International Journal of ChemTech Research
CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.15, pp 272-276, 2017

Clinical Outcome Difference of Internally Fixated Distal Radius Fracture Between Young Patients and Elderly In Haji Adam Malik General Hospital

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Abstract : Background : Incidence fracture of radius was one of the most common than the other bone fracture. Usually the fracture involving the distal end of radius. The age distribution was variated, from second decade of life to fourth decade. The most complication of radius fracture was deformity of the forearm and also wrist joint stiffness and the decrease of hand function. DASH (Disability of Arm Shoulder and Hand) Score was one of the score that can be used to evaluated the outcome of distal radius fracture. It was used worldwide and one of the best tool to evaluate the outcome after doing surgery.**Objective** : The objective is to evaluate outcome of distal radius fracture that treated with internal fixation and to measure if there is any difference between old patient and young patient after surgery**Method** : This is a retrospective study, we take sample from our hospital that done the surgery from January 2015 until January 2016, than we evaluated at our clinic using the DASH Questionare. SPSS V2.0 was used to analyze the data. The data distribution was analyze using Saphiro-wilk method and after that continue with Chi Square test.**Result** : 43 patient was met the inclusion criteria, 22 was old age and 21 was young age. The result from 21 young age patient, 14 patient (66,66 %) had good DASH Score and 7 patient (33,33 %) had poor DASH Score. The result from 22 old patient, 14 (63,63%) patient had good DASH Scores and 8 (36.36%) patient had poor result.**Conclusion** : Based on the study, there is no difference between the result of surgery from young and old patient.

Introduction

Fracture is partial or complete discontinuity of bone, joint cartilage, and epiphyseal cartilage. Both physical condition of bone and mechanism of trauma is needed to know why and how the bone is fractured. Most fracture is caused by failure of bone to withstand pressure, escpecially bending, torsion, and stretching.[1,5]

Clinically, fractures can be differentiated into closed fracture, open fracture, and fracture with complication. Closed fracture is a fracture that has no relationship with external environment, while open fracture is a fracture that is exposed to external environment through injuries to the skin and soft tissue both from within or without. Fracture with complication can be classified by early, immediate, and late complication.[1,9]

Due to increased activity in traveling by land, water, and air, industrial activities, and competitive sports, it can be said that it is the age of injury / trauma. The incidence of trauma is increasing and will keep increasing. Trauma is the number one cause of death in young adults in the United States (US). Estimate yearly

cost for trauma in the US is around 160 billion dollars. Around 10% of inpatient are caused by trauma. Two third of them has musculoskeletal problems including fractures, dislocations, and soft tissue injuries.[1,3]

In 2004, an estimate of 1,2 million deaths and 50 million injuries are caused by road traffic accident. It is the leading cause of death in 10-19 years old age group (260.000 deaths each year and 10 million injured) and sixth leading cause of deaths in the US. Data found in Indonesia, in particular North Sumatra is listed in the table below.[9,14]

Table 1. Road Traffic accident distribution in 2005 - 2007

Year	2005	2006	2007
Total Incidence	1.376	2.438	700
Human Casualties	2.939	4.859	1.481
Deaths	963	1.205	383
Heavy Injuries	1.079	1.720	517
Mild Injuries	897	1.934	581
Material loss	4.341.290.000	5.794.892.000	1.569.796.000

Although musculoskeletal trauma in healthy individual is rarely fatal, but it can cause serious physical and mental problems, and a lot of wasted time. Therefore it can be said that musculoskeletal trauma has a low mortality rate but high in morbidity. With an increasing survival age, a lot of people get to their old age with lower coordination resulting in more frequent falling; this combined with weakened bone due to osteoporosis can cause pathological fracture.

One of the highest incidence amongst others are distal radius fracture (Larsen &Laurtsen, 1993). Commonly fracture of the distal radius occurs in the end of the radius (near the wrist). Can occur in adolescent until the elderly, 15-60 years old. Distal radius fracture is also one of the highest cause of morbidity in patients. Deformity and joint stiffness in the wrist and fingers are the most common complication of distal radius fracture.[7,8]

There is no studies to assess clinical outcome of distal radius fracture in Haji Adam Malik Hospital. A few scroringsystem is known to assess fracture of the distal radius, but not all system has a good objectivity. Functional score Quick DASH (Disabilities Arm Shoulder Hand) is the most commonly used functional score on distal radius fracture. This functional score consists of 11 factors, such as : 1) Opening and closing a new jar, 2) Doing a heavy housework such as cleaning the floor and wall, 3) Carrying luggage or grocery bags, 4) Washing their own back, 5) Cutting food with knife, 6) Recreational activity involving pressure to the arm, back, and hand (golf, tennis), 8) Interference with daily chores due to problems with upper and lower arm and hand, 9) pain on the upper and lower arm and hand, 10) Numbness on the upper and lower arm and hand, 11) Disturbance of night sleep from pain in the upper and lower arm and hand. This scoring system makes enables evaluation of intervention in radial fracture treatment. With this study, we will try to assess outcome of open distal radius fracture with a good soft tissue coverage (Gustillo Anderson grade III A classification) and closed distal radius fracture that has been operated in Haji Adam Malik hospital. All sample has unstable fracture configuration. Evaluation of distal radius fracture outcome is very important to judge the success of therapy; therefore improving the quality of treatment hence lowering the morbidity and mortality.[15,16]

Method

This study is a descriptive analytic study that assesses the differences in clinical outcomes of fracture of distal radius at young and old age treated with internal fixation at the RSUP HAM.The research was conducted in all hospitalization unit of RSUP H Adam Malik Medan after obtaining approval from FK USU Research ethics committee. Target population is all patients with fracture of distal radius. Affordablepopulation of this study were distal radius fracture patients treated at the Department of Orthopedics and Traumatology RSUP H Adam Malik Medan and polyclinic through medical records between January 2014-January 2015

The study in considered as analytic with consecutive sampling as the sampling method. Thus a single sample large formula for hypothesis testing the proportion of a population is as follows. The inclusion criteria involves patients with open distal radius fracture but still have adequate soft tissue coverage, patients with

unstable fracture of distal radius, e.g. displacement of fracture, patients with distal radius fracture that is brought to RSUP H. Adam Malik Medan, patients with distal radius fracture after 6 months post-operation, and patients with closed fracture of distal radius. While the exclusion criteria includes patients with distal radius fracture with additional comorbidity, patients that has undergone fracture treatments, patients that refuse to be examined.

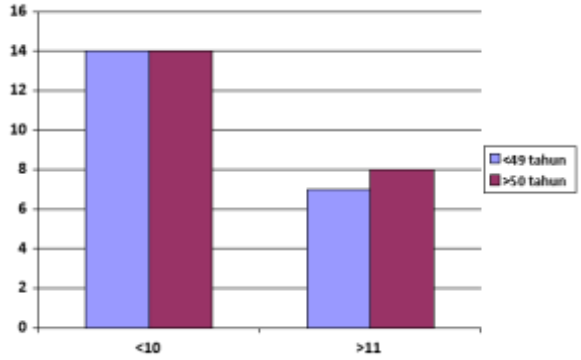
All study subjects have been approved by department of research and development if RSUP H. Adam Malik Medan.This study is consented by the Ethical Committee for Health Research in University of North Sumatra's Faculty of Medicine.

Results

Data from medical record from January 2014 – January 2016 shows 106 cases of fractures involving radius bone. 60 cases among them are intra/extra articular fracture of distal radius of all ages treated and diagnosed in RSUP HAM's emergency department and orthopedic polyclinic. 43 patients met the inclusion criteria, consisting of 22 elderly patients and 21 young patients.

Table 2 Age distribution to Quick DASH score

Age	Quick Dash Score		Total
	<10	>11	
<49 years old	14	7	21
>50 years old	14	8	22
	28	15	43



From table 2 and the diagram above, it is known that in young patients there are 14 people with Quick DASH score <10 and 7 people with Quick DASH score >11, whereas in elderly patients there are 14 people with Quick DASH score <10 and 8 people with Quick DASH score >11.

Table 3.*Chi-Square test*

Chi-Square Tests[c]

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	.043[a]	1	.835	1.000	.545	
Continuity Correction[b]	.000	1	1.000			

From the above table obtained that the test results P> 0.05, meaning there is no significant relationship between old and young age.

Discussion

The researcher tested the result using SPSS V.20, the data distribution was tested using saphiro-wilk method because the amount of data is less than 50, then continued with Chi-Square test. From Chi-Square test, P> 0.05 is obtained showing there is no relationship between age with Quick Dash Score. This is in accordance with the hypothesis of researchers that there is no difference in clinical outcomes between young patients and elderly.

The results of this study shows no significant difference between young age and the elderly who had the same treatment. This is based on clinical, radiological, and physical examinations and also based on Quick DASH score performed on each patient. This is in accordance with previous studies (MacKenzie et al., 1988; Trumble et al., 1994.

But this is contrary to another studies which suggest that the increase in age becomes a predictor of decreasing clinical outcome (Glancy et al.,1992;Kaukonen et al.,1988; Morris et al.,1991;Stewart et al.,1985).

The researcher encountered difficulties when collecting samples due to patient error while filling out contact details in the medical record.

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