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RESEARCH ARTICLE

EFFECTS OF EARLY TREATMENT ON MORTALITY IN ONE YEAR IN ELDERLY PATIENTS WITH HIP FRACTURES

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ABSTRACT

Objective: To observe the effects of early treatment in elderly patients with hip fractures in terms of mortality at one year.

Method: In this retrospective observational cohort study we compared the difference in one year mortality between two groups of the patients who were operated for fractures of hip. This study was conducted on patients who were hospitalized and operated for hip fractures from January 2014 to December 2014. Patients were divided in two cohorts, cohort 1 included patients who were operated within 24 hours of getting fracture and patients who were operated after 3 days of injury. All patients followed at one year of treatment via phone calls and emails.

Inclusion criteria were patients with either sex, older than 60 years of age with diagnosis of hip fracture confirmed by history, clinical examination and radiographs. Patients below age of 60 years, having pathological fractures, acetabulum fractures, bilateral hip fractures, prior surgery on same hip or previous ipsilateral hip fracture were excluded.

Result: Total 445 patients were hospitalized with hip fractures, cohort 1 included 190(42.69%) patients who underwent for surgery within 24 hours of injury, and 115(25.84%) were those patients who were operated after three days of injury included in cohort 2. These two groups were comparable in gender, age distribution and types of operation. Mortality in group one is 15.7% and in group 2 is 29.56%, there is increase of 13.86% in the mortality of patients in cohort 2.

Conclusion: This study shows that survival at 1 year is better when patients who were presented earlier and were operated within first 24 hours of injury.

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INTRODUCTION

Hip fractures are a one of leading causes of morbidity and motility in elderly population. Morality associated with hip fractures have been estimated to be between 5% to 10% at 1 month after surgery and 12% to 37% at 1 year in various reports (Collyer *et al*., 2011; Simunovic *et al*., 2011). About 20% beds in orthopaedic ward are filled by patients with hip fractures and accounting for in excess of 1.5 million bed-stay days annually (Smith *et al*., 2011). Number of hip fractures in every year are expected to be more than 7 million in coming 40 to 50 years as most of population at present will be old (Simunovic *et al*., 2010). Prognosis of hip fractures in elderly population is poorly affected by the risk factors such as comorbid conditions, osteoporosis and fewer physiological reserves, these are related with the prolonged hospital stay, higher complication rate, poorer functional levels and increased morbidity (Mark, 2010; Hu *et al*., 2012).

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Among them osteoporosis has become a remarkable public health issue predominantly in elderly community and hip fractures are the main justifiable epidemiologic marker of osteoporosis (Kang *et al*., 2010). Several guidelines, focusing on the preoperative and postoperative monitoring have been developed world wide for care of orthogeriatric patients to get more better results in elderly hip fracture patients (Eschbach *et al*., 2016). These all data shows the impacts of hip fractures, on health, cost and productivity of old population and indicate the importance of measures to improve geriatric care and provide better out come with hip fractures. Considering the impacts of hip fractures on the health, the timing of surgery needs an important focus. When to operate patient with hip fracture still remains a controversial issue. Many surgeons in the world favour early treatment to avoid prong immobility, larger stay at hospitalization and to achieve shorter duration of pain, lower rates of nonunion, post- operative complications and mortality and over all effects on functional outcome will better (Bottle and Aylin, 2006). Further more those who support delay in timing of surgery trust that it provide enough window period to resuscitate patients and optimize medical issues, and there fore

decrease risk of perioperative complications (Orosz *et al*., 2004). The aim of our study is to compare effects of early and delayed treatment on the outcome in term of mortality at one year in patients with hip fractures.

MATERIALS AND METHODS

This retrospective observational study was conducted at Liaquat National Hospital Karachi on patients who were hospitalized for hip fractures from 1 January 2014 to 31 December 2014. Total 445 patients were hospitalized with hip fracture in above mentioned year. We assessed all patients in two cohorts, cohort 1 include the patients who underwent surgery within 24 hours of trauma and patients who were operated after 3 days were included in cohort 2. Patients who presented earlier to the health care were treated within 24 hours and reason behind delayed treatment in cohort 2 was late presentation to the hospital. Both groups were compared in term of mortality at one year. Patients with either sex, older than 60 years of age with diagnosis of hip fracture confirmed by history, clinical examination and radiographs were in included in study. Patients younger than age of 60 years, having pathological fractures, acetabulum fractures, bilateral hip fractures, prior surgery on same hip or previous ipsilateral hip fracture and those who underwent delayed treatment due to impact of chronic medical conditions were excluded. Data regarding a variety of patient characteristics and risk factors, demographic measures (age, sex, race), pre-fracture locomotion, presence of chronic medical conditions physiological function, type of fracture was obtained from hospital medical record that was maintained at time of admission and data on operation details was obtained from the hospital's surgical register. Statistical Package for Social Sciences (SPSS ver.20) was used to analyse the data. All patients were chased via contact on phone and email.

The patients of the two cohorts are comparable, two groups have similar age and sex characteristics. In cohort one 93(48.9%) male and 97(51.1) are female. In cohort 2, 47(40.9%) are male and 68(59.1) are female. The average age for cohort 1 was 68.2%(60-91) while that for cohort 2 was 67.4(60-92). For convenience to interpret data all, patients in both cohorts were divided into 4 groups, group 1 older than 60 years, group 2 older than 70 years, group3 older than 80 years and group 4 more than 90 years. In cohort 1 76(40.0%) patients had neck of femur fracture, 112(58.9%) patients had intertrochentric femur fracture and 2(1.1%) had subtrochentric fracture. In cohort 2, 45(39.1) patients had neck of femur fracture, 68(59.1) had intertrochentric line femur fracture and 2(1.7%) had subtrochentric femur fracture. In cohort 1 Dynamic hip screw (DHS) was used in 112(58.9%) patients and hemiarthroplasty was done in 76(39.8%) patients. In cohort 2, 67(58.3%patients) were treated with Dynamic hip screw (DHS) and 46(40.0%) patients underwent hemiarthroplasty. In cohoar 1, 148(78%) patients got spinal anaesthesia and in 42(22%) general anaesthesia was given. In cohort 2, 92(80%) underwent spinal anaesthesia and 23(20%) were treated in general anaesthesia. Skin traction was routinely applied to injured leg for patients sustain hip fractures prior to surgery. Patient were starved for at least 6 hours before surgery. Operated patients received prophylaxis against deep vein thrombosis by TED stocking, subcutaneous un-fractionated heparin and early mobilisation. Antibiotic prophylaxis for 72 hours starting at induction of anaesthesia was used routinely in all cases. All surgery was done or supervised by experienced surgeons at senior registrar or consultant level.

RESULTS

Total 445 patients were hospitalized for hip fractures in Liaquat National Hospital form 01 January 2014 to 31 December 2014. Total number of patients who fulfil inclusion criteria were 305. Patients operated within first 24 hours of getting trauma (cohort 1) were 190, among them 93(48.9%) were male and 97(51.1%) were female. Cohort 2 contain 115 patients with 47(40.9%) male and 68(59.1%) female. The 1 year mortality rate for cohort 1 was 15.78% (30 patients, female 18 and male 12) compared to 29.56%(34 patients female19 and male 15). The difference in mortality is 13.78% that is significant difference. The 1 year mortality rate for patients having DHS was 12.1%(23 patients) for cohort 1 and 21.7%(25 patients) for cohort 2, a difference of 9.6%. For patients having hemiarthroplasty 1 year mortality rate was 3.6%(7 patients) in cohort 1 and 7.8%(9 patients) in cohort 2, a difference of 4.2%. In cohort 1, 10.5% of those having general anaesthesia died within 1 year as compared to 21.5% of those who were operated under spinal anaesthesia. In cohort 2, 9.5% of those having general anaesthesia died within one year as compared to 19.5% of those who were operated under spinal anaesthesia.

Outcome of overall patients at one year follow up is shown in Table-1 and 2.

Table no:-1 showing the current status of patients in cohort-1

CURRENT STATUS OF PT

	Frequency	Percent	Valid Percent	Cumulative Percent
ambulant without support	53	27.9	27.9	27.9
alive ambulant with support	103	54.2	54.2	82.1
alive, nonambulant	4	2.1	2.1	84.2
dead	30	15.8	15.8	100.0
Total	190	100.0	100.0	

Table no:-2 showing the currents status of patients in chorot-2

Current status of PT

	Frequency	Percent	Valid Percent	Cumulative Percent
alive, ambulent without support	35	30.4	30.4	30.4
alive, ambulant with support	45	39.1	39.1	69.6
alive, non ambulant	1	.9	.9	70.4
dead	34	29.6	29.6	100.0
Total	115	100.0	100.0	

DISCUSSION

The patients in this study form part of bulk of stable patients presented to Liaquat national hospital Karachi, Sindh, Pakistan in one year. We found significantly decreased mortality rate in the group of patients who were operated early as compared to those who were treated late. This implies better survival of patients when operation is carried out with first 24 hours of

trauma. A difference in mortality for patients having a hemiarthroplasty procedure was also found, but this was insignificant because of the small number of patients in the subgroups. This difference in mortality has various possible causes the delayed presentation for patients in cohort 2 increases their risk for developing deep vein thrombosis and pulmonary embolism, atelectasis and hypostatic pneumonia. Venous thrombo-embolic disease is reported to be leading cause of death in patients suffering orthopaedic\ trauma who survive a minimum of the 7 days after injury (Fitts *et al*., 1964). Studies have yielded conflicting results on the relationship of early surgery for hip fracture and survival, Orosz *et al*. (2004) found that compared with later surgery, surgery in first 24 hours was not associated with either improved o worsened survival and function at 6 months. Our findings are supported by some authers and contradicted by others. Kenzora *et al*. (1984) looking retrospectively at a group of patients who had sustained hip fracturte, found that patients who had been operated within 1 day of admission had significantly greater 1 year mortality rate than those who had the operation between the second and fifth day of admission. Even after considering mortality data from patients who were relatively healthy, they found that patients who were operated within 24 hours of admission had higher 1 year mortality. In contrast, various other authers including Sexson and Lehner (1987) found an increased 1 year mortality for patients who had been operated after 24 hours and who were relatively healthy. Neer (1951) and McGoey and Evans (1960) firmly supported the theory that fracture of hip should be operated upon as soon as possible after hospital admission. Zukerman *et al*. (1995) in a prospective study of 367 patients who had a fracture of hip and who were at least 65 years old, cognitively intact, living at home, and able to walk before fracture, conclude that an operative delay of more than two calendar days after admission is an important predictor of mortality within 1 year. Current guidelines (1989) recommend that surgeons perform hip fracture surgery within 24 hours of injury as observational studies suggest earlier surgery is associated with better functional outcome and lower rates of non-union, shorter hospital stay and duration of pain and lower rates of complications and mortality (Bottle and Aylin, 2006; Hardin, 1990).

Limitation

In all around the world meta analysis have been done to assess the mortality rate in the elderly people with hip fractures, this study is conducted in single tertiary hospital having small number of patients, and is first time conducted in Pakistan. Final results should be compiled after assess the outcome in whole population.

Conclusion

In the limitation of our study, we conclude that elderly patients with hip fractures, who are treated early, have decreased mortality rate as compared to those who get delayed treatment.

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