Original Research Article

Predictors of Long-Term Survival After Hip Fractures-A 5 Year Results of A Retrospective Study

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Abstract

Purpose: The most important fractures in this setting are hip fractures. The mortality declines during the following years after surgery. There are different studies with contrary conclusions regarding the long term mortality. Only little is known about predictable characteristics regarding the 5-year mortality. Furthermore, the already existing data present inconsistent results. In order to identify the risk factors and predictors on long term survival this study was conducted in elderly patients with hip fracture.**Methodology:** The study is a Retrospective study. Patients aged above 60 years with fracture around hip in the year 2015 & 2016 was taken and analysed. The details of the patients are derived from MRD and patients are contacted through telephonic communication to find out the survival. We have excluded patients with age less than 60yrs, multiple fractures and malignancy related fractures. Parameters like age, sex, comorbidities, the day of presentation to hospital following fracture, hospital stay, whether patient was put on antiplatelets following surgery, years of survival after surgery or treated non operatively.**Results:** A total of 150 patients attended to our Yenepoya Medical College during 2015 and 2016 were included in study and evaluated. The mortality was more than 40 % in less than two years after fracture. In the multivariate analysis, significant risk factors for dying were male gender (p = 0.188), comorbidities (p = 0.860), antiplatelet following surgery (p = 0.015), presenting to hospital after fracture (p = 0.003), operating day following admission (p = 0.033), dearranged blood markers (p = 0.020).**Conclusion:** Our results confirms poor results after hip fracture in elderly population. While better results might be influenced by optimal fracture care, patient's age, gender,day of presentation to hospital, day of undergoing surgery following admission, antiplatelet following surgery, dearranged blood markers before surgery. More prospective clinical studies are required to exactly predict the factors responsible for survival after fractures in elderly.

Keywords: Predictors of 5 year survival , hip fractures, elderly.

Introduction

The number of fractures in geriatric patients is increasing as a result of demographic change. Osteoporotic hip fracture is known to be associated with excess mortality. Several studies suggested that osteoporotic hip fracture is associated with adverse effects, such as decreased mobility, significant morbidity, mortality, independence loss, financial burden and diminished quality of life. Mortality is more during the first year when compared at a later date. A meta analysis revealed that men aged 65 to 84 years sustaining a hip fracture had increase in likelihood of death within 3 months when compared to women. The patients with associated comorbidities have less survival rate. There are different studies with contrary conclusions regarding the long term mortality. Only little is known about predictable characteristics regarding the 5-year mortality. Furthermore, the already existing data present inconsistent results. Data on long-term survival and influencing factors available following hip fractures in elderly are sparse. In order to identify the risk factors and predictors on long term survival this study was conducted in elderly patients with hip fracture[1-5]

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Methodology

The study is a Retrospective study. It is a single centered study. Patients aged above 60 years with fracture around hip in the year 2015 & 2016 in Yenepoya medical college hospital, Mangalore, Karnataka,India, India was taken and analysed. The details of the patients are derived from MRD and patients are contacted through telephonic communication to find out the survival and analysed. Parameters like age, sex, comorbidities, the day of presentation to hospital following fracture, hospital stay, whether patient was put on

antiplatelets following surgery, years of survival after surgery or treated non operatively are analysed and tabulated. Inclusion criteria was all the patients aged above 60 years with hip fractures are taken for study. Exclusion criteria includes multiple traumas (injury severity score ≥ 16) and malignancy-related fractures. Predictors of long term survival are evaluated by using descriptive statistics, Pearson correlation coefficient and ANOVA test[6-10]

Results

In our study, which was conducted in Yenepoya Medical College hospital in the year of 2015 and 2016, a total of 150 patients who satisfied the inclusion criteria was studied. We found that mean age of patients was 77.1, 53% were males and 47% were females. The data collected is being entered n SPSS format and analysed are as follows

Table 1: showing Descriptive statistics on each parameters and survival

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
1) Age	150	1	3	1.71	.848
2) Sex	150	1	2	1.49	.502
3) Comorbidities	150	0	1	.36	.482
4) Antiplatelet Following Surgery	150	0	1	.11	.310
5) Presenting to Hospital	150	1	2	1.16	.368
6) Operating Day Following admission	150	1	2	1.20	.401
7) Preopdearranged Blood Parameters	150	0	1	.09	.292
8) Survival	150	0	4	.89	1.386
Valid N (listwise)	150				

The age of the patient has significant correlation with the sex (p = 0.188), antiplatelet following surgery (p = 0.015), presentation of patient following fracture to hospital (p = 0.003), operating day of the patient following admission (p = 0.033), comorbidities (p =0.860) and preop dearranged blood markers (p = 0.020). Pearson's correlation is shown below

Table 2: Showing Correlation of each predictors on survival

Pearson's Correlations								
	Sex	Age	Antiplatelet Following Surgery	Presenting to Hospital	Operating Day Following Admission	Preopdearranged Blood Marker	Survival	Comorbidities
Sex		.013	.613	.003	.027	.186	.188	.130
Age	.013		.015	.003	.033	.020	.000	.860
Antiplatelet	.613	.015		.066	.682	.066	.068	.079
Presenting to Hospital	.003	.003	.066		.197	.085	.804	.000
Operating Day	.027	.033	.682	.197		.000	.027	.108
Preopdearranged Blood Marker	.186	.020	.066	.085	.000		.196	.575
Survival	.130	.860	.079	.000	.108	.575		.408
Comorbidities	.130	.860	.079	.000	.108	.575	.408	
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Table 3: Showing predictors analysed using ANOVA test

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Sex	Between Groups	.603	4	.151	.593	.668
	Within Groups	36.890	145	.254		
	Total	37.493	149			
Comorbidities	Between Groups	13.520	4	3.380	23.293	.000
	Within Groups	21.040	145	.145		
	Total	34.560	149			
Antiplatelet	Between Groups	.155	4	.039	.398	.810
	Within Groups	14.138	145	.098		
	Total	14.293	149			
Presenting to Hospital	Between Groups	2.022	4	.505	4.041	.004
	Within Groups	18.138	145	.125		
	Total	20.160	149			
Operating Day	Between Groups	7.403	4	1.851	16.169	.000
	Within Groups	16.597	145	.114		
	Total	24.000	149			
Preopdearranged Blood Marker	Between Groups	2.183	4	.546	7.527	.000
	Within Groups	10.511	145	.072		
	Total	12.693	149			
Age	Between Groups	45.650	4	11.413	26.933	.000
	Within Groups	61.443	145	.424		
	Total	107.093	149			

Each parameters on survival are analysed using ANOVA test has significance on patient presenting to the hospital, antiplatelet theraphy following surgery and sex.

The graphical representation of various predictors on 5 year survival rate in the study cases.

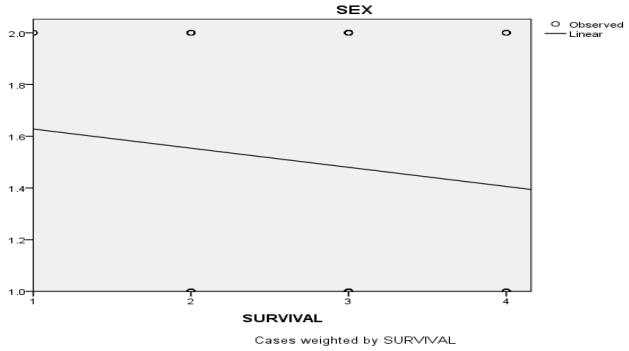

Fig 1: Showing Sex versus Survival

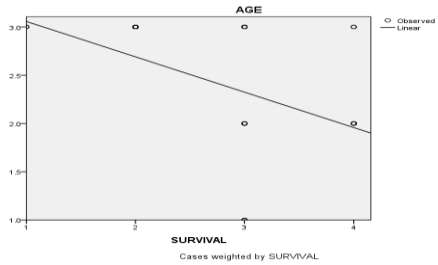

Fig 2: Showing AGE versus Survival

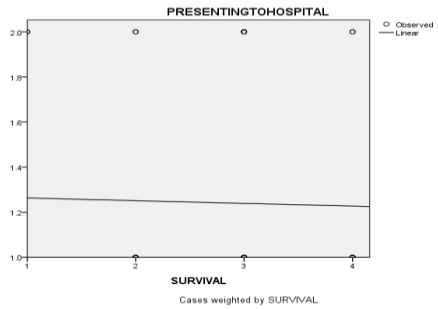

Fig 3: Showing Patient presenting to hospital versus Survival

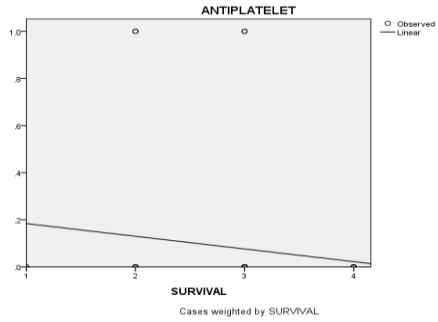

Fig 4: Showing Patient started on antiplatelet theraphy following surgery versus Survival.

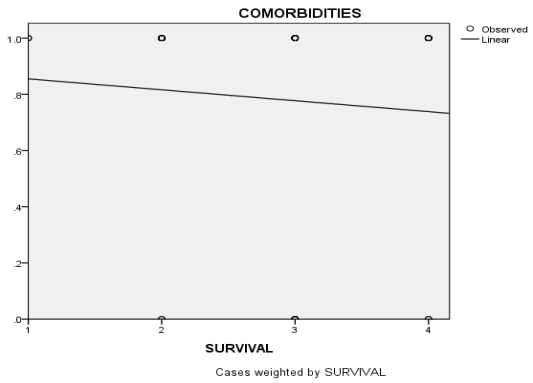

Fig 5: Showing Associated comorbities versus Survival

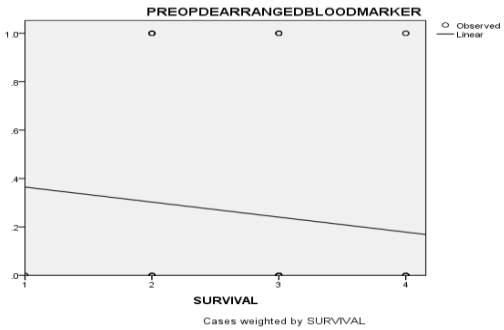

Fig 6: Showing Preop dearranged blood markers versus Survival

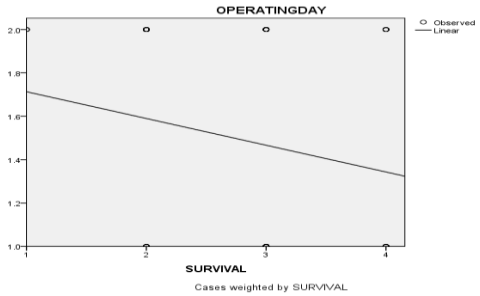

Fig 7: Showing Patient undergoing surgery following admission versus Survival

Discussion

This study aimed to identify the predictive survival factors that may occur both during hospital admission and during clinical treatment. This single-center study included 150 patients with hip fractures in elderly. Five years followup shows only 35% of male patients were alive, as opposed to 44% of female patients. The mortality rate in men is higher when compared to women. Among other authors investigating hip fracture–associated mortality in different populations, Haentjens et al. described the risk of all-cause mortality during the first 3 months, five to eight times higher compared with the general population. Following the first year after hip fracture, Omsland et al. reported the mortality in Norwegian inhabitants to be 21% in women compared with 33% in men. The mortality declines during the following years after surgery. A recent study from Western countries showed that 5-year relative survival was 48% in men and 59% in women following fracture around hip. They included a small number of patients (206 patients) and had a different cut-off value of age (60 years). They demonstrated that the relative survival showed a gender difference and was reduced with age[11-16]

In our study, mortality was about 42% within 2 years following hip fracture followed by 1 year (28%), 6 months (18%) and 2 to 5 years (12%). Mortality was observed more in patients with advanced age group, male sex, presentation to hospital following fracture, surgery done following hospital admission, antiplatelet therapy following surgery and dearranged blood markers[17-20].

Conclusion

Our study has brought out the 5-year relative survival in the general population after hip fractures in elderly. However, our study has limitations. First, we involved only a limited number of patients from a single center. Only selected parameters were evaluated and other factors needs to be critically analysed. The prospective data collection and analysis, along with the high number of evaluated variables and the integration of patients into this study are to be mentioned with reference to the strengthen our study.

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