EVALUATION OF THE MORTALITY RATE ONE YEAR AFTER HIP FRACTURE AND FACTORS RELATING TO DIMINISHED SURVIVAL AMONG ELDERLY PEOPLE

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ABSTRACT

Objective: To evaluate the mortality rate after one year and correlated preoperative factors, among patients with hip fractures. Methods: We prospectively studied 202 out of a total of 376 patients with a diagnosis of hip fracture who were admitted to the Hospital Cristo Redentor, between October 2007 and March 2009. The database with the epidemiological analysis was set up during their hospitalization, and follow-up data were obtained preferentially by phone. Results: The overall mortality rate after one year of follow-up was 28.7% or 58 deaths, among which 11 (5.45%) occurred during hospitalization. Fractures were more prevalent among women (71.3%) and rare among blacks (5%). Among the comorbidities, dementia and depression showed a statistically significant reduction in survival (p = 0.018 and 0.007, respectively). Conclusion: The mortality rate after one year of follow-up was 28.7%. Dementia and depression increased this rate.

Keywords – Aged; Hip Injuries; Mortality

INTRODUCTION

Hip fractures continue to be one of the commonest and most devastating traumatic injuries among the geriatric population[1]. They occur mainly in the peritrochanteric region and may be associated with both high and low-energy trauma. The latter is more common among the elderly[2]. Hip fractures affect females more frequently and, although these fractures present good consolidation, they are associated with high rates of morbidity and mortality[3,4].

In the United States, approximately 250,000 hip fractures occur every year, with an annual cost of around nine billion dollars[5,6]. One study suggested that the hospitalization of patients with hip fractures accounted for approximately 13% of total hospital expenditure on adults in Brazil in 2004[7].

In addition to the social losses resulting from femoral fractures, elderly people have lower functional reserves and present large numbers of associated chronic diseases. At the time of suffering the fracture, 70% of these patients have at least two other diseases. Thus, elderly people are much more subject to complications, both during the immediate postoperative period and later on[8].

Studies in developed countries have suggested that certain preoperative factors are associated with higher mortality rates among patients presenting hip fractures on admission, for example: nonwhite color[3,9-12], advanced age[11,13-15], presence of dementia[16-18], male sex[13,19,20], clinical comorbidities[11,14,16,21,22] and delirium[18,23,24].

In view of the importance that fractures of the proximal femur have for society, our aim was to determine the mortality rate and preoperative factors related

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to such fractures, over the first year of follow-up after hip fractures among elderly people treated at Hospital Cristo Redentor, in Porto Alegre, between October 2007 and March 2009.

MATERIAL AND METHODS

A prospective study was conducted on 202 patients of both sexes over the age of 60 years, out of the total of 376 patients with a diagnosis of hip fracture (femoral neck, transtrochanteric or subtrochanteric) who were admitted to Hospital Cristo Redentor between October 2007 and March 2009, with any clinical cognitive or mental state, who remained eligible. Patients under the age of 60 years, those with pathological fractures and those who could not be contacted by telephone (no telephone number in the medical file or no telephone number for messages) were excluded.

While the patients were still in hospital, a database was set up, with an analysis on their epidemiological profile consisting of age, sex, date of hospitalization, type of fracture, side of the fracture, type of treatment, any previous arthroplasty on the hip and any presence of the following comorbidities: anemia, systemic arterial hypertension (SAH), heart diseases, lung diseases, rheumatoid arthritis, diabetes mellitus (DM), major depression, upper airway infection, urinary tract infection, thyroid diseases and dementia.

In the neuropsychiatric evaluation, we sought to detect the presence of depression through applying the diagnostic criteria of the American Psychiatric Association[25] and the criteria of the Geriatric Depression Scale[26]. In evaluating dementia, we used the Mini-Mental State Examination[27] and the diagnostic criteria of the American Psychiatric Association[28].

We obtained follow-up data preferentially over the telephone, from the medical files or at additional consultations. We often contacted family members or the patients themselves.

The time until death was calculated using the date of death supplied by the family when a telephone contact was made.

We used SPSS version 17.0, with a statistical significance level of 5% ($p \leq 0.05$). The Log-Rank test was used, and the analysis on the survival curve was done using the Kaplan-Meier curve.

RESULTS

Regarding the patients' profile (Table 1), the gender ratio was 2.48 (women to men). The left side predominated slightly as the fracture location (53.5%). Only 5% of the patients had black skin color.

The patients' mean age (Table 2) was 79.15 years, with a standard deviation of 8.68. The male patients were older on average, with an age of 80.13 years (standard deviation ± 8.55), whereas the mean was 76.72 years (standard deviation ± 9.89) for the females. With regard to stratification according to age, the means and group compositions are presented in Table 2.

The fractures were categorized according to the fracture line location: trochanteric, subtrochanteric or femoral neck fractures (Table 3).

Regarding treatment (Table 4), the following were performed: 29 cases (14.5%) of cemented total hip arthroplasty; 40 cases (19.8%) of partial hip arthroplasty; 99 cases (49%) of osteosynthesis using the Dynamic Hip Screw (DHS®); 15 cases (7.4%) of osteosynthesis using the Dynamic Condylar Screw (DCS®); five cases (2.5%) of osteosynthesis using the Proximal Femoral Nail (PFN®); and 11 cases (5.4%) of osteosynthesis using cannulated screws (7.0 mm). Three patients (1.5%) who were not in an adequate clinical state to undergo surgery were treated conservatively.

The presence of the following comorbidities was evaluated preoperatively: anemia, SAH, heart diseases, lung diseases, rheumatoid arthritis, DM, psychiatric disease, upper airway infection, urinary tract infection, thyroid diseases and dementia (Table 5).

Table 1 – Patients' profile.

Gender	144 women (71.3%)	58 men (28.7%)
Color	192 whites (95%)	10 blacks (5%)
Side	94 right (46.5%)	108 left (53.5%)

Table 2 – Age profile of the men and women (means and standard deviations).

Age group	Women	Men
60-69	17 (mean = 66.52 ± 5.65 SD)	13 (mean = 65.69 ± 4.24 SD)
70-79	52 (mean = 74.76 ± 6.36 SD)	25 (mean = 74.64 ± 6.36 SD)
80->	75 (mean = 86.93 ± 13.43 SD)	20 (mean = 86.5 ± 10.60 SD)
Total	144	58
	Mean = 76.72 ± 9.89 SD	Mean = 80.13 ± 8.55 SD

Mean age for the whole group = 79.153 years;
Standard deviation: 8.68;
N total = 202;
SD = standard deviation.