

Clinical Outcome SF-36 Score Following Above-Knee Amputation in Osteosarcoma Patients at H. Adam Malik Hospital Medan 2013 – 2018

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Abstract

Introduction

Osteosarcoma is the most common non-hemopoietic primary bone malignant tumor. Surgery is a fundamental component of any osteosarcoma treatment algorithm. Amputation is indicated because of the involvement of multiple neurovascular bundles or the presence of soft tissue involvement. Amputation can affect the patient's quality of life. The method with LSS has better results than amputation. The quality of life of patients with osteosarcoma is determined by the therapeutic measures they undergo and the emotional quality of the patients in their post-therapy life. In this study, we observed the clinical outcome of osteosarcoma patients undergoing amputation using an SF-36 score.

Methods

This cross-sectional study took data from medical records from 2013 – 2018. Patients with osteosarcoma who underwent amputation surgery were included in the sample of this study. The inclusion criteria in this study were patients who had undergone above knee amputation (AKA) surgery. Exclusion criteria in this study were incomplete patient medical record data, the patient could not be contacted/contacted, the patient was sick/died, and the patient did not complete the questionnaire.

Results

This study was carried out from 2013 – 2018, and 36 patients were included with an average age of 24.23 ± 12.71 . Patients included in this study consisted of 26 (73%) males and 10 (27%) females. The quality of life of osteosarcoma patients was assessed using the SF-36, which assessed the physical and mental components. The results of the SF-36 assessment in this study obtained the total value of the physical component, 49.76 ± 14.33 , and the total value of the mental component, 49.01 ± 14.67 .

Conclusion

This study showed quality of life of osteosarcoma patients with amputation treatment showed low results in this study

Keyword: Osteosarcoma, Amputation, Quality of life

Introduction

Osteosarcoma is the most common non-hemopoietic primary bone malignant tumor. According to WHO, the incidence of osteosarcoma in all populations is about 4-5 per 1,000,000 population. The estimated incidence of osteosarcoma increases to 8-11 per 1,000,000 population per year at 15-19 years old.

Surgery is a fundamental component of any osteosarcoma treatment algorithm. Amputation is indicated because of the involvement of multiple neurovascular bundles or the presence of soft tissue involvement. Amputation can affect the patient's quality of life. Kim et al.(Kim, Kwak and Chung, 2013) observed the quality of life of osteosarcoma patients with parameters SF36 and musculoskeletal tumor scores (MSTS) in the lower extremities.

His research showed a significant relationship between MSTs and the SF-36 score in patients undergoing LSS (*limb salvage surgery*). The method with LSS has better results than amputation. The quality of life of patients with osteosarcoma is determined by the therapeutic measures they undergo and the emotional quality of the patients in their post-therapy life. In this study, we observed the clinical outcome of osteosarcoma patients undergoing amputation using an SF-36 score.

Methods

This cross-sectional study took data from medical records from 2013 – 2018. Patients with osteosarcoma who underwent amputation surgery were included in the sample of this study. The inclusion criteria in this study were patients who had undergone above knee amputation (AKA) surgery. Exclusion criteria in this study were incomplete patient medical record data, the patient could not be contacted/contacted, the patient was sick/died, and the patient did not complete the questionnaire. Patients who enrolled in the study had received information and consent for medical treatment.

An orthopedic doctor performs the AKA procedure following existing procedures. Patients undergoing AKA procedures will be given three cycles of adjuvant chemotherapy. The SF-36 questionnaire was assessed two years after the AKA action was taken.

Results

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Table 1. Characteristic patient with osteosarcoma

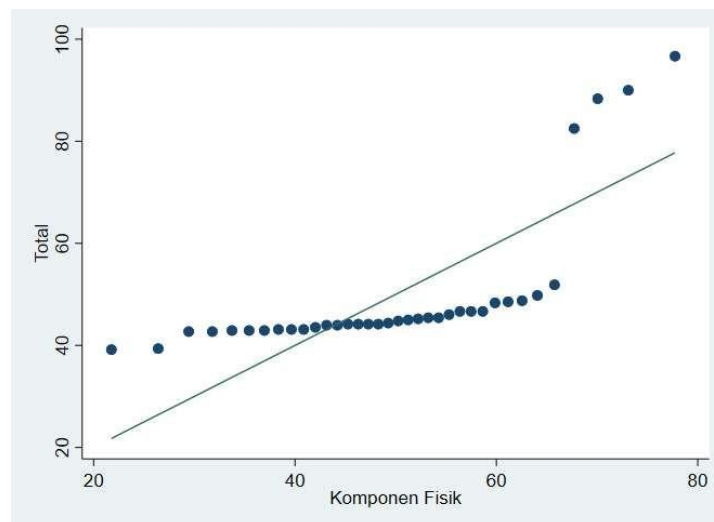
Characteristic	n = 36
Age	24.23 ± 12.71
Gender (%)	
Male	26 (73)
Female	10 (27)
Education (%)	
Primary school	4 (11,1)
Junior high school	6 (16,7)
Senior high school	22 (61,1)
Incomplete primary school	2 (5,6)
No education	2 (5,6)

Job (%)

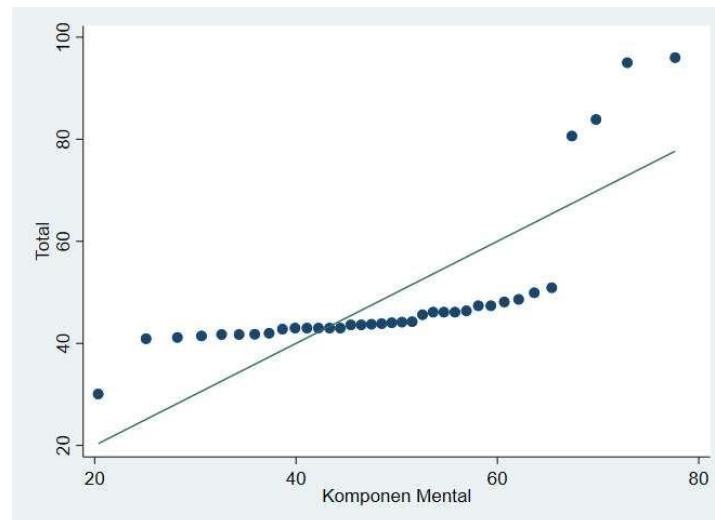
Jobless	5 (13.8)
Student	15 (41.7)
Private employee	14 (38.9)
Government employee	1 (2.8)
Entrepreneur	1 (2.8)

Component (0-100)	SF-36 score		
	Total	≤50 (n)	>50 (n)
Physical component score	49,76±14,33	32	4
Physical functioning	47,36±16,05	29	7
Physical role functioning	89,58±16,00	1	35
Body pain	42,99±21,07	28	8
General health perception	19,10±27,73	32	4
Mental component score	49,01±14,67	32	4
Vitality	30,00±27,54	29	7
Social functioning	43,47±23,22	26	10
Emotional role functioning	88,89±19,25	2	34
Mental health	33,67±17,92	32	4

In this study, there were four patients with outlier scores on the assessment of the physical component [Gambar 1] and mental component [Gambar 2]. In assessing the physical and mental components, scores were 82.5, 88.3, 90, 96.7 and 95, 96, 83.9, and 95, respectively.



Gambar 1. Grafik hasil penilaian komponen fisik pada SF-36



Gambar 2. Grafik hasil penilaian komponen mental pada SF-36

Discussion

This study found that the demographics of osteosarcoma patients were more common in male patients than in female patients. The results of this study are in accordance with several previous studies, which showed that the incidence of osteosarcoma was more common in men than women.(Polednak, 1985; Monograph, 2014) Osteosarcoma has a bimodal age distribution in young children and adults. This study showed that the average age is 24.23 ± 12.71 years. Most of the patients included in this study had a high school education and a job as a student. Previous studies have shown that social and economic status can be predictors of morbidity and mortality in osteosarcoma cases.(Davis, Bell and Goodwin, 1994) The lack of education can lead to a lack of understanding of the patient about the disease he is suffering from. In addition, seeking alternative treatment, delaying, or refusing medical action are also often found in patients with low levels of education. These things can cause increased morbidity and mortality in osteosarcoma patients.

Osteosarcoma is a disease that is quite difficult to treat both from the side of the medical staff and the patient. Collaboration between doctors and patients can be a factor in healing and improving the quality of life in osteosarcoma patients. There are several methods to assess a patient's quality of life. This study used the SF-36 to assess patients' quality of life with osteosarcoma. Management of osteosarcoma affects the quality of life of osteosarcoma patients. In 1970, the current treatment for osteosarcoma was amputation. At that time, more than 80% of patients died from metastases, mainly to the lungs.(Ottaviani and Jaffe, 2009) Over time, the life expectancy of osteosarcoma patients has increased. With the addition of a chemotherapy protocol in osteosarcoma, life expectancy increases.(Hudson *et al.*, 1990; Bacci *et al.*, 2000) A study showed that quality of life could be an independent prognostic factor for survival in osteosarcoma patients.(Eichler *et al.*, 2022) In this study, the average physical and mental components were 49.76 ± 14.33 and 49.01 ± 14.67 . Some studies use a score above 50 to be interpreted as a good quality of life and a score below 50 to be interpreted as poor quality of life.(Modersitzki *et al.*, 2014) The average results obtained in this study are classified as poor results. The results of this study are in accordance with several previous studies. Yonemoto *et al.*(Yonemoto *et al.*, no date) compared the quality of life of osteosarcoma patients between the amputated group with limb salvage. The results of this study indicate that

the value of the quality of life of osteosarcoma patients undergoing limb salvage is higher than amputation.(Yonemoto *et al.*, no date) In the amputation group, the average value of the physical component was 39.4 ± 13.8 , and the mental component was 55.6 ± 10.1 . Griesser *et al.*(Griesser *et al.*, 2012) demonstrated hemipelvectomy in pelvic sarcoma patients. The results showed a low value of SF-36 where the physical component was 32.4 ± 8.9 and the mental component was 54.6 ± 12.3 .(Griesser *et al.*, 2012)

This study had four patients with high total physical and mental components scores. Several aspects that can affect the quality-of-life assessment include the location of cancer, the surgery performed, the duration of the first diagnosis, comorbid diseases, age, and education level. The above factors may lead to a high SF-36 assessment in osteosarcoma patients.

The low SF-36 rating in this study indicates that a better action or strategy is needed to treat osteosarcoma. This can be achieved by increasing public education about osteosarcoma and providing good and holistic medical services. Although amputation shows the poor quality of life assessment results, studies show that amputation can improve the quality of life in osteosarcoma patients with metastases.(Gil *et al.*, 2019) Gil *et al.*(Gil *et al.*, 2019) observed amputated osteosarcoma patients and demonstrated reduced pain accompanied by increased mobility and emotionality.

There are several shortcomings in this study. First, in this study, there were no identified confounding variables that could affect the assessment of the quality of life, such as income level, cancer severity, and classification of osteosarcoma. Second, this study was conducted retrospectively, which tends to be biased. However, all patients who entered this study were treated using state insurance so that this variable could be controlled. On the other hand, the management of osteosarcoma has been regulated in PNPk osteosarcoma so that the variables of severity and classification can be controlled.

Conclusion

This study shows (1) the characteristics of osteosarcoma patients in this study were dominated by men with an average age of 24 years; (2) Quality of life of osteosarcoma patients with amputation treatment showed low results in this study, and (3) there were 4 patients out of 36 patients who had an SF-36 score above 50. Some suggestions that can be added for future research, including: (1) using a study design with a prospective approach; (2) more samples; and (3) better data collection such as osteosarcoma staging, osteosarcoma location, and the type of chemotherapy used.

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