

A Prospective Study to Assess the Risk Factors Associated with Hip Fractures in Elderly

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Abstract: Aim: To assess the risk factors associated with hip fractures in elderly. Materials and Methods: Our study included 100 patients aged above 50 years reported to Yenepoya medical college hospital during 6th august 2016 to 1st September 2017. All the patients were identified as inpatient of Yenepoya Medical College Hospital and were available for follow up. Study was initiated after obtaining the ethical committee clearance from the institutions ethical committee. A structured, pre-prepared case proforma was used to enter the clinical history, physical examination findings and investigation findings. Those who met the inclusion criteria were included in the study. The patients who are selected have undergone clinical evaluation, radiological evaluation and haematological evaluation. There was no risk involved in this study. SPSS software was used to analyse the data and results were interpreted accordingly. Result: 31 patients were identified to have hip fracture and 69 patients with no hip fracture. Of 31 hip fractures 18 were female (41.9%) and 13 males (43%). Mean age of study subjects with hip fracture was found to be higher, 69.21 against 64.57 for patients without hip fracture, ($p < 0.05$). Out of 27 patients with osteoporosis 18 (66.7%) had evidence of hip fracture, of 63 patients without osteoporosis 13 (20.6%) had hip fracture ($p < 0.05$). 51 patients were identified to have diabetes, of that 19 had hip fracture (37.3%). 15 of 43 patients with hypertension had hip fracture (34.9%). 19 patients had hip fracture out of 38 patients with osteoarthritis (50%). 29 patients had hip fracture out of 59 patients with chronic pain (49.2%). 21 patients were identified with BMI $< 20 \text{ kg/m}^2$, of that 12 had hip fracture (57.1%). Conclusion: We observed that age > 70 years, BMI $< 20 \text{ Kg/m}^2$, osteoporosis and history of smoking were significant risk factors for hip fractures in elderly ($p < 0.05$). We also observed that presence of hip fractures significantly affects the quality of life among elderly.

Keywords: Hip fracture, risk factors, elderly

1. Introduction

About one third of the population aged 65 or more suffers at least one fall a year, of which 5 to 10% result in severe injuries [1-4]. More than 90% of hip fractures are the result of a fall. Falling and the frequency of falls increases exponentially with age injuries resulting from falls incur costs for health providers, social services, patients and their families.

An active research agenda exists with a focus on prevention, Cognitive impairment, low body mass index and certain medications such as benzodiazepines have been consistently associated with severe injuries from falls Data on the proportion of fall-related injuries attributable to each of these factors is sparse and it is likely that their relative contribution varies from one setting to another.

Most studies of risk factors for fractures due to falls have been carried out in developed countries, although the size of the elderly population is increasing fast in middle income countries. Little is known about the frequency, circumstances, risk factors and consequences of falls [5].

The most important known risk factors for hip fractures are female sex, older age, and low body mass index (BMI). Some other factors, such as tobacco or alcohol consumption, are suspected to be risk factors for osteoporotic fractures, but results have not been consistent. Several studies have found an increase risk of falls or hip

fractures in elderly psychotropic drug users and particularly in benzodiazepine use [6].

We conducted a prospective study at Yenepoya Medical college Hospital, Mangalore to assess the risk factors associated with hip fracture in elderly men and women. The study concentrated on age, gender, osteoporosis, smoking, alcohol, nutrition, diabetes, hypertension, chronic pain and osteoarthritis. We were particularly interested assessment of risk factors associated with hip fractures in elderly individuals.

2. Objective of the Study

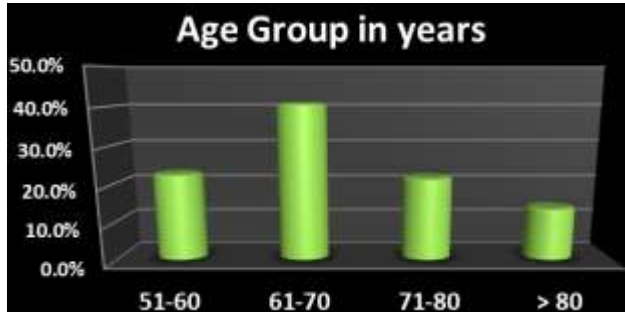
To assess the risk factors associated with hip fractures in elderly.

3. Materials and Methods

Our study included 100 patients reported to Yenepoya Medical College Hospital during 6th August 2016 to 1st September 2017. All the study patients were identified as inpatient of Yenepoya medical college hospital, and were available for follow up. Study was initiated after obtaining the ethical committee clearance from the institutions ethical committee. A structured, pre-prepared case Proforma was used to enter the clinical history, physical examination findings and investigations findings. Those who met the inclusion and exclusion criteria were included in the study.

The patients who are selected has undergone Clinical evaluation ,radiological evaluation and hematological evaluation. There was no risk involved in this study. There was no any additional cost for the patient. Confidentiality of all the information obtained during this study were maintained .

4. Observations and Result



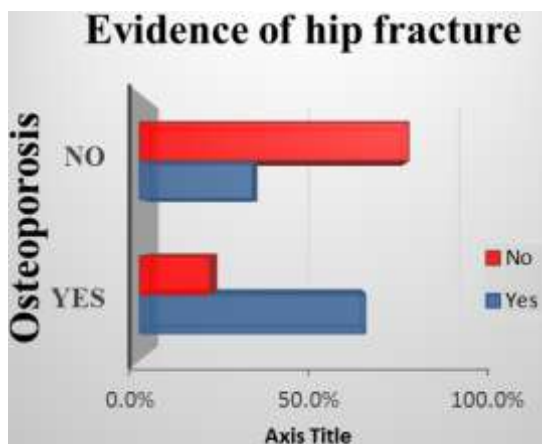
Graph 1: Age distribution of the study subjects

Mean age of the study subjects was 68.32 years with maximum number of cases fall between age of 61-70 years (41%).



Graph 2: Distribution of study subjects as per Gender

A slight predominance of males were seen in present study with 57% males to 43% females.



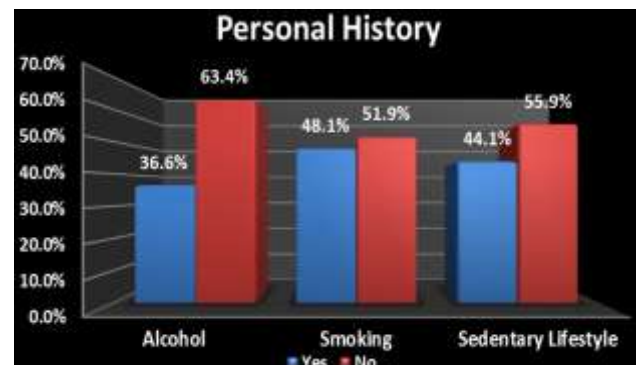
Graph 3: Association of hip fracture with osteoporosis

Presence of osteoporosis was significantly associated with hip fractures (66.7% vs 20.6%; $p < 0.05$).

Table 1: Association of hip fracture with medical co-morbidities

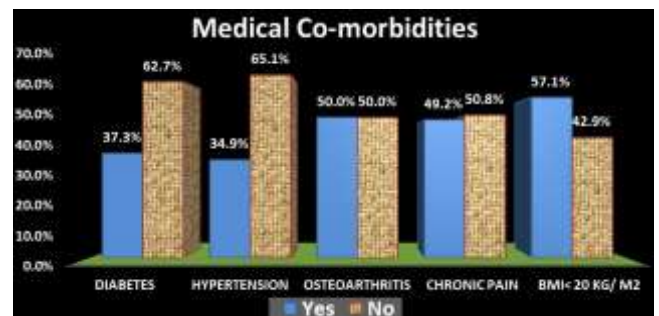
Medical Co-morbidities	Hip Fracture		Total	p-value
	Yes	No		
Diabetes	19 37.3%	32 62.7%	51 100.0%	0.23
Hypertension	15 34.9%	28 65.1%	43 100.0%	
Osteoarthritis	19 50.0%	19 50.0%	38 100.0%	<0.05
Chronic Pain	29 49.2%	30 50.8%	59 100.0%	
BMI < 20 Kg/ m2	12 57.1%	9 42.9%	21 100.0%	<0.05

Associated medical co-morbidities with hip fractures included osteoarthritis, chronic joint pain and BMI below 20 Kg/ m² ($p < 0.05$).



Graph 4: Association of hip fracture with Personal history

On assessing personal history, hip fractures was observed to be associated with history of smoking and sedentary life style ($p < 0.05$).



Graph 5: Showing associated associated medical co-morbidities with hip fractures

Table 2: Logistic regression analysis for evaluating risk factors associated with hip fractures

Logistic Regression: Hip Fracture (Y/N)				
Variables	p- value	Odds Ratio	95% CI for EXP(B)	
			Lower	Upper
Age > 70 years	<0.01	1.84	1.12	3.00
Female	0.053	1.055	0.999	1.113
BMI < 20 Kg/ m2	<0.01	1.72	1.09	2.77
Osteoporosis	<0.01	2.88	1.40	5.96
Chronic Pain	0.46	1.233	0.707	2.148
Smoking	<0.01	1.77	1.12	2.96
Sedentary Life style	0.354	1.343	0.72	2.502

On multivariate regression analysis for evaluating predictors of hip fracture, we observed that age > 70 years, BMI < 20 Kg/ m², osteoporosis and history of smoking were significant risk factors for hip fractures in elderly (p<0.05).

5. Discussion

Present study was conducted to identify the risk factors for hip fractures in elderly to predict the occurrence of hip fracture.

Risk factors

Out of the 100 Patients presence of hip fracture was observed in 31 cases. On univariate analysis, factors like advancing age, female gender, undernutrition (BMI< 20 Kg/m²), Osteoporosis, chronic joint pain, history of smoking and sedentary life style were observed to be associated with hip fractures. On multivariate regression analysis we observed that only age >70 years, undernutrition, osteoporosis and history of smoking can independently predict risk for hip fractures in elderly (p<0.05).

Female Gender

In present study female gender was a risk for hip fractures only in univariate model. On regression analysis, we observed no gender difference related to occurrence of hip fracture in elderly.

Undernutrition

In present study, BMI was dichotomized at 20.0, which indicates underweight in people aged >60 years [9]. A significant association was observed in present study between undernutrition and risk of hip fractures in both univariate & multivariate model.

Smoking

In present study, a significant association was observed between history of smoking and risk of hip fractures in both univariate & multivariate model.

6. Conclusion

In conclusion, present study identified that advancing age, osteoporosis, currently smoking and underweight elderly subjects seems to be independently associated with a higher risk of incidence for hip fractures. We also observed that presence of hip fractures significantly affects the quality of life among elderly.

The results of this study could have important clinical implications in identifying very old people at high risk of hip fracture, as well as in the development of effective preventive strategies. However, further research is needed to confirm these associations; randomized controlled trials should be conducted to evaluate the effectiveness of preventive measures that are implemented based on our results.

After the results of this study we also concluded that further studies with large sample size are warranted to supported this study.

References

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