

CASE REPORTS

CONSERVATIVE CARE COST ANALYSIS OF PATIENTS OF LONG BONE FRACTURE IN EMERGENCY ROOM. A REVIEW TO SEE THE SUFFICIENCY OF HEALTH INSURANCE COSTS

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ABSTRACT

Introduction: Long bones are bones that include the humerus, radius, ulna, femur, tibia and fibula. Aside from fibula, the main function of long bones is supporting weight and facilitate movement. Therefore, fracture in the long bone will cause limited movement or even loss. Long bone fracture is still a global problem because the number of events is quite large. This is in line with the increase in socioeconomic status and the incidence of traffic accidents which is one of the causes of fractures. **Method:** This is a Prospective study to determine the magnitude of the cost of treatment conservatively in cases of long bone fractures in RSUD dr. Soetomo. The study design used was a prospective cohort. The sample size used in this study was determined by consecutive sampling, ie patients who met the inclusion criteria in the period May - August 2017. **Results:** From the observations for four months from May 2017 - August 2017 at Emergency Room Soetomo General Hospital, we found 77 patients with long bone fractures that were casted. Of these patients, 38 patients were placed in a slab and 39 patients were placed in a circular cast. Among the 39 people, 17 patients were excluded according to the exclusion criteria and 22 patients were included as the study sample according to the inclusion criteria. By using a statistical test using paired sample T test with a value of $\alpha = 0.05$, a significance of 0.025 was obtained. Because the significance value is $0.025 < 0.05 (\alpha)$. **Discussion:** From the results, there was a difference between the BPJS rate of installing circular cast and the real cost of installing circular cast on long bone fractures. In addition, we get that the average value of the BPJS rate is greater than the real cost value, which means we can conclude that the BPJS cost can cover the cost of conservative therapy in cases of long bone fractures. **Conclusion:** In the economic aspect, the longer stay means higher costs that must be paid by the patient (the payer) and accepted by the hospital. This only applies to real tariffs, whereas to INACBG's long or short length of stay does not affect the cost.

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INTRODUCTION

Long bones is a main framework for movement. Fracture of long bone can limited movement. The occurrence of long bone fracture is still a global problem because the number of events is quite large. This is in line with the increase in socioeconomic status and

the incidence of traffic accidents which is one of the causes of fractures ¹.

Long bone fractures mainly result from significant trauma. Data shows incidence of long bone fractures is 21 fractures per 1000 people per year in United States, men is higher than women. Similar data also reported in Norway and United Kingdom². Approxi-

mately, 2109 patients seeking ED to Orthopedics and Traumatology at the Soetomo General Hospital itself, in 2016, about 360 (17%) were patients with long bone fractures treated with conservative therapy³.

In every case of long fracture, it is necessary to choose the right therapy. In general, therapy for long bone fractures is divided into conservative (non-operative) and operative therapy. The costs between conservatively and operative therapy are quite different. James Heckman in 1997 showed that the cost of therapy in tibia fracture cases is 65% lower conservatively compared to operative therapy⁴.

Recently, health financing model In Indonesia is mainly centered on BPJS (Social Security Organizing Agency) Health and health insurance. Funding with Health BPJS based on the INA-CBGs (Indonesia Case Base Groups) package makes it possible to carry out conservative treatment of long bone fractures comprehensively. In BPJS, the products covered are regulated by national formulary⁵.

Therefore, to estimate adequacy of conservative therapy treatment costs for long bone fractures and its efficiency, this study focus on the costs incurred by the INA-CBG package and the amount the need for conservative therapy of patients with long bone fractures at dr. Soetomo General Hospital³.

CASE(S)

From 22 patients included in inclusion criteria, there were 14 patients (65%) male and 8 female patients (35%). From these patients we get a number of cases with diagnoses of fractures in the upper limb, such as: closed fracture antebrachia, closed fracture distal radius, and Galeazzi fracture and closed fractures in the lower extremities such as: closed tibia fractures, calcaneus fractures, and metatarsal fractures. Most of them, we found most cases were fractures in the antebrachial section.

In antebrachial fractures, we do closed reduction management and immobilization using a long arm cast, while distal radius fracture, immobilization is done by placing a long arm cast. In lower extremities, most fractures ensue in tibia. It could be done conservatively that is closed reduction and immobilization with long leg cast, whereas metatarsal fracture, conservative management was performed under knee cast.

RESULTS

Afer four months observation, from May 2017 - August 2017 at Emergency Room Dr. Soetomo General Hospital, we found 77 patients with long bone fractures that were casted. Of these patients, 38 patients were placed in a slab, 39 patients were placed in a circular cast. Among 39 patients, 17 patients were excluded according to criteria and 22 patients were included as subject on this study. The cast installation was performed by PPDS Orthopedics and Traumatology Hospital Dr. Soetomo - Faculty of Medicine, Airlangga University who has received casting academy training.

Table 1. Sample distribution based on age

Group age	Number	(%)
≤10 Years old	8	36,4
11-20 Years old	5	22,7
21-30 Years old	2	9,1
31-40 Years old	4	18,2
41-50 Years old	2	9,1
61-70 Years old	1	4,5
Total	22	100,0

From data, it was found that the highest incidence of closed fractures occurred in the range of first and second life periods. Children run into dramatic change in motoric development so as they tend to fall like from furniture or stairs. Meanwhile, in second decade of life, the trauma mechanism mainly occurs during outdoor activities. This is almost in line with study conducted by Hedstrom EM et al in 2010 in Sweden⁶.

Table 2. Sample Distribution based on gender

	Genders	Total	(%)
o	Men	14	63.7
	Women	8	26.3
	Total	22	100

From table 2, the highest incidence of closed fractures is found in men twice than women. It caused by trauma, especially trauma due to traffic accidents, workplace accidents and activities/ sports.

Table 3. Sample Distribution based on Conservative treatment

Conservative Treatment	Total	%
Long arm cast	8	36
Below elbow cast	1	4
Long leg cast	3	13
Below knee cast	3	13
Long arm cast dengan general anesthesia	6	27
Long arm cast + below knee cast	1	4
Total	22	100

Based from table 3, it was found that the incidence of fractures is more common in the upper limb than the lower limb

Table 4. Distribution of Average Comparison of Real Cost Rates and BPJS Rates

Conservative Treatment	Total	Average of Real Cost	BPJS Insurance Cost
Long arm cast	8	Rp. 548.750	Rp. 579.700
Below elbow cast	1	Rp. 641.000	Rp. 579.700
Long leg cast	3	Rp. 411.666	Rp. 579.700
Below knee cast	3	Rp. 641.000	Rp. 579.700
Long arm cast dengan general anesthesia	6	Rp. 5.605.333	5.724.600
Long arm cast + below knee cast	1	Rp. 821000	Rp. 579.700

DISCUSSION

By using a statistical test using paired sample T test with a value of $\alpha = 0.05$, a significance of 0.025 was obtained. Because the significance value is $0.025 < 0.05 (\alpha)$, it can be concluded that H_0 is rejected, which means there is a difference between the BPJS and real cost of installing circular cast on long bone fractures. In addition, average value of BPJS rate is greater than real cost value. It means that the BPJS cost can cover cost of conservative therapy in cases of long bone fractures. This happens because in patients who are treated conservatively do not require a long treatment time.

According to Cleverly (1997), one way that costs for a package payment system (Cased Base Groups) can be reduced by reducing patient length of stay (Cleverley, 1997). Meanwhile Sudra (2009) reported, from medical aspect the longer patient stay at hospital, quality of medical performance is declining because the patient must be treated longer (longer recovery). Conversely, the quality of medical performance is good in case patients treated in shorter period ⁷. From economic aspect, the longer the length of stay means the higher the costs that must be paid by the patient (the payer) and accepted by the hospital. This only applies to the real tariff, whereas the tariff of INACBG's long or short length of stay does not affect the cost ⁸.

The results of this study are almost in line with study conducted at Kalisat Hospital Jember in January - June 2015 in which there was a statistically significant difference between real cost rate and INA-CBG package rates on the payment of diabetes mellitus patient claims. In this case a lower real cost rate is obtained⁹.

However, different results were obtained in study conducted at RSUD dr. Achmad Mochtar Bukittinggi in January to December 2016. In this study, the difference in negative rates that illustrates hospital rates is greater than the payment of INA-CBG rates.

Negative rate difference is found in surgical cases involving operative medical measures ¹⁰.

Weaknesses of this study involve: period is too short, only 4 months (May to August 2017), so that the number of cases obtained is relatively low. Then further study is needed to assess especially in terms of patient satisfaction and operator satisfaction. In addition, this study also received funding from sponsors in accordance with agreed cooperation.

CONCLUSION

Conservative therapy with circular cast for closed bones with long bones is still one of the main choices today, especially in children. The current health cost financing model mainly uses BPJS based on the INA-CBGs package. The rate of the INA-CBG package is greater than the real cost rate for patients with closed fractures that are treated conservatively in Emergency Room Dr. Soetomo General Hospital.

Further research is needed to review more deeply about conservative therapy in the treatment of closed fractures, especially in terms patient satisfaction as well as from operator or doctor's point of view.

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