Femur Fracture Patient Characteristics in Dr. Hasan Sadikin General Hospital Bandung Indonesia January–December 2011

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Abstract

Background: Femur fracture is one of the most common orthopedic cases which may occur in all age groups. Its incidence can be characterized by several aspects, such as patient's age, sex, causes, location and many more. The aim of this study was to understand the characteristics of femur fracture patients in Dr. Hasan Sadikin General Hospital Bandung Indonesia during the period of January to December 2011

Methods: A descriptive study was conducted using 89 medical records of femur fracture patients in the Department of Orthopedic and Traumatology Dr. Hasan Sadikin General Hospital Bandung from January to December 2011. The inclusion criteria of the study were medical records containing patient aged 20-59 years data who were diagnosed with femur fracture, sex, cause of fracture, type of fracture, location of fracture, type of treatments given, and the length of hospitalization. Data were analyzed using frequency distribution.

Results: Of 60 cases of motor vehicle accidents, there were more male (77.53%) than female who suffered from fracture. Closed fracture was more common with 52 cases of closed fracture compared to 29 cases of proximal fracture. Of 35 patients accepted treatment, 30 patients were treated by surgery and hospitalized for 21–30 days.

Conclusion: Young male adults are the most common group suffering from femur fracture. A continuous epidemiology study must be carried out on annual basis so that a better view of the incidence and the location of femur fracture as well as the type of treatment given to patients can be observed.

Keywords: Adults, characteristics, femur fracture

Introduction

Femur fracture is one of the most common orthopedic cases. According to a report in Sweden, the prevalence was 10 cases of 100,000 people every year.[1] In Dr. Hasan Sadikin General Hospital Bandung, there was about 20.84% femur fractures from total fracture cases (173 from 830 cases).[2] There are many factors contributed to the incidence of femur fracture, such as: age, sex, body weight and height, previous history of any fracture, drug usage, trauma, weakness and bone malformation related to malnourished, chronic deseases, osteoporosis and others.[3]

The older the females, the more decrease their bone strength especially after menopause because of the reduction of hormones such as growth hormone, estrogen,and progesterone. As a result, the absorption of calcium and vitamin D will be disturbed.[4] Formation of weaker bone also increases the incidence of fracture. The most common causes of fracture due to trauma are \motor vehicle accidents, fall and repetitive stress on certain part of the leg.[3]

The location of femur fracture can vary from head fracture, neck fracture, shaft fracture to the fracture of distal part of the bone. There two types of fracture: open and closed fracture. Treatment of femur fracture can be operative or non–operative depends on the type and the severity of the fracture.[3]

The objective of the study is to describe the characteristics of femur fracture patients in Dr. Hasan Sadikin General Hospital Bandung from January to December 2011.

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Methods

A descriptive study was conducted using 103 medical records of femur fracture patients in the Department of Orthopedics and Traumatology Dr. Hasan Sadikin General Hospital Bandung from January to December 2011. Of 103 medical records, 89 medical records were eligible and 14 medical records reported to be lost. The inclusion criteria of the study were medical records that contained data of patient aged 20–59 years who were diagnosed with femur fracture, sex, cause of fracture, type of fracture, location of fracture, type of treatments given, and the length of hospitalization.

Data were analyzed using frequency distribution. Ethical clearence was given by the Health Research Ethic Committee Dr. Hasan Sadikin General Hospital.

Results

The total number of femur fracture recorded in Dr. Hasan Sadikin General Hospital Bandung was 103 cases. Fourteen medical records of 103 cases could not be found, thus were excluded from this study. Only 35 cases were agreed to be treated for their fracture. The patients were treated by either operative or non–operative methods. Forty seven patients out of a total of 89 patients refused to be treated because the patients could not pay the treatment and seek for other alternative treatments. They were scared to be operated.

One patient was shifted to other hospital or 6 patients were died before the treatments were carried out.

According to table 1, the majority of the patients were male aged between 20–29 years. Most of the cause of fracture was accidents involving motorcycles. Closed and proximal fracture were the common type and the location of femur fracture (Table 2).

Three of four patients in non-operative group had lenght of hospitalized between 1–10 days, while most of patients in non-operative group (38.24%) had 21–30 days. Thirty patients received either internal fixation or external fixation for operative treatments. Most of patients were treated by adjoining the fractured bone by fixing plate and screws to hold the plate, on the bone. Non–operative treatments include closed reduction and casting of the affected limbs.

Discussion

Based on the characteristics of age for patients diagnosed with femur fracture, most of the patients are male young adult. This finding is in line with a research done in Saudi Arabia5 that stated male aged between 20–29 years old is the most frequent cases found.

From the most common cause leading to fracture, this study found that motor vehicle accidents were more than half of the total incidence of femur fracture. Examples of motorvehicle accidents involve motorcycles, cars, buses or trucks. Since more males are involved in handling and driving vehicles, more males affected fractures than females.

The most common type of fracture reported was closed fracture, over 50% of 52 cases. Closed fracture is the most common fracture because the femur bone itself is a strong bone and also covered by strong thick layers of muscle around the thigh region. Therefore, it will need a very strong trauma for the bone to break its continuity and pierce out of the thigh muscles. Moreover, most of the reported open fracture happens at the distal region, where the muscle layers are thinner and will be easier for the bone fragments to pierce out of the skin.[7]

Table 1 Total Cases of Femur Fracture

Age (years)	Sex				Total cases
	Male		Female		
	Number	%	Number	%	
20–29	29	32.59	6	6.74	35
30–39	15	16.85	7	7.87	22
40–49	11	12.36	5	5.62	16
50–59	14	15.73	2	2.24	16
Total	69	77.53	20	22.47	89

Table 2 Causes, Type and Location of Femur Fracture

Femur fracture	Number of cases	Percentage (%)
Causes of fracture		
Motorvehicle accident	60	67.42
Fall	1	1.12
Explosion	1	1.12
Unspecified	27	30.34
Type of Fracture		
Open	19	21.35
Closed	52	58.43
Unspecified	18	20.22
Location of Femur Fracture		
Proximal	29	32.58
Shaft	25	28.09
Distal	22	24.72
Unspecified	13	14.61

From these result, the most frequent fracture location on femur is the proximal part. The neck of femur, which connects the head and the body of femur, is the weakest connection on femur, thus making it is prone to fracture injuries with even the slightest trauma.[7]

Of 35 patients received treatment, 30 patients had operative procedure. This will shorten the healing period and reduces the possibility of having any complications.[8]

As for the length of stay in hospital, the mode length of those who undergoes surgery is around 21–30 days. A study done in England[9] also shows that the median length of stay is around 23 days for proximal femur fracture repair. Another study in Peterborough District Hospital[10] shows that the length of stay is around 21.6 days. This is necessary to check for the presence of any complication after the surgery. The length of hospitalization also depends on the severity of the injury. Those who were suffering with multiple fractures in other location of body usually will be admitted for a longer period, as we can see that there were 5 patients who were treated for more than 31 days, mainly caused by the seriousness of the injury they suffered from. As for non-operative treatment, patients can be discharged once they are treated, as long as there is no complication following the treatment.

As for non-operative patients, the lenght of hospitalization is shorter as 3 out of 4 patients were discharged within the first 10 days of admission. The 4 non–operative

Table 3 Type of Treatments and the Length of Stay for Those with Complete Medical Records

Length of stay (days)	Operative		Non–Operative		Total
	N	%	N	%	
1–10	4	11.76	3	8.82	7
11–20	8	23.53	0	0	8
21–30	13	38.24	1	2.94	14
> 31	5	14.71	0	0	5
Total	30	88.24	4	11.76	34*

Note: * This data is excluding one medical record where the treatment and length of hospitalization was not mentioned in the medical records.

treatments, 3 were done on patients with closed fracture. From the 3 patients, 2 patients were discharged within the first 10 days of admission. This is usually because of the non-complicated closed fracture and its chances for contamination are lower if compared to open wound that is usually present with open fractures. However, the choice of treatment according to the guidelines is through surgery, open reduction internal fixation, also known as ORIF. This method usually reduces chances of complication such as mal–union and non–union as the bone will be placed in a proper anatomical alignment and be held by plate and screws placed on the bone.[3]

There were few factors that lead to the limitation of this research. Several medical records that fullfil the inclusion criteria could not be found during this study. Moreover, incompleteness of medical records also cause a unspecified classification of the characteristic

This study recommends that a continuous epidemiology study must be carried out on yearly basis so that a better view of the incidence and location of femur fracture and the type of treatment given to patients can be seen. Through this way, a prevention method can be developed, such as educating the public about the main cause leading to incidence of femur fracture and socialization of save driving among young adults

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