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The Occurrence of Hip Fractures among Old Patients in KSA

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ABSTRACT

Background: Associated with the increase in the aging population, there is an increase in the occurrence of hip fractures worldwide. Result following such fractures is influenced by age of the patient.

Purpose: This study purposes to evaluate the incidence and early outcome of hip fractures, comparing between different age groups.

Materials and Methods: Data of hip fractures collected over a period of five years was analyzed. Patients were divided into three groups, group A (patients under the age of 64), group B (patients between 65 and 84 years of age), and group C (patients over the age of 85).

Results: Of the 588 patients included in the study, there were 45 patients in group A, 351 patients in group B and 192 patients in group C. There was a female preponderance across all age groups, and this increased as age advanced ($p < 0.0001$). A significantly larger number of older patients lived alone and needed aids to walk before the injury ($p < 0.0001$). There was no significant difference in the type of fracture across the three groups ($p = 0.13$). A higher proportion of the elderly with intracapsular fractures were treated by replacement arthroplasty. Older patients who had internal fixation of intracapsular fractures had a better walking ability at 4 months. The overall deterioration in mobility was greater in older patients ($p < 0.0001$). Mortality was higher in older patients.

Conclusions: Hip fractures are more common among females irrespective of age group. Older patients have a higher mortality and a greater deterioration of walking ability after such injuries. Internal fixation of intracapsular fractures have demonstrated satisfactory early outcome in the immediate period. This might be attributed to retention of native bone, better proprioception and shorter operation time.

Keywords: Intracapsular Fractures, Elderly Patients, Hip Fractures.

INTRODUCTION

Hip fractures in the population above 65 years of age over the second half of the 20th century and at the beginning of the 21st century are becoming emerging problems for health care systems worldwide. These types of fractures are so far the most frequent cause of hospitalization after a fall in the elderly population and treatment is highly expensive [1]. Throughout the world it is predicted that the total number of hip fractures will increase from 1.26 million in 1990 to 2.6 million by the year 2025 and to 4.5 million by the year 2050 [2].With the life time threat for a woman of sustaining a hip fracture being more than that for increasing a breast carcinoma [3, 4], this fracture has extended a vital place in terms of monitoring preventive and therapeutic measures for osteoporosis and falls. Earlier studies have stated a higher mortality attributable to the fracture with greater decrease in life expectancy in the younger age group and males compared to patients in the older age group and females [5, 6]. The pattern of hip fracture [7-9] and the risk of social deterioration [10] are primarily determined by the age of the patient.

Notwithstanding from the higher frequency, hip fractures in the geriatric population are a significant problem due to the possible onset of severe and in some cases dramatic complications and consequences. These types of fractures are responsible for increased mortality, up to 33% in the first year after the fracture [11,12]. It is important to underline that mortality in the elderly above 65 years of age is three times higher for those with hip fractures during the first year from the time of fracture, than for those without hip fractures [13].

The purpose of this study was to evaluate the effect of age on the incidence, fracture pattern, management and outcome of hip fractures in different age groups.

MATERIALS AND METHODS

We analyzed data on hip fractures collected prospectively over a period of five years at King Abdulaziz Hospital, KSA. Demographic details, pre- operative, intra operative and post-operative details of these patients were collected. Patients were followed up for up to 4 months following the fracture. For the purpose of the study we divided

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the patients into three groups; group A, those aged 64 or less; group B, those between 65 and 84 and group C, those above the age of 85.

The type of surgery and post-operative care determined by the type of fracture, age, co-morbid medical status and general level of mobility. The data was analyzed using the SPSS 11.0 (SPSS inc, Chicago, Illinois). Variables between groups were compared using the chi square test at 95% confidence interval with $p < 0.05$ considered as significant.

The study was done according to the ethical board of King Abdulaziz university.

RESULTS

During the five year period, 588 patients were admitted with hip fractures. There were 45 patients below the in group A (<64 years), 351 patients in group B (65-84) and 192 patients in group C(> 85 years).

In group A (n = 45), hip fractures were seen more commonly in females (71%). 88.8% of patients came from their own home and 71% living with family or friends. 66.7% of the patients were able to walk without any aids. There was a roughly equal distribution of intracapsular (51%) and extracapsular fractures (49%). 65.2% of patients with intracapsular fractures were treated by internal fixation and the remaining (34.8%) were treated by total or hemi arthroplasty. None of the patients were treated non-operatively. At 4 months, 75.5% of patients were living in their own home and 22.2% were able to walk without any aids. The re-operative rate within the first 4 months was 6.7%. Mortality rate at 4 months was 12.2%.In group B (n = 351), hip fractures were seen more commonly in females (77.8%). 64.9% of patients came from their own home and a greater proportion of patients compared to group A living alone (38.6%). 48.4% of the patients were able to walk without any aids. 53.6% had intracapsular fractures with 46.4% having extracapsular fractures. Of the patients with intracapsular fractures, 73.1% of patients were treated with a hemi or total arthroplasty and 26.9% had internal fixation. 4.5% of patients were treated non-operatively. By four months, 48.4% of patients were living in their own home and 7.7% were able to walk without aids by four months. There was a 4.4% re-operation rate within 4 months. Mortality rate at four months was 20% with 56.2% of the patients treated non-operatively.

In group C (n = 192), hip fractures were seen more commonly in females (87%). 44.2% of patients came from their own home and 45% were living alone. 30% of the patients were able to ambulate without aids. There was an approximately equal distribution of intracapsular (48%) and extracapsular (52%) fractures. 79.1% of patients with intracapsular fractures were treated by a hemi or total arthroplasty. 4.2% of patients had non- operative management. At 4 months 22% of patients were living in their own home and only 1.8% managed to walk without any aids. There was a 5.5% re-operation rate within the first four months. Mortality rate at 4 months was 30.7% with 81.3% of the patients treated non- operatively.

Table 1: Summary of results

	Group A (<64 yrs)	**Group B (65-84 yrs)**	**Group C (>85 yrs)**
	N = 45	N = 351	N = 192
	No.	No.	No.
Male	13	78	25
Female	32	273	167
Pre op residence- own home	40	228	85
Pre op walking without aids	30	170	57
Intracapsular fractures	23	188	93
Extracapsular fractures	22	163	99
Internal fixation	37	202	108
Replacement arthroplasty	7	137	76
Non-operative	0	16	8
In hospital death	1	19	17
Living at home (4 months)	34	170	43
Walking un aided (4 nonths)	10	27	4
Total death in 4 months	5	70	59

Table 2: Summary of results of operated intracapsular fractures

	Group A (<64 yrs)		**Group B (65-84 yrs)**		**Group C (>85 yrs)**	
	N = 23		N = 178		N = 88	
	Internal fixation	Replacement arthroplasty	Internal fixation	Replacement arthroplasty	Internal fixa	Replacement arthroplasty
	N = 15	N = 8	N = 48	N = 130	N = 14	N = 74
	No.	No.	No.	No.	No.	No.
Pre injury living at home	14	6	34	84	4	35
Pre injury walking unaided/one stick	13	6	42	103	10	52
Living at home in 4 months	12	6	28	65	4	18
Walking unaided at 4 months/one stick	10	5	22	40	5	7
Re operations	2	1	3	6	1	5
Total death	1	1	6	19	2	23

DISCUSSION

Hip fractures are stated to be more common in females and the elderly [14]. In this series the fracture was realized more commonly in females across all three age groups. This female majority was found to expressively increase with advancing age ($p < 0.0001$). This might conceivably be ascribed to the higher female to male ratio in the general populace as age increases and lower bone density (BMD) in women compared with men [15]. Group C demonstrated a lower number total number (n = 192) compared to group B. It could be contended that patients in group C have outlived their normal life expectancy, therefore, causing a decrease in the total number of people in this group in the general populace with a resulting lower number of patients developing a hip fracture. Correspondingly, majority of patients with neck of femur fractures belong to group C. A significantly lower number of older patients were resident in their own home and were capable to walk alone outdoors at the time of fracture ($p < 0.0001$). Compared to groups A and B, a higher proportion of the patients in group C required aids to mobilize ($p < 0.0001$). This might have a bearing on the increase in number of patients increasing a hip fracture in the elderly. A previous meta-analysis of 16 case series has established that in females amid the ages of 50 and 60, and in men over the age of 70, intracapsular fractures are more mutual than trochanteric fractures [7]. Another study has shown the proportion of hip fractures that occurred in the trochanteric area to increase steeply with age between females compared to other demographics and males [8]. Hip fracture pattern is more allied to the trochanteric and femoral neck BMD and proximal femoral geometry rather than age, gender, fall characteristics and body habitus [16, 17]. In our study there was no statistically significant difference in the number of intra and extracapsular fractures among the three groups ($p = 0.15$). 5% of patients with intracapsular fractures in groups 2 and 3 were treated non-operatively owing to their co-morbidity. A higher portion of the intracapsular

fractures were treated by replacement arthroplasty in the older age groups (34.8%, 69.4% and 79.1% respectively, $p < 0.0001$). We compared the change in residential status and walking ability between those who had internal fixation and those who had replacement arthroplasty for intracapsular fractures between the three groups at 4 months. Results are summarized in table 2.

The type of fixation varied based on the patient group. In group A, 65% of the patients underwent internal fixation while 35% underwent hemi/total arthroplasty. In Group B, the rates of internal fixation dropped to 27% and further to 16% in group C. Patients in Group B and group C, who had internal fixation fared better at 4 months

compared to those who have hemi/total arthroplasty with no statistically significant difference in re operation rates. It has been reported that over a longer period of follow up younger patients with a replacement arthroplasty have a better walking ability with lower re operation rates [18]. Nonetheless we do not have any longer term follow up data on our patients to validate this.

Perioperatively (in-hospital) the mortality rate were 2.2% in Group A, 5.4% in Group B and 8.8% in group C. The mortality rate rose to 12.2% in Group A, 20% in Group B and 30.7% in group C at 4 months ($p < 0.0001$). There was a significantly higher mortality associated with hip fractures with increasing age. Between group A and C, this represents a 900% in increase in peri-operative and 250% increase 4 months post-operative mortality. Our results compare well with other reports [19, 20]. A recent study suggests that the one year mortality rate in patients with hip fractures over the age of 95 is no worse than in patients below this age [21]. There is similarly no significant increase in mortality attributable to the hip fracture in the elderly compared to the general populace of the same age [22]. Re-operation rate in group B was 6% for those who had internal fixation compared with 5% for those who had a hemi/total arthroplasty ($p = 0.57$).

While, in group C was 3.5% and 7.5% following internal fixation and replacement arthroplasty respectively ($p = 0.72$). Most of the functional recovery after a hip fracture occurs by 4 months [23]. In our study 85% of patients in group A who came from their own home returned home by four months, compared to 74.5% and 50.6% in group B and C respectively ($p < 0.0001$). Between patients who were independently mobile or walking with one stick before the injury, 66% in the group A regained this level of mobility by four months compared to 40% and 16% in group B and C respectively ($p < 0.0001$). This displays a significant deterioration in both, walking ability and residential status in the elderly who sustain these fractures. Age is stated to be a significant variable affecting functional recovery after hip fractures [24], even though cognitive function, presence of co-morbid factors and pre- injury function in terms of activities of daily living have a significant impact in recovery [25]. We have not assessed the role of these further factors on result, though, it would be safe to assume deterioration in these factors with age.

From group A, 86% of patients who have been living in their own home for greater than 4 months had internal fixation and managed to return to their home. All of the patients who came from their own home and had a replacement arthroplasty were back at home by 4 months ($p = 0.4$). 71% of patients regained their mobility after internal fixation, compared to 77% following hemi or total arthroplasty ($p = 1$). Type of surgery did not make a statistically significant difference in these results and reoperation rate ($p = 0.49$). In group B, among the patients who had an internal fixation of the intracapsular hip fracture, 82% returned to their home by four months compared to 76% following a replacement arthroplasty ($p = 0.41$). 52% of patients who were independently mobile prior to their fracture regained mobility after internal fixation. This value was 38% among those who had a replacement arthroplasty ($p = 0.031$).

Therefore, patients who had internal fixation had a statistically significant enhanced walking ability compared to those who had replacement arthroplasty in this group. In group C, 89% of patients returned home following an internal fixation compared to 51% following a replacement arthroplasty ($p = 0.035$). 45% of patients who were walking independently or with one stick managed to do so at 4 months following internal fixation, while following a replacement arthroplasty, the figure was only 13% ($p = 0.0009$). Once more type of surgery made a statistically significant difference in result, with those having internal fixation faring better at four months.

CONCLUSIONS

Hip fractures were more common amid females across all age groups. There was no significant difference in fracture patterns among the groups. A higher mortality and a better deterioration of walking ability were distinguished amid older patients. A larger proportion of older patients with hip fractures were incapable to return home. In patients over the age of 65, at 4 months, a better walking ability and lesser re-operation rate was found after internal fixation compared to replacement arthroplasty. This variation was not seen in younger patients.

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