Die Spastik kann durch oral verabreichte Medikamente vermindert werden, welche die Dehnungsreflexe auf spinaler Ebene ergänzen (z. B. Baclofen, Tizanidin, Benzodiazepine) oder muskelrelaxierend wirken (Dantrolen).

Besteht eine umschriebene Muskelspastik, ist eine Behandlung mit Botulinumtoxin zu erwägen.

Botulinumtoxin blockiert die neuromuskuläre Übertragung in der injizierten Muskulatur und dämpft somit die spastische Muskelaktivität fokal.

Botulinumtoxin A ist im Erwachsenenalter in Deutschland nur zur Behandlung des Handgelenkes nach Schlafanfall zugelassen. Der Einsatz bei anderen Indikationen erfolgt im Rahmen eines Heilversuches.

Ziele der Botulinumtoxinbehandlung sind in erster Linie die Erleichterung der Pflege, eine Schmerzlinderung sowie die Prophylaxe von Hautinfektionen oder von Subluxationen, die durch schwere Gelenkfehlstellung hervorgerufen werden können. Eine Verbesserung kann nur selten und nur bei ausreichender Kraftentwicklung der Antagonisten erreicht werden.

Botulinumtoxin A wird seit mehr als 10 Jahren zur Behandlung der Spastik eingesetzt. Die Wirksamkeit wurde in einer Vielzahl von klinischen Studien systematisch untersucht und belegt.

Placebokontrollierte Studien liegen für die Adduktorenspastik bei Multipler Sklerose, die Armspastik nach Schlaganfall und für den spastischen Spitzfuß vor.

Der dort nachgewiesene Behandlungseffekt rechtfertigt auch den Einsatz bei fokalen spastischen Extremitätenfehlstellungen sowie bei schwerer Adduktorenspastik bei MS.

SEROMAS AFTER THE SURGERY OF POSTOPERATIVE VENTRAL HERNIAS WITH THE USE OF MESH ENDOPROSTHESES

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Dmitri Davydov
deputy head surgeon, doctor of the first category

The objective of the research is to study the occurrence of seroma formations depending on the method of the surgery of the anterior abdominal wall with the help of a mesh endoprosthesis in case of postoperative ventral hernias.

Materials and methods. The retrospective research was based on the method of the paired analysis of the surgery of the postoperative ventral hernias in „Dr. Paramonov's Clinic". During the analysis of 460 cases we chose 58 women at the age of 40 to 60 years. The first group (n=24) was composed by patients who had an „on lay" operation, 2 (n=24) had an „in lay" surgery. Polypropylene endoprostheses were used in all cases.

Criteria of inclusion: a planned surgical procedure; the size of the hernia from 100 to 200 cm^2; tension hernia repair.

Criteria of exclusion: infectious complications in the postoperative period; duration of the surgery more than 120 minutes due to the apparent adhesive process and the necessity of reconstructive invasions in the intestine.

The performance of the „in lay" surgery is possible if the preperitoneal cell is sufficiently apparent, if the peritoneum has cicatrical changes and apparent fusing, „on lay" surgery is carried out. The duration of the operation in the second group was longer by 16±11 min.

The frequency of drainage in the area where the mesh is situated was 100% in the first group and 16.6% (4 cases) in the second. Subcutaneous cellular tissue was drained in 100% of observation cases in the second group.

The duration of the drainage before implanting the endoprosthesis was 3 days in all the cases. The amount of the drainage was reduced from 86±42 ml to 30±12 ml in the first group and to 24±10 ml in the second. The duration of the drainage of the subcutaneous cellular tissue in the second group was 2 days.

The occurrence of seromas in the first group was 6 (25%). It required some additional evacuation of fluid along the drain channel, cutaneous sutures or by puncture, 4 to 12 times. The evacuation was performed once a day in the course of one week, and later according to indications.

There were three cases of seromas of the subcutaneous cellular tissue in the second group, which required evacuation from 2 to 4 times via the drain channel or cutaneous sutures. The area of placement of the endoprosthesis in the second group was monitored with the help of the ultrasound. The formation of seromas was registered in 3 (12.5%) cases. The preperitoneal cellular tissue was not drained in these observations. A puncture was performed in two cases when the estimated indicators of the cavity space showed more than 100 cm^3. 60 and 80 cm^3 of the serous fluid were obtained during the puncture; further punctures were not needed.

The research shows that the „in lay" surgery is more rarely accompanied by the formation of seromas. Most probably, the drainage of the fluid into the abdominal cavity takes place between the sutures of the peritoneum. Furthermore, we think that due to this type of surgery there is a closer contact of all layers of the prosthetic peritoneum, which is caused by the intraperitoneal pressure.

ENDOSCOPIC OPERATIONS DURING TREATMENT OF TUBO-PERITONEAL INFERTILITY

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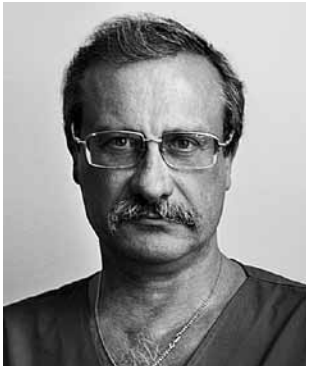

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Tubo-peritoneal infertility is a large problem in the modern gynecology. The main reasons for the formation of the peritoneal process in the organs of generation are inflammatory diseases of fallopian tubes, operations on the uterus and uterine appendages as well as the external genital endometriosis.

The objective of the research is to assess treatment of gynecological patients with the tubo-peritoneal infertility factor at the stages of fertility recovery.

Materials and methods of the research: the observation group was composed of 350 (100%) women referred for the endoscopic operative treatment. 216 (61.8%) patients had primary infertility, 134 (38.2%) had secondary infertility. The age of the observed women was 22–38. The endoscopic laparoscopy was carried out typically: coagulation of foci of endometriosis, separation of adhesions, sonographic hydrotubation with dye test of fallopian tubes, hysteroscopy. Surgical procedures were performed using the Karl Storz equipment.

The results of the research: it was diagnostically confirmed that only 210 (60%) (1 group) operated women had adhesive processes in the small pelvis as a result of a recurring inflammation of the fallopian tubes and ovaries; 140 (40%) operated women were diagnosed with the external genital endometriosis.

According to the results of endoscopic operations the patients of the first group were divided according to the endoscopic classification by V. Hulk: 25 women (11.9%) had the first stage of the adhesive process, 70 patients (33.4%) had the second stage, 69 women (32.8%) had the third and 46 patients (21.9%) had the fourth stage. The surgical procedure for the first stage of the adhesive process was salpingo-ovariolysis, stage 2 and 3 – salpingo-ovariolysis and salpingostomy, 2 patients had salpingectomy. The patients with stage 4 had salpingo-ovariolysis and salpingostomy, and it was impossible to perform salpingostomy with 6% of women. The fertility recovery with adhesiolysis was 35% in patients with the light form and 19% with the medium and heavy stage of the adhesive process in the small pelvis.

During endoscopy 140 (40%) women (second group) were diagnosed with the external genital endometriosis of different stages of endometrial injury. This group of patients had salpingo-ovariolysis, metrolysis, coagulation of foci of endometriosis, 9% had a fallopian tube removed.

After the operation women of the first group had therapy preventing a recurring formation of adhesions: physiotherapeutic measures, immunomodulation, system enzymatic therapy, correction of hormonal disorders. The second group received a gonadotropin-releasing hormone agonist therapy in the course of 3–6 months. The reproductive function was recovered in 17.8%.

Conclusions: During the treatment of a chronic inflammatory process it is necessary to take into account that in 40% of cases the infertility is connected to the external genital endometriosis and requires a pathogenetic treatment. This way, this research made it possible to confirm the high diagnostic and therapeutic value of endoscopic operations.

HAUTLYMPHOME – IHRE KLASSIFIKATION UND THERAPIEOPTIONEN

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Primär kutane Lymphome entstehen in der Haut bzw. manifestieren sich zuerst an der Haut. Anders als bei den primär nodalen Lymphomen, überwiegen an der Haut zahlenmäßig die Lymphome der T-Zellreihe (ca. 75% T-Zell-Lymphome, ca.20% B-Zell-Lymphome, ca. 3–5% Natürliche Killer-Zell-Lymphome und Lymphome dendritischer Zellen). Das häufigste T-Zell-Lymphom ist die sogenante Mycosis Fungoides, hat –außer im Tumorstadium – meist einem relativ gutartigen Verlauf. Die primär leukämische Variante, das Sezary Syndrom, hat hingegen nur eine mittlere Überlebenszeit von nur 4 Jahren. In der Frühphase müssen diese T-Zell-Lymphome von Ekzemen und der Schuppenfleche (Psoriasis) abgegrenzt werden. Für die Pathogenese dieser Tumore spielen Apoptosedefekte der Zellen eine größere Rolle als eine Hyperproliferation. Eine weitere Variante der kutanen T-Zell-Lymphome ist das großzellig-anaplastische, CD30+ Lymphom das eine gute Prognose hat und damit im Gegensatz zur der primär systemischen CD30+ Form steht. Pannikulitische T-Zell-Lymphome wachsen im Fettgewebe und die Expression des T-Zell-Rezepor-Typs (TCRalpha/beta versus TCR gamma/delta) bestimmt ihre Prognose.In den frühen Stadien der T-Zell-Lymphome sind externe (UV-Licht inclus. Extrakorporale Photopherese) und systemische immunmodulatorische Therapien (Interferone, Retinoide, Methotrexat, anti-CD25-Antikörper, anti-CD52-Antikörper, HDAC-Hemmer (zB Vorinostat, Rhomidepsin), etc. indiziert. Erst bei Wirkungslosigkeit kommt primär eine Mono-Chemotherapie(pegyliertes Doxorubicin, Gemcitabine ua) und ggfs auch die allogene Knochenmarkstransplantation in Frage.

Die primär kutanen B-Zell-Lymphome manifestieren sich meist von Anfang an als Knoten (singulär oder disseminiert) und müssen besonders von Pseudolymphomen abgegrenzt werden. Die histologischen Untergruppen beinhalten das kutane Marginalzonenlymphom und das Follikelcenter-Lymphom. Beide haben meist eine gute Prognose und systemische Therapien sind nicht indiziert. Eine auslösende chronische Infektion (zB Borrelien) muss ausgeschlossen werden. Das diffus- großzellige kutane Lymphom, das histologisch einen sogenannten aktivierten Phänotyp aufweist, hat eine deutlich schlechtere Prognose, insbesondere wenn es multilokulär am Bein auftritt, mit einem mittleren Überleben von 5–6 Jahren. Rituximab ggfs in Kombination mit einer CHOP-Chemotherapie sind hier indiziert. In Abhängigkeit vom Typ des kutanen B-Zell-Lymphoms unterscheiden sich die molekularen Aktivierungswege erheblich.

Die seltenen CD56-positiven Varianten der primär kutanen Lymphome (NK-Lymphome) haben, je nach Subtyp, eine teilweise sehr schlechte Prognose.

in brief...

Lesezeichen programmieren Krebszellen

Krebs entsteht durch Veränderungen am Erbgut der Zelle. Forscher zeigen jetzt, warum die DNA nicht alleine für das Verhalten der Zelle ausschlaggebend ist. Auch Veränderungen an DNA-gebundenen Eiweißmolekülen entscheiden darüber, ob Krebs entsteht.

Originalpublikation:
The Histone H2B Monoubiquitination Regulatory Pathway is Required for Differentiation of Multipotent Stem Cells
O. Karpiuk et al.; Molecular Cell Vol. 46;
doi: 10.1016/j.molcel.2012.05.022; 2012

in brief...

MEK-Hemmer gegen Hautkrebs

US-Forscher fanden heraus, dass eine ungewöhnliche Mutation des BRAF-Gens bei Melanom-Patienten auf MEK-Inhibitoren reagiert. Dieser Ansatz könnte künftig eine Therapiemöglichkeit für Patienten mit metastasierenden Tumoren sein.

Mutationen auf BRAF V600E- oder KIT–Genen sind in etwa 40 bis 50 Prozent der Melanome üblich. Medikamente, die BRAF V600E blockieren oder hemmen, wurden kürzlich für die Behandlung von Melanom-Patienten mit diesen Mutationen zugelassen. Dennoch gab es keine effektive Behandlung für Patienten mit Wildtyp (WT) Melanom, das diese Treiber-Mutationen nicht aufzeigt.

Originalpublikation:
BRAF L597 mutations in melanoma are associated with sensitivity to MEK inhibitors
K. B. Dahlman et al.; Cancer Discovery;
doi: 10.1158/2159-8290.CD-12-0097; 2012

Krebstherapie: Parvoviren nach Mass

Parvoviren werden zur Behandlung bösartiger Hirntumoren erprobt. Da sie jedoch auch normale Zellen, ohne Schädigung, infizieren können, geht bei der Therapie ein Großteil der Viren verloren. Forscher sorgten nun dafür, dass die Viren zunächst ihre Infektionsfähigkeit verlieren.

Originalpublikation:
Retargeting of Rat Parvovirus H-1PV to Cancer Cells through Genetic Engineering of the Viral Capsid
Xavier Allaume et al.; Journal of Virology,
doi: 10.1128/JVI.06208-11; 2012

Krebsstammzellen: Existenz belegt

Wissenschaftler haben jene Zellen in Tumoren entdeckt, die für ein erneutes Wachtum verantwortlich sind. Drei Studien haben bestätigt, dass das Tumorwachstum durch sogenannte Krebsstammzellen hervorgerufen wird.

Originalpublikationen:
Defining the mode of tumour growth by clonal analysis.
Beck et al.; Nature;
doi:10.1038/nature11344, 2012

Lineage Tracing Reveals Lgr5+ Stem Cell Activity in Mouse Intestinal Adenomas.
Schepers et al.; Science;
doi: 10.1126/science.1224676

Krebsentstehung: Suche im Mutationsdschungel

Wie entsteht Krebs? Das ist bis heute noch nicht komplett entschlüsselt. Wissenschaftler haben eine Forschungsmethode entwickelt, um präziser herausfinden zu können, welche Kombination von Genmutationen tatsächlich zu Krebs führt.

Originalpublikation:
A mouse model to identify cooperating signaling pathways in cancer
Monica Musteanu et al.;
Nature Methods,
doi:10.1038/nmeth.2130; 2012

Osteoporose: Knochenschwund für alle

Osteoporose ist häufiger bei Frauen, bei denen die Menopause früh einsetzt. Doch auch viele junge Frauen haben eine zu niedrige Knochendichte. Therapien sind für diese Frauen nur Off-Label möglich.

Dr. rer. nat. Christine Hutterer, http://news.doccheck.com/de/article/210268-osteoporose-knochenschwund-fuer-alle/