



## CHARACTERISTICS OF DEMOGRAPHY AND SITE OF LESION IN PATIENTS WITH OSTEOMYELITIS IN ADAM MALIK GENERAL HOSPITAL MEDAN FROM 2016 – 2017

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### ABSTRACT

**Introduction:** Osteomyelitis is an infection of bone tissue that affecting the bone marrow and/or bone cortex, it can be either exogenous or hematogenous. Osteomyelitis can be an acute inflammatory process or chronic inflammation of the bone and its surrounding tissue secondary to infection. Osteomyelitis can be acute or chronic.

**Aims :** This study aim to find out the demographic characteristics and site of lesion inpatient with osteomyelitis in Haji Adam Malik General Hospital Medan from 2016-2017

**Method:** This isa descriptive study aims to determine the characteristics of osteomyelitis patients in Haji Adam Malik General Hospital Medan from 2016-2017. Samples were medical records data from patients diagnosed with osteomyelitis treated in Haji Adam Malik General Hospital Medan ward.

**Results:** This study showed that out of 51 osteomyelitis patients, there were 9 patients (17.6%) in the age group of < 18 years and 42 patients (82.4%) were in the age group of > 18 years. 40 patients were male (78.4%), and the rest 11 patients (21.6%) were female. There were 22 patients with elementary school graduate (43.1%), 25 patients with junior high school graduate (49.0%) while the rest 4 patients were senior high school graduate (7.9%). Patients who had occupation were 34 patients (66.7%), while those who did not have any occupation were 17 patients (33.3%).

Based on the anatomical location of osteomyelitis, most of the infected site were in the long bones, such as in the Femur (35.5%), Tibia (19.6%) and Tibia-Fibula (13.7%). The most common site of osteomyelitis sites of lesion besides long bones were in foot (11.8%), Ankle (5.9%). The other location were Pelvis, Clavicle and Digiti III Manus Dextra, each affecting only 1 patient (2.0%).

**Conclusion:** Osteomyelitis patients are more often seen in age groups of > 18 years, male, junior high school graduate and who had some occupation. While the site of infection is commonly seen in the long bones, namely in the femur.

### KEYWORDS : Characteristics Of Demography, Site Of Osteomyelitis

#### INTRODUCTION

Osteomyelitis is an infection of bone tissue that affecting the bone marrow and/or bone cortex, it can be either exogenous or hematogenous. (Gomes, 2017). Osteomyelitis can be an acute inflammatory process or chronic inflammation of the bone and its surrounding tissue secondary to infection (Ramachandran, 2017). Osteomyelitis in general is a slow infection process compared to acute infections of the skin, muscles or joints, and sometimes can be difficult to distinguish from cellulitis (white, 2016). Acute osteomyelitis is characterized by the onset of systemic fever and rapid local manifestations.

Chronic osteomyelitis is a result of poorly treated acute osteomyelitis (Salter, 2008). According to research conducted in the United States, it was found that about 25% of acute osteomyelitis will continue to become chronic osteomyelitis. Subacute osteomyelitis is more common in pediatric populations with 5 cases out of 100,000 children per year in developed countries and may be higher in developing countries (Catherine, 2019). The incidence of subacute osteomyelitis has increased since antibiotics use to treat osteomyelitis. According to Blyth et al there was a decreased incidence of acute and subacute osteomyelitis with a greater reduction in the incidence of acute osteomyelitis. In East Africa, subacute osteomyelitis is the most common form of osteomyelitis. The average age of patients is 2-12 years no matter what gender, but in general men are more affected than women.

Osteomyelitis occurs after an inoculation and bone necrosis. This can be caused by bone trauma, surgery or due to a

foreign object entering the bone. Osteomyelitis can usually be caused by *Staphylococcus aureus* then followed by *bacillus coli*. Except for *salmonella*, hematogenous osteomyelitis usually manifests as an acute systemic fever accompanied by symptoms of local pain, malaise, redness and swelling (Robbin & Kumar, 2000).

Lately, the morbidity and mortality of osteomyelitis infections has begun to decline, this is due to the increasingly advanced techniques for handling cases of infection including the use of antibiotic therapy and surgery. The key to managing osteomyelitis infection is management of initial diagnosis, surgical therapy, and administration of appropriate antibiotics. A multi disciplinary approach is absolutely necessary by involving orthopedic surgeons, plastic surgeons and the role of clinical microbiology doctors. Until now, deb rident and the use of intravenous and oral antibiotics is a therapy adopted to treat chronic osteomyelitis in general.

One of the main therapies for osteomyelitis is antibiotics. Antibiotics are drugs that are widely used to treat infections caused by bacteria. Antibiogram is an antibiotic sensitivity test conducted by a microbiology laboratory to look for possible antibiotics that can be used as therapy. Anti biogram can be used as a basis for empirical therapy before culture results are obtained.

Healing chronic osteomyelitis is quite difficult as it is often accompanied by recurrence and exacerbations. In addition, there are no studies about characteristics of osteomyelitis patients at the Haji Adam Malik General Hospital Medan ever conducted yet. With the reasons, this study needs to be conducted in Adam Malik General Hospital in order to be the

guideline for the determination of antibiotic therapy in osteomyelitis.

## METHOD

This study uses a descriptive method to determine the characteristics of osteomyelitis patients in Haji Adam Malik General Hospital Medan from January 2016- December 2017. The study subjects were chosen from a population of osteomyelitis patients who came for treatment at Haji Adam Malik Hospital Medan and have their medical record data examined then analyzed.

## RESULT

From the results of this study, out of 51 osteomyelitis patients, as many as 9 patients (17.6%) were in the age group of <18 years and as many as 42 patients (82.4%) were in the age group of > 18 years, which means more osteomyelitis occur more commonly in adult patients. Based on gender, from 51 osteomyelitis patients there were 40 male patients (78.4%) and 11 female patients (21.6%), which meant that osteomyelitis were affecting more men than women. Based on level of education, out of 51 osteomyelitis patients there were 22 patients with elementary school graduate (43.1%), 25 patients with high school graduate (49.0%) and 4 patients with university graduate (7.9%). Based on occupation there were 34 patients who worked (66.7%), while the rest 17 patients does not have any occupation (33.3%). Based on bone type there were 39 patients with osteomyelitis in long bone (76.5%) and 12 patients with osteomyelitis in other than long bones (23.5%).

**Table 1. Distribution of Study Subjects According to Osteomyelitis Location**

No	Osteomyelitis Location	n	%
1	Tibia	10	19,6
2	Fibula	1	2,0
3	Tibia-Fibula	7	13,7
4	Femur	18	35,3
5	Femur-Tibia	1	2,0
6	Humerus	2	3,9
7	Pedis	6	11,8
8	Ankle	3	5,9
9	Pelvis	1	2,0
10	Clavicle	1	2,0
11	Digit III of Manus Dextra	1	2,0
	<b>Total</b>	<b>51</b>	<b>100</b>

From the table above, it can be seen that the frequency distribution of osteomyelitis patients based on the anatomical location. Most of them were in the long bone, specifically femur in 18 patients (35.5%), followed by the Tibia in 10 patients (19,6%) and Tibia-Fibula in 7 Patients (13.7%). The most common site other than long bones, are foot, found in 6 patients (11.8%) by Ankle in 3 patients (5.9%) and the rest were in Pelvis, Clavicle and Digit III Manus Dextra each in 1 patient only (2.0%).

## DISCUSSION

From age group perspective, this study is in line with research conducted by Indira et al (2016) stated that chronic osteomyelitis is commonly occurred in late adolescence group ranging from 17 to 25 years (22 cases or 35.5%), and the occurs the least in adolescence group ranging from 14 to 16 years (4 cases or 6.5%). Nigatie et al (2017) also conducted study at the Ethiopian hospital and found out that most of osteomyelitis were affecting patients in the age range of 18-27 years (122 patients or 51.2%), followed by age group of 28 - 37 years (54 patients or 22.6%), which means more osteomyelitis affect adult.

Osteomyelitis in adults is usually chronic and the disease can

last for several months to years. The occurrence of chronic osteomyelitis in adult patients can occur due to inoculation from other adjacent areas of infection and can also due to direct contamination at the site of injury. The disease that predispose osteomyelitis in Indonesia is mostly TB (Tuberculosis). Poor hygiene factors and trauma to the bone increase the occurrence of infections that can cause open sores so that it becomes an entry point for bacteria causing infection.

Based on gender, the results of this study are in line with research conducted by Indira et al (2016) who stated that 51 cases of osteomyelitis (82.3%) occurred in men and while other 11 cases (17.7%) occurred in women with a ratio of 4: 1. Then the results of research by Adiwanto and Sutejo (2005) in Dr. Kariadi Semarang in 2001 - 2005 also obtained results that were not much different. The study found that out of 33 patients diagnosed with chronic osteomyelitis, 26 of them were male while the rest 7 patients were women. The higher incidence of osteomyelitis in men compared to women in this study is likely due to the large number of trauma cases in men which cause bone fractures and are not treated quickly.

Nigatie et al (2017) also said that the majority of patients suffering from osteomyelitis work as farmers (190 patients or 79.8%), and 10 patients work as government employees (4.2%).

On bone infected site perspective, however, this study is not much different from the study conducted by Pozo et al (2018) who found that the most common location of osteomyelitis were in Tibia (17 patients or 23.6%) and femur (in 6 patients or 22.2%). A similar study was conducted by Peng et al (2017) with results that were not much different: the average osteomyelitis patient had an infection in the long bones for 32 patients (38.1%) and the femur in 13 patients (15.4%). Results of study conducted by Jiang et al (2015) also found that the location of osteomyelitis commonly located at the long bones, which is femur (24.46%) and tibia (39%). For locations other than long bones, calcaneus is the most commonly found (11.46%).

## CONCLUSION:

From this study it can be concluded that: Osteomyelitis is more common in patients in the aged group of > 18 years, mostly occurred in male than female patient. Osteomyelitis also more common in high school graduate and employed patient. As for the infection site, long bone especially femur is the most common location.

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