ROLE OF CONNECTIVE TISSUE DYSPLASIA IN THE FORMATION OF COMPLICATED SURGICAL DISEASES OF THE KNEE IN CHILDREN

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ABSTRACT — The aim of this study is to establish the connection between the development of complications in surgical pathology of the knee joint and the presence of the patient connective tissue dysplasia.

MATERIAL AND METHODS

The study included 183 children with confirmed surgical pathology of the knee at the age of 4 to 17 years who were treated in the clinic of traumatology and orthopedics Children's Regional Clinical Hospital of the city of Tver. The main group consisted of 98 patients with complicated diseases of the knee joint, the control group consisted of 85 children with a favorable course of the disease. The structure of the knee joint disease in patients examined presented in the diagram (fig. 1).

Analysis of clinical and anamnestic data included detailed examination of genealogical, biological and socio-environmental factors.

RESULTS AND DISCUSSION

A survey of patients revealed that patients with complicated course of the disease more often than in the control group were diagnosed phenotypic signs of connective tissue dysplasia (table. 1).

It was found that the children of the main group more frequently diagnosed malformations of the heart (4.32 times), prolapse of the mitral valve I–II degree (18.32 times), extra chords of the heart (3,18 times). Disturbance of vision in this group of patients,

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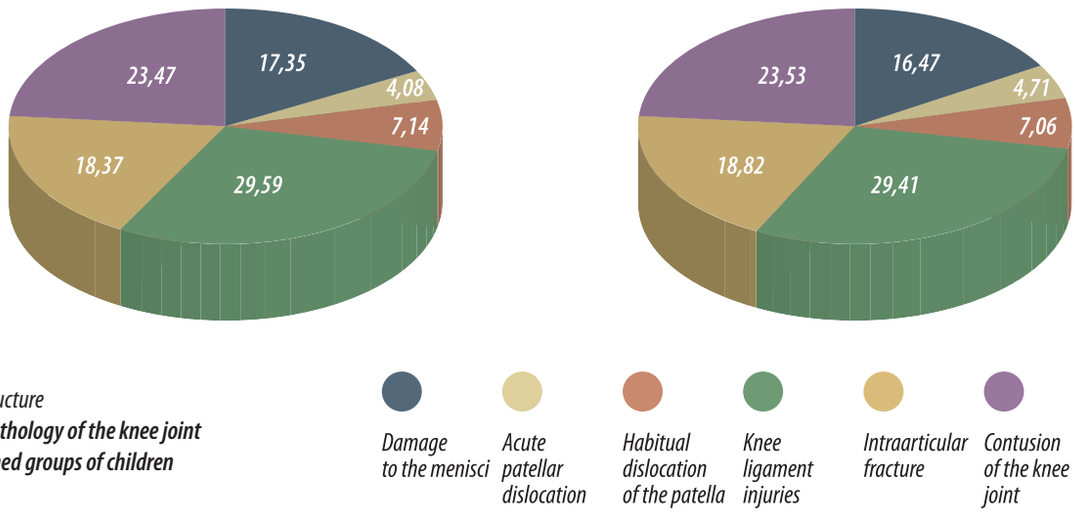

Fig. 1. *The structure of surgical pathology of the knee joint in the examined groups of children (1°=3,6%)*

Table 1. *The distribution of children surveyed by the presence of secondary phenotypic signs of connective tissue dysplasia (abs. %)*

Sign	Main group n=98		Control group n=85		Significance of differences
	n	%	n	%	
Clinodactyly	71	72,45	4	4,71	0,001
Eye hypertelorism	12	12,24	1	1,18	0,001
Protruding ears	37	37,76	13	15,29	0,001
Expansion of the first interdigital space of the foot	42	42,86	9	10,59	0,001
Changes in the skin (dark spots, lesions of depigmentation)	88	89,8	19	22,35	0,001
Stretch marks on the skin	15	15,31	4	4,71	0,05
Malocclusion	29	29,59	9	10,59	0,001
Low line of hair growth on the forehead and neck	22	22,45	7	8,24	0,01

compared with the control, occurred most 2.54 times, including myopia 2.6 time ($p < 0.01$).

In a study of the state of the musculoskeletal system established significant differences between the study and control groups of patients, as shown in table 2.

In patients with complicated surgical diseases of the knee changes, inherent to connective tissue dysplasia were installed and at the biochemical level. Patients of the main group noted a decrease in quartile range (25–75%), alkaline phosphatase level values on the background of increase in the overall spread of values in this indicator compared to the control group. In this case the median concentration of alkaline phosphatase in children with complicated disease was lower than in the control group. In children, the main group showed an increased fibrinogen level range, sialic acids, magnesium of erythrocyte and reduction of matrix metalloproteinase I and matrix metalloproteinases IX in serum. In the blood serum of children with complicated disease median level of the C-terminal telopeptide of collagen type I (CrossLaps) was lower than in the control group.

Thus, the study revealed that children who have surgical knee joint diseases have a complicated course, observed phenotype, cardiac, visceral and biochemical signs of connective tissue dysplasia. In our opinion, connective tissue dysplasia should be referred to one of the major risk factors leading to complications of the disease. The data should be considered when choosing the volume of diagnostic and therapeutic interventions in patients with traumatic injuries and surgical diseases of the knee joint.

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Table 2. *Features examination of the musculoskeletal system in children with surgical pathology of the knee joint*

Sign	Main group n=98		Control group n=85		Significance of differences
	n	%	n	%	
spinal path ology	94	95,92	24	28,24	0,001
limb deformity	84	85,71	14	16,47	0,001
chest deformity	16	16,33	5	5,88	0,05
asthenic constitution	74	75,51	13	15,29	0,001
joint hypermobility	53	54,08	5	5,88	0,001
longitudinal flat feet	91	92,86	15	17,65	0,001
cross flat feet	71	72,45	11	12,94	0,001
combined flat feet	81	82,65	16	18,82	0,001
adduction of the forefoot	27	27,55	1	1,18	0,001
valgus deformity of the first toes	56	57,14	13	15,29	0,001
hollow foot	10	10,2	1	1,18	0,001

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