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Research paper

Socio-medical aspects of hip fracture among elderly population in Belgrade, Serbia

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ABSTRACT

Hip fracture has epidemic character in the world, including Serbia, which is significant for its medical and social consequences on the one hand and economic on the other, taking into account the increasing number of elderly in Serbia. Socio-medical aspects of hip or femur fracture were researched on the territory of Belgrade, within two groups of patients, younger (age 20–64) compared to elderly (age 65+).

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1. Introduction

Hip fractures have an epidemic character in the world, so we have assumed it is the case here in Belgrade, capital of Serbia, a country in Southeast Europe.

Until now this matter has not been researched here from the epidemiological i.e. social-medical aspect, so there was an interest to research epidemiological and social-medical characteristics of our population with hip/femur fractures on the territory of Belgrade, capital of Serbia. There are no data on the total number of hip/femur fractures in people in Belgrade, there are only records about fractures treated in hospitals. Upon completion of hospitalisation, hospitals send invoices for medical treatment to the Institute for public health in Belgrade and to the Republic institute for health insurance. Republic institute for health insurance is territorially organised according to regions, where the Institute for public health in Belgrade is keeping the detailed database on each patient separately for the territory of Belgrade and for a great number of parameters (almost 80 parameters). Republic institute for health insurance is also regionally organised and the Belgrade branch is a separate unit. Precisely, for our research total costs of treatment, medication costs, implanted material costs and costs of rehabilitation in rehabilitation centres were significant for each individual patient. Before 2008, no detailed data have been kept

about the expenses of health insurance for each individual patient, due to a lack of adequate information system. There were approximate and flat data on different expenses. Since 2008, the Republic institute for health insurance has been publishing these data on its website, under “statistics and reports”, “financial reports” and “hip endoprosthesis replacement”. For the purpose of illustration, there are general data that during 2007, on the entire territory of Serbia, approximately 8000 hip endoprosthesis have been implanted but without other detailed data (etiology, type of endoprosthesis, etc.) [1].

The interest was to discover potentially treatable conditions, i.e. factors on our territory, whereby falls can be prevented and according to the literature, there is one third of them and to prevent consequences from falls [2–5]. In 1% of those who fall, hip fractures occur, and about 5% suffer from fractures in other localisations (femur, humerus, ribs or hand wrists). More than 90% of hip fractures are caused by falling, and with increase in the number of the elderly, they gain an epidemic character [4,6–10].

2. Purpose of the study

The purpose of this study was to examine socio-medical aspects of hip fractures in the elderly, in the city of Belgrade during 2007; socio-medical aspects, the number and structure by age and by place of residence, cause of injury, presence of comorbidity, type of treatment, length of bed stay, the outcome of treatment; possible differences between groups of young and elderly patients with hip fracture and point out many specifics of the gerontological population.

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3. Patients and methods

A retrospective and descriptive study was conducted over a period, from 01.01.2007 to 31.12.2007. Patients with hip fracture were studied – Belgrade residents aged 20 and above. The tested population from Belgrade is not a statistically representative sample of the entire Serbian territory.

The inclusion criterion was:

- (1) to be a citizen of Belgrade (i.e. to separate from the total number of patients with hip fracture on the territory of the city the inland patients who have been hospitalised and treated in Belgrade for a hip (femur) fracture);
- (2) to be between 20 to 64 years of age (group with younger patients) and 65 years and older (group with older patients);
- (3) to have an acute hip i.e. femur fracture (code S 72 according to ICD 10) [11].

Due to the number of registered comorbidity in the elderly, there is an observation that a great number of hip fractures are placed under codes S72 and S72.9 while in fact they are hip fractures, mostly with the elderly (we have assumed that our older patients have been treated from osteoporosis and that, according to the data from literature, atypical femur fractures different from the proximal are more frequent in treated older persons), and that with the fracture of distal femur S724, there is a bigger number of interventions with the elderly in relation to younger persons (30 vs 18), i.e. the entire significance of the problem. All the sub-codes of the S72 diagnosis have been taken into consideration (proximal femur as well as parts of femur different than the proximal one), i.e. all the resident patients treated in hospitals on the territory of Belgrade during 2007.

The source of data have been invoices for hospital treatment from the database of the Institute for public health in Belgrade, i.e. hospital, unit, sex, age of persons, resident municipality, main diagnosis and name of diagnosis, second and third diagnosis, number of days in bed, type and name of surgery, outcome of the treatment, injury, external cause of injury, rehabilitation, primary cause of death, number of days in intensive care, number of days in semi-intensive care, second and third surgery, fourth, fifth and sixth diagnosis, and fourth, fifth and sixth surgery, number of days in bed up to the surgery (calculated value).

Data on the costs of treatment and rehabilitation were not available from the Republic institute for health insurance because there was no precise recording of these data (precise data have been kept since 2008).

After the preliminary statistical processing it was found that the elderly make up 1458 (almost 80%) of the total number of patients, and that with the distal femur fracture S724, there is also a greater number of older people compared to the young ones (30 vs 18).

4. Results

The material studied during 2007 in Belgrade showed a total of 1851 patients, Belgrade residents with the diagnosis code S72 (fracture of femur). Due to the number of registered elderly, comorbidity, interventions undertaken, and overall significance of the problem, all sub-codes of the diagnosis S72 (fracture of femur) were taken into account.

Table 1 shows age and gender structure of patients in primary group, group of younger patients (aged 20–64) and older patients (aged 65+).

According to all diagnosis and methodology, i.e. instructions for filling out, coding and data entry of hospitalization reports of the Belgrade Institute of public health, the total of six diagnoses can be

Table 1

Age and gender structure of patients with hip fracture.

		All (1851)	Younger (n = 393)	Elderly (n = 1458)
Average age (years)	All (n = 1851)	71.82 ± 14.40	49.00 ± 12.81	77.97 ± 6.40
	Male (n = 551)	63.44 ± 18.60	45.35 ± 13.50	76.89 ± 6.54
	Female (n = 1300)	75.00 ± 10.31	54.49 ± 9.37	78.27 ± 6.33

inputted (such as admission diagnosis, primary diagnosis, and the possibility of inputting up to five other diagnoses).

Not all of the studied patients had hip fracture as primary diagnosis, but as the goal was to study hip fractures, all the patients with S72 diagnosis-fracture of femur, were taken into account.

Among 1851 patients with hip fracture, the most common primary discharge diagnoses were hip (femur) fracture (90.05%), followed by other injuries, fractures and sequelae (5.67%), and the remaining 5% of patients had other discharge diagnosis out of which the most common were rheumatic (1.08%), neurological (1.03% out of which 0.65% is stroke), cardiac (0.54%).

Elderly population dominates among patients with hip fracture as well as among patients with other injuries, fractures and sequelae. Group of younger population also tends to have hip or femur fracture as primary discharge diagnosis, but is less likely to have other injuries, fractures, sequelae of injuries.

According to the present comorbidity in relation to second, third, fourth, fifth and sixth diagnosis in the total material, and group of younger patients compared to older, second diagnosis had 46.56% vs 36.9%, third diagnosis had 18.32% vs 20.30%, fourth diagnosis had 2.54% in both groups, fifth diagnosis was twice more represented with elderly patients than younger age group (0.51% vs 1.17%).

Among the younger age group, various types of injuries were represented, while among the older age group, almost equally represented were injuries and cardiac diseases such as hypertension, heart failure, then a little less diabetes, stroke, and ischemic heart disease (i.e. angina pectoris, myocardial infarction), as shown in Fig. 1.

In relation to the external cause of injury, a similar number of patients had injury in the total material (1284 i.e. 69.37%), older age group compared to younger (1009 i.e. 69.2% vs. 275 i.e. 70%). Others had no injuries.

In the older age group (n = 1458), the most common injuries were, falls on the same level due to slips (330 i.e. 22.63%), unspecified falls (273 i.e. 18.72%), other falls on same level (210 i.e.

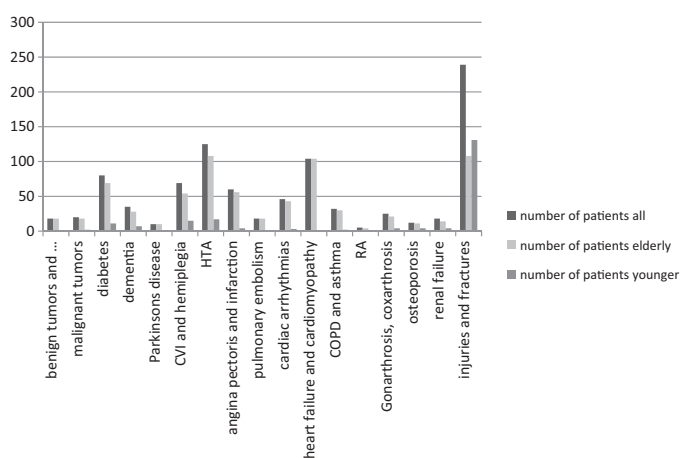


Fig. 1. Frequency of patients according to total comorbidity, in younger and older groups.

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