SURGERY

THE PREVALENCE OF COGNITIVE IMPAIRMENT IN PATIENTS WITH PROXIMAL FEMORAL FRACTURES

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ABSTRACT

Introduction: Fractures of the proximal femur are becoming more common. Through the data, this medical problem became a humanitarian, economic and social has imposed the first evidence-based review in our clinic. It is necessary to find out if there is a causal relationship between postural instability, hip fractures and cognitiv impairment.

Methods: Clinical data were recorded, removing any information about personal identity. Consecutive patients aged over 65 years were included in the study. They were admitted during the period 01.01.2021-31.12.2021 and had primary fractures of the proximal femur caused by low energy trauma produced by falling from the same level.

Results: 360 cases with a mean age of 78.73 years and having a proximal femoral fracture were analyzed. The prevalence of cognitive impairment was 27.22%, significantly undifferentiated by the type of fracture or age group. The relatively small age of the batch of 72-100000 indicates the existance of a socio-economic problem besides the high medical problems raised by a major fracture occurring in the context of comorbidity of 86.36%.

Conclusions: The existence of proximal femur fractures in elderly people with certain cognitive involution creates personal dramas and socio-medical problems that require complex studies.

Keywords: Alzheimer's disease, Dementia, Fracture, Hip fracture, Older person.

INTRODUCTION

The incidence of proximal femur fractures is increasing in Romania and around the wold. This "boom" in hip fractures has grown in the context of increased life expectancy an is associatted with a boom in cognitive deficits. after 65 years of age, falls at same level are more common, cognitive deficit increases from 3% (65-74 years) to 47% (over 85 years) and the prevalence dementia doubles every 20 years (Friedman et al., 2010).

There is an increase in life span of people with decreased physical activity, low food intake, reduced body mass index (BMI), sarcosis and low bone density, chronic drug users, smokers and alcohol users with increased pictorial and falls on the same level.

The SENECA study (de Groot et al., 2004) linked the self-perception of helth to healthy aging and lifestyle. Inactivity, smoking and iandequate diet increase the risk of death (Yamamoto et al., 2018).

The medical literature mentions cognitive and visual disturbances, functional limitations with walking difficulties, arithmias and orthostatic hypotension among factors that increase postural instability. Falls on the same level are potentiated by sedative, hypnotic, neuroleptic, antipsychotic, non-steroidal anti-inflamatory, antihipertensive and cholinesterase inhibitors (Tseng et al., 2013). The link between mental

state and the rhytm of falling older people remains controversial for those with a MMSE score over 15 (Juola et al., 2015) but ovious for those with an MMSE score below 10 with dementia (Chenocweth et al., 2009).

The evolution of elderly patients is the burden of complications with unfavorable developement in 50% of cases. Deaths reach 18-33% of cases in the first year after hip fracture.

From the point of view of current data, this medical problem becomes a humanitarian, economic and social problem (Sandu, 2013; Sandu 2021a; 2021b). The increased incidence of these cases reuired the first evidence-based analysis in our clinic. This analysis highlights the prevalenceof cognitive impairments in the medical recordsof elderly patients with fractures of proximal femur (femoral neck fractures, petrochanteric fractures and trochanterodyapysis). It is mecessary to find out if there is a causal relationship between cognitive impairment, pictorial instability, mechanism, evolution and prognosis of hip fractures.

METHODS

The study used the database of Orthopedics-Traumatology Department of a hospital that serves a population estimated at 500,000 inhabitants.

Was recorded: age, sex, comorbidities, including impaired cognitive status. Any information related to your personal identity has been removed.

They were included in the study consecutive patients admitted during 01.01.2021-31.12.2021, aged 65 and primary fractures of the proximal femur caused by low energy trauma produced by falls on the same level. They excluded patients with fractures caused by high energy and readmissions after settlement at other times or other services.

RESULTS

Of the 435 patients with proximal femur fractures, 360 patients were enrolled for the study.

The age was oscillated between 65 and 98 years distributed in three age groups: 65-74 years with 87 cases (36 men and 51 women), 75-84 years with 167 cases (48 males and 119 females), 85-94 years of 103 cases (22 men (8-14-0) * and 84 women (27-52-2) * and 3 cases over 95 years . Women's hospitalization of 2.39 times more often (254 women: 51-119-84 * and 106 men: 36-48-22 *) are correlated with the existence of a larger female population at older ages. There was a women / man ratio 2.20 in urban and 2.89 in rural areas.

The average age was 78.23 years (69.5 to 77.45 - 88.11 to 96.33) * 75.15 with the limits years (mean femoral neck) and 80.35 years (average fracture pertrohanteriene). The difference of 5.2 years of pertrohanteriene fractures and the group of femoral neck support classical claims.
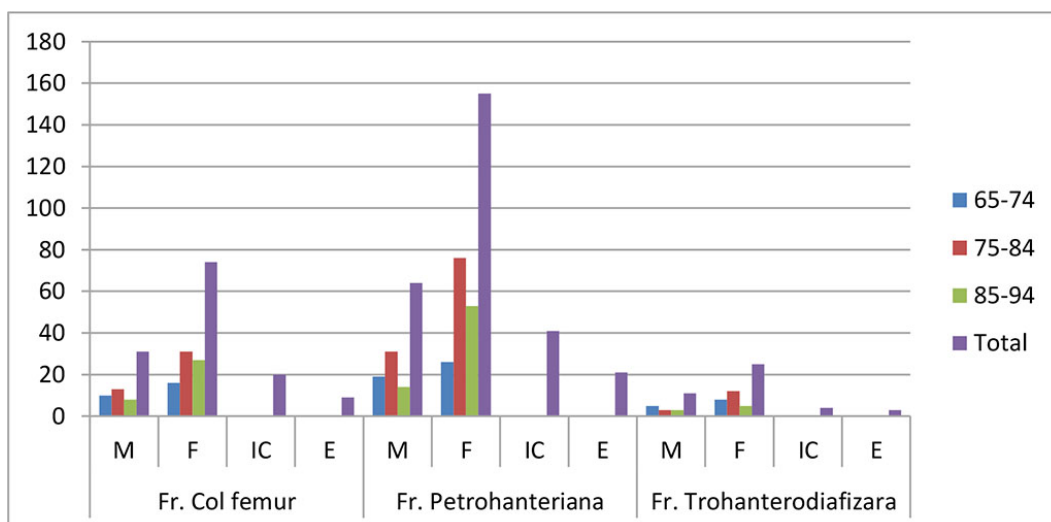

Figure 1. Age

Age	Neck femoral fractures				Petrchanteric fractures				Tohanterodyafizar fractures				
	M	F	IC	E	M	F	IC	E	M	F	IC	E	
65-74													
75-84	**Case 360**				**Men 106**				**Women 247**				
85-94													

Figure 2. Average age per group and global

The data can be considered as a test trust and validation of the study results. The patients were from urban 68.61% (247 cases: 77 men and 170 women) and 31.38% of the area (113 cases, 29 men and 84 women). The number of patients in urban areas is 2.18 times higher. The high proportion of fractures from urban can be induced by a sedentary lifestyle, with well-dressed man, quiet, tired and depressed. Scared by the thought of death from heaven, future patient hid in the house with tension and instability, irritability and insomnia, diabetes and stress, indigestion and bloating, viruses and cigarettes, amassing a huge defict of 25OH vitamin D (Casey et al., 2019).

Hospitalization ranged between 1 day and 60 days with an average of 13.23 days.

The average length of 13.23 days (12,32 - 15.41 days) and especially mortality of 5% (18 cases: 9 men and 9 women) during hospitalization, reflects the seriousness of the fracture fragility patients and difficulties the recovery of the fracture lethality can reach 20% in the first year (Kwan & Straus, 2014).

Falls occur as a result of hazard, cognitive and visual imperfections, orthostatic hypotension at change of position and medication. Their frequency increases steadily after 65 years and may interest up to 30% of the conyingent. Many falls, hip fractures followed by (12-42%), are produced in individuals having a limited mobility and fear of falling (Litwin et al., 2018). It claims that Alzheimer's disease increase the risk of falls by 1.2 times for each point MMSE lost between 30 and 22. The stiffness values, periods of wandering and agitation influence the direction of the fall and "chance" to do a hip fracture.

The prevalence of cognitive impairment was of 27.22% (98 cases: 41 women and 57 men) with uneven distribution: 38.67% to 22.44% for men and women. A more serious damage was found in 66.33% of them.
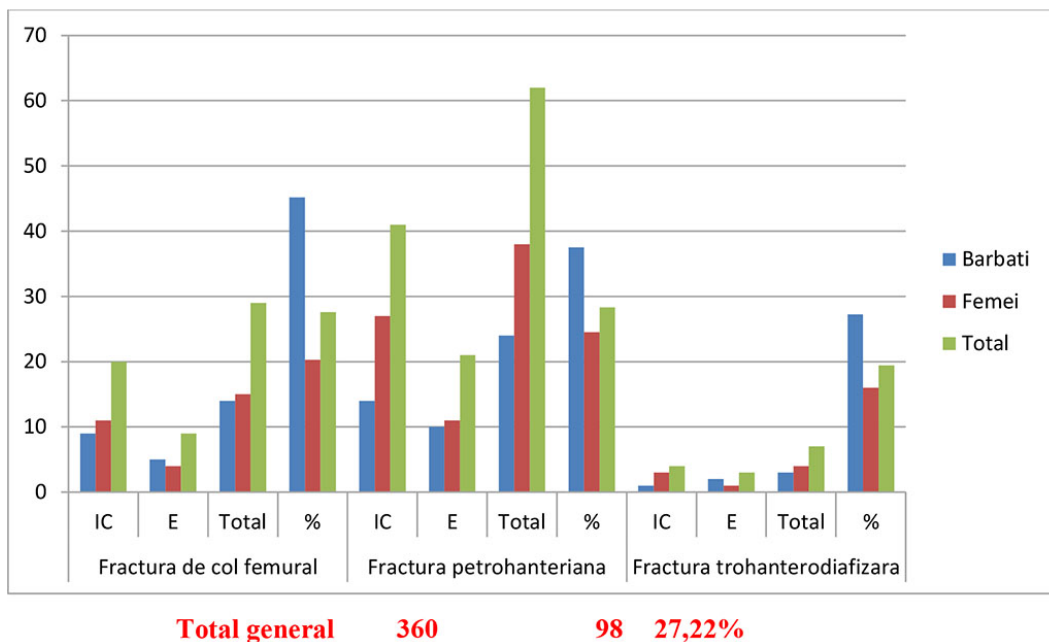

Total general   360   98   27,22%

Figure 3. Distribution of cognitive impairment

The presence of *dementia* and *Alzheimer's disease* has been certified to 18.05% (65 cases: 24 women and 41 men) of the patients analyzed, representing: 22.64% 16.14% of men and of women. For this difference can be invoked action of smoking, incriminated in diminishing the function of execution and problem solving, visual-spatial capacity, attention and memory, which leads the factor risk to 1.79 for those with Alzheimer's disease and vascular dementia. Cognitive impairment in 27.22% of cases reflects brain aging involution highlighting participants achieving static and dynamic postural balance in the elderly with decreased activity levels accompanied by sarcopenia. Distribution of dementia and Alzheimer's disease (18.05%) very different urban and rural (19.43% to 15.04%) supports the influence of environmental factors in cognitive deterioration. The complications of immobility and increases the development of Alzheimer's disease by 30% raising the three-month mortality.

Cognitive impairment has reached 24.69% (61 of 247) to those from 32.74% in the urban and rural derived from (37 of 113). The diagnosis of Alzheimer's disease or dementia reached 19.43% (48 of 247) in the urban and 15.04% (17 of 113cazuri) in the rural areas.
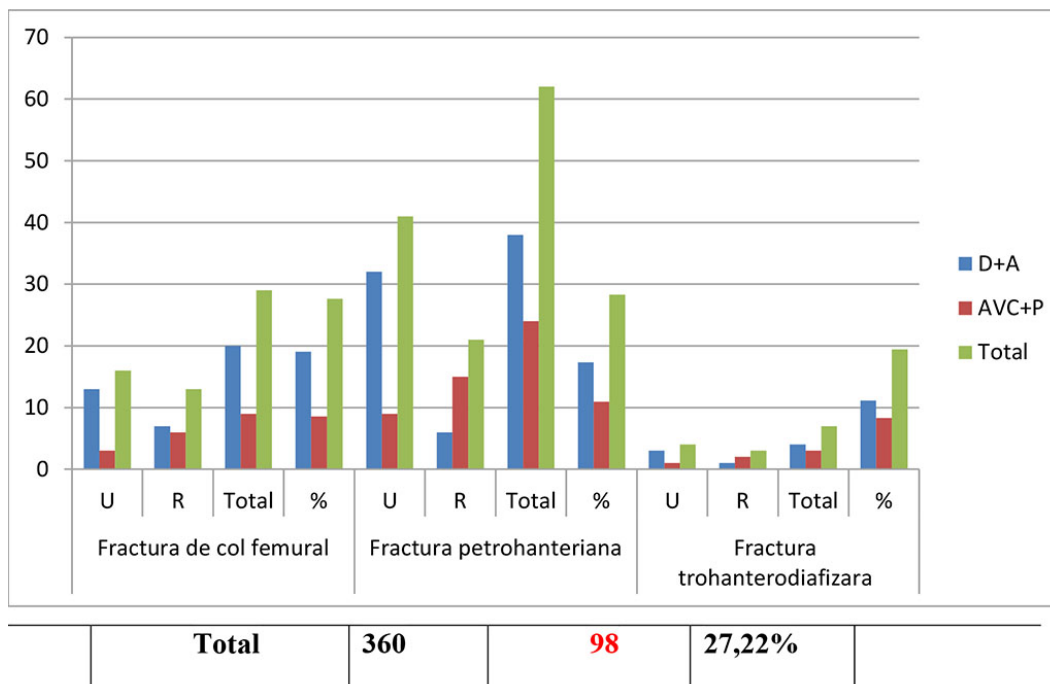
Total	360	98	27,22%

Figure 4. Distribution of cognitive involution in urban san rural areas

Cognitive impairment was recorded and the sequelae after stroke, pseudobulbar syndrome, Parkinson's disease or parkinsonian phenomena in other cerebrovascular disease. In the studied group there were 9.16% (33 cases) or acute stroke sequelae thereof: 16.03% male (17 cases: 6 + 6 + 5) * 6.29% and women (16 cases: 2 + 7 + 7) *. This type of damage was found in 3.74% of urban and 20.35% of those residing in the village. Elderly dementia occurs after micro-infarction small blood vessel atherosclerotic (multi-infarct dementia). The hight share (20.35%) of those with stroke and cognitive impairment compared to those from rural to urban (3.74%) suggests a difference in monitoring blood pressure and other risk factors. The changes are associated with the reduction of central muscle followed by slower movement, reducing the length of oscillating stroke member, accompanied by the doubling of the frequency steps of the period of support. Stride length and walking speed increased risk of falls and walking in tandem is a predictor of fractures over the next three years.

Mental balance and stability are positively influenced by a negative vitamins and folic Ac peripheral neuropathy and musculoskeletal problems in the context of serum parathyroid hormone creşterii (Horvat et al., 2016).

The reduction of bone mass and strength of cortical raises risk factor for hip fracture by 19%. Documented osteoporosis was found in 11.66% (42 cases 7 - 15 to 20 *) and we can say that elderly femur became vulnerable to trivial trauma, reduced the "socket" fixation material and complicated period of functional recovery (Hofeldt, 1987). Demonstration habitat depending on the age necessary to supplement the intake of vitamin D for decreasing the rate falls and their consequences (Bisschoff-Ferrari et al., 2010). Regardless of the type, osteoporosis is an independent predictor of fracture (Knauf et al., 2019). Each fall with a standard deviation increases the risk 2.6 times reaching risk 8.5 times higher for women with osteoporosis.

There are significant differences in the Barthel Index, cognitive impairment, demneţă, osteoporosis, Parkinson's disease, benzodiazepines, antidementiale, changes in renal function, heart rate, ambulance (Jiménez-Mola et al., 2018). We are seeing a vicious circle in which the inactivity induce weight reduction and muscle tone decreases in the tension of the composite beams each side of the limb. Reducing tension increases the radius of curvature of the long bones requiring remodeling and enlarging with increasing diameters medullary canals of long bones causing osteoporosis fragile cortices thickness reduction (Sîrbu et al., 2017). The reduction causes decrease of periosteal circulation "shell" fiber reduces the tensile strength of the areas subject to efforts priming occurs where the fracture. "Slowness" that occurs postural muscles allow greater trochanter fall on what causes hip fracture. A faster response to postural muscles determines the buttock fall followed by pelvic fracture (previous spring) with another chance evolution and survival.

Sarcopenia is usually accentuated by a lower BMI. A decrease indicates an increased risk.

Increasing w*eight* is accompanied by a small reduction in risk. In Alzheimer's disease weight loss is attributable to the inability to prepare food, eating, sensory disorders, depression concomitant energy requirements, social factors and comorbidities. Both the proximal femoral fractures and cognitive impairment appeared during the existence of other diseases in 86.38% (311 cases), heart rhythm disorders

were present in 55 cases (15.27%) representing 13 men (3-55) * and 42 women (6-21 - 15) *. They affect primarily the age group 75-84 years. The medical literature correlated with the incidence of hip fractures pointing out that the risk of fracture etiology of dementia in Alzheimer's disease remains constant regardless of the form (Friedman et al., 2010).

Cardiopathies were present in 86 cases (23.88%): 21 males (7-10 - 4) * and 65 women (9-33 - 23) *. Part of the risk of falling is attributable to cardiovascular disease untreated, accompanied by parkinsonism, fluctuations knowledge, visual hallucinations. Arrhythmias (15.72%) and heart diseases (23.88%) increases the risk of accidents vasulare brain (embolism or bleeding). Hypertension was recorded in 156 cases (43.33%): 36 men (14 - 19-3) * and 120 women (30 - 82-8) *. Most cases (77.92%) are women (120 of 156). About two-thirds of cases of hypertension (60.48%) were found in the decade 75-84 years (101 of 167) where hypertensive women reach 68.90% (82 of 119).

Anemia was found in 33 cases (9, 16%): 11 men (5-4-2) * and 22 women (4 - 21-6) *. It was clear that there megaloblastelor involving folic acid deficiency and vitamin B12. These deficiencies contribute to cognitive aging, but remain present inconclusive evidence (Horvat et al, 2016). Post-fractures anemia and post-intervention potentiate postural hemodynamic changes, index of highlight behavioral symptoms of dementia and greatly influece rehabilitation and quality of life.

Diabetes was found in 33 cases (9.16%) 5 males (2 - 2 - 1) * and 28 women (10 to 12 - 6) *. Chronic hepatitis was diagnosed in 24 patients (6.66%) 7 men (3-3 - 1) It and 17 women (15 - 0-2) *. The presence of most cases in the first decade analyzed (21 of 24) suggests the possibility of impaired function by consuming alcohol withdrawal causing some cognitive alterations that reach for this decade, a rate of 33.33% (29 cases out of 87).

The coexistence of a hight number of *chronic diseases* is increased from 83.9% in the decade 65-74 years at 91.50% over 85 years.

Comorbidities recognize the same risk factors, but mutually potentiate each other directly or through means of treatment (Tseng et al, 2013) influencing the development of the occurrence of hip fractures from falling.

It comes as two of five patients with hip fracture have a cognitive impairment (Bickel et al., 2018). It is a reality that must be talked about. Diagnosis remains poorly documented and requires continuous medical care. Are common dehydration, electrolyte disturbances, urinary tract infection. Smoking causes or aggravates respiratory disease, deficiency of vitamin D and by isolation in the apartment, influence bone density and muscle tone. Treatment of these patients have certain features that influence the evolution of the fracture, the survival rate and quality of life post fracture. The correction of vitamin D deficiency reduces muscle weakness, correct the course, decreases the rate falls, increase the titer of serum alkaline phosphatase and favorizerază increase bone mass recovery. Physical exercise and a positive influence on the elasticity of the vessel walls vascular endothelial function, reduced blood pressure and decreases the risk of acute vascular events (stroke and myocardial infarction).

Effect of physical exercise on falls frequency is discussed. Positive impact on daily activities in patients with multiple co-morbidities and interval between the time of hospitalization and surgery. The negative effects of inactivity and obesity induced by treatment with statins are amplified in terms of vitamin D deficiency, reduced well-being, mobility, life expectancy, increase the risk of death by cardiovascular complications (Liu et al., 2019).

Dementia, even in the early stages is a risk factor changes and some medical services programs of physical activity, because it is conducted safely and reach the goal (Jeon et al., 2019).

It is known that older people are traumatized waiting time in emergency departments of hospitals, especially if they are brought by ambulance. They feel the need for timely information to limit environmental effects "hostile" and avoid the depression (Stein-Parbury et al., 2015). In postoperative pain management is difficult (Fry et al., 2016) which adversely affect recovery. During this period there were numerous complications: delirium, pressure ulcer, operative wound infections, urinary and respiratory infections with high mortality (Ciobotea et al., 2016; Shibasaki et al., 2018; Sîrbu et al., 2019,).

For patients with cognitive involution, th role of the family is important. Their family know the behavior of these patients and they can help medical team recovering the pacient with fracture and cognitive involution (Fry et al., 2015).

Agitation and falls are reduced if care staff is experienced and familiar with such patients (Chenocweth et al., 2009).

Depression is associated with reduced activity and osteoporosis. It differs hard apathy increases the risk of dementia and Alzheimer's disease, especially when using antidepressants.

Antipsychotics, anxiolytics and inhibitoriii cholinesterase may induce syncope and bradycardia accompanied by falls and hip fractures.

Delirium, another clinical events undervalued, has significant effect in assessing the present state and evolution of the injured elderly. Often considered as a defining element of withdrawal, he may be the result of psychological trauma during hospitalization, perioperative ion imbalance, anemia and transient or persistent hypotension.

In the postoperative period can involve 35-65% of cases can persist for months and often exposes a dementia or Alzheimer's disease. He has character predictor of admission in a nursing home and mortality at one year (de Jong et al., 2019). Cognitive decline worse or causing extrapyramidal highlights motoneuron destruction apraxia is exacerbated by stress. Those with parkinsonism frequently change their steps a little boost and less than 6 feet per minute forecast fall followed by a hip fracture.

Cognitive impairment limitsfunctional recovery and return to the spre-accident stages. Only a proper management of this life-saving leads to a good functional recovery, reduce material costs and social (Păduraru et al., 2019).

The 18 deaths during the study: 9 men and 9 women illustrates the severity of the condition occurs in patients with heavily loaded pathological. Pre-existing pathology is a risk factor for falls unforced, followed by fractures at the same level. The significant difference between the deaths of men with pertrachanteric fracture (7.81%) and the deaths of women (2.7%) coincides with a significant difference in cognitive involution (21.87% to 9.03%). In men the most common deaths are recorded in the age group 75-84 years (10.93%) and the most frequent deaths in women are in the age group 85-94 years (3.70%) which overlaps over the difference in life expectancy between the sexes,

CONCLUSIONS

Dementia and hip fractures are common in the elderly and is associated with high morbidity and increased mortality in hospital in the first three months it reaches even 30% of cases and one year. At 5 years 50% of the cases died. The existence of proximal femur fractures elderly with definite involution congnitivă create personal dramas and socio-medical problems that require new studies complex.

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