



EPIDEMIOLOGY AND SOCIAL BURDEN OF THE FEMORAL NECK FRACTURES

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ABSTRACT

The incidence of femoral neck fractures, one of the most common traumatic injuries in the elderly increases continuously due to the ageing of population on the planet and urbanization. In terms of global economic instability, increasingly more funds would have to be paid by the health systems for treatment of those fractures. Probably it will be necessary to revise and optimize some current therapeutic standards.

Key words: femoral neck fracture, intracapsular fractures, osteoporotic fractures, hip, epidemiology,

The incidence of femoral neck fractures, one of the most common traumatic injuries in elderly patients increases continuously among the ageing population on the planet [1, 2].

The UN Human Rights Commission in 1999, has proposed to use the term “older people” instead of the word “elderly” [3]. Older people are the fastest growing age group in the world and the annual number of hip fractures will grow with the continued ageing of population. Even if age-related incidence of hip fractures continues to grow with unchanged rates, the number of hip fractures worldwide is expected to increase from 1.7 million in 1990 to 6.3 million in 2050. Assuming that the age-related incidence will increase by only 1% per year, the number of hip fractures in the world will reach the figure of 8.2 million in 2050 [2].

Femoral neck fractures and pertrochanteric fractures are of approximately equal incidence [4, 5] and together make up over 90% of the proximal femur fractures and the remaining 5-10% are subtrochanteric. According to more recent research, half of the proximal femur fractures are intraarticular fractures of the femoral neck [6, 7].

Most of the hip fractures occur after a fall. It is estimated that the lifetime risk of hip fracture was 23.3% for men and 11.2% for women [8].

The femoral neck fractures are rare among young people – they are only 2% in patients under 50 years of age [9]. The incidence increases with age, and after 50 years is doubled for each subsequent decade, and is 2-3 times higher in women than in men [5, 10]. 80% of hip fractures occur in women and 90% in people older than 50 years [2]. They are twice or three times as common for white women as for black women [4, 5]. The overall annual age-standardized rates of both femoral neck fractures and trochanteric fractures are higher among white women than among black women (4.33 vs. 1.91 and 4.23 vs. 1.54 per 1,000, respectively) [6].

Age-adjusted rate of hip fractures is highest in Scandinavian and North American populations and is lower in Southern European countries. Hip fracture risk is lower in Asian and Latin American populations and is lower in rural areas than in urban areas [2].

The increase in incidence of hip fractures with increasing the age is a result of an age-related decrease of bone mass in the proximal femur as well as of the age-related increase in the incidence of falls.

Study on femoral neck fractures in New England revealed that the incidence among white women aged 65-69 years was 2,2 per 1000 per year. This rate increased up to 31.8 per 1,000 per year at the age of 90-94 years. With white men aged 65-69 years, the rate was 0.9 and rising up to 20.8 for the 90-94 age group [11]. In the UK, a rate of 1.6 (per 1000 per year) was registered for women aged 65-69, and 32.8 for age group 90-94, and 0.7 and 14.0 for men respectively [12].

Dhanwal [13] reported that, there are wide racial and geographical variation in the incidence of femoral neck fractures worldwide, with the highest incidence in industrialised countries, compared with developing countries. The rate among the black population is lower than that in white population in all age groups [11]. Among the population of Asia, lower incidence rates of femoral neck fractures are registered. In Japan, the frequency is 99 (per 100,000 per year) in men, and 368 in women. In 1990, the age-standardized rates of hip fracture in China were 87/100 000 for women and 97/100 000 for men. The highest incidence rate in Asia is registered in Singapore: 152 (per 100,000 per year) in males, and 402 in women. In Latin America, the frequency is also lower. In 2005 in Mexico, rates of 98 (per 100,000 per year) in men, and 169 in women were reported. In Argentina, the frequency is 137 in males, and 405 in women. In Africa, the incidence is 43,7 (per 100,000 per year) in men, and 57,1 in women [13].

The incidence rate in North America is the highest in the world: 201 (per 100,000 per year) in men and 511 in women [14]. The rate in Europe varies from Northern to Southern Europe, with the highest incidence in Sweden and Norway (399 per 100,000 per year in men and 920 in women) and the lowest in France and Switzerland (137 per 100,000 per year in men and 346 in women). These variations are explained by the differences in ethnic and climatic characteristics, as well as by the differences in living standards [13].

Increased frequency of these fractures has been observed over the years, combined with periods of declines.

In the United States, the age-adjusted fracture incidence rate has increased over the period from 1986 to 1995 and then gradually reduced during the period 1995-2005. At the same time, in Denmark, the incidence of fractures of the proximal femur is decreased dramatically by 20% between 1997 and 2006 among the population aged over 60 years, which is related to the use of anti-osteoporotic therapy [15].

In Germany, the incidence continues to increase. Marked trend toward a slight decrease in the period 1997-2004 has been observed in Finland. In Sweden, the age-adjusted incidence rate among the population over 50 years of age has decreased, but the absolute rate of these fractures has increased among women over 90 years of age [16,17].

Institutionalized geriatric patients are exposed to a higher risk of femoral neck fracture. The annual incidence in New Zealand among the elderly living in their own home is 348 per 100,000 and is 10 times higher, 3975 respectively, among those older people living in an institution or a nursing home [18].

Patients with impaired cognitive status are at increased risk of femoral neck fracture. A significant increase in the incidence was observed when comparing the population of a mental hospital with the rest of the population in Sweden. The relative hip fracture risk was seven times higher for women and 12 times higher for men with mental disorders [19].

ECONOMIC ASPECTS

Worldwide, the number of older people is expected to double by 2040, and the increase of hip fracture incidence

rate is likely to become a substantial burden for the public health systems [20]. The proximal femur fractures are the most devastating result of osteoporosis. They require surgical treatment, often lead to disability and are associated with high mortality rate [20].

Currently, the hip fractures represent a major economic burden on the health care systems in the world. In the United States, adjusted first-year costs associated with hip fracture for patients aged 65 years or older were US \$ 15,196, compared with the costs of US \$ 6701 for vertebral fracture [21]. In 1997, an assessment of direct and indirect annual costs for hip fracture treatment in the world were \$131,5 billion [22]. In 2005 in the United States are registered 2 million fractures with patients over 50 years old, costing a total of \$17 billion for medical care. From all registered fractures, 14% were fractures of the proximal femur, but they take up a huge share of the 72% of the total value for the treatment of fractures. The total allocation of costs according to the type of treatment was 57% for hospitalized patients; 13 percent for outpatient treatment and 30% for long-term inpatient and institutional treatment. From the total cost of fracture treatment, 89% account for patients over age of 65 [23].

CONCLUSION

The increasingly aging population of the world will have to face the challenge of coping with the growing number of femoral neck fractures and with the increasing economic burden they represent for the healthcare system in the conditions of economic uncertainty in the future.

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Please cite this article as: Filipov O. Epidemiology and social burden of the femoral neck fractures. *J of IMAB*. 2014 Jul-Sep;20(4):516-518. doi: <http://dx.doi.org/10.5272/jimab.2014204.516>

Received: 30/04/2014; Published online: 02/07/2014



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