



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.2613820>Available online at: <http://www.iajps.com>

Research Article

**OSTEOMYELITIS IN THE CHILDREN SUFFERING FROM  
SICKLE CELL ANEMIA IN ALLIED HOSPITAL FAISALABAD****Dr Muhammad Aftab Younas, Dr Muhammad Zeeshan, Dr Muhammad Usman Arif  
Allied Hospital Faisalabad****Article Received:** January 2019**Accepted:** February 2019**Published:** March 2019**Abstract:**

**Objective:** The most common cause of morbidity & mortality among the patients of sickle cell anemia is osteomyelitis. The main objective of this research work was to find out the frequency and design of this complication among the children suffering from the disease of sickle cell anemia Allied Hospital Faisalabad.

**Methodology:** This study was a retroactive analysis of every available data of the patients of sickle cell anemia having less than 16 year of age. These patients admitted in the children ward of Allied Hospital Faisalabad from the January 2014 to December 2018. Patients found with incomplete records were not the part of this research work.

**Results:** Review of the records of 187 patients of sickle cell anemia carried out. The average age of the population of this case study was  $6.950 \pm 4.230$ . Females were less in number as compared to the males. Among 187 patients suffering from SCA, 15 patients found with osteomyelitis. The occurrence of osteomyelitis was 0.08%. We found the AO (acute osteomyelitis) as accounted for hundred percent patients. The most common organism which separated from the blood of 5 was *Klebsiella pneumonia*. High temperature, swelling the legs & pain in bones were the most common mode of appearance. Most frequently involved bone was Tibia found in 8 patients. The organisms which were the main cause of the disease were very sensitive to gentamycin & ceftazidime in 55.0% cultures of the blood samples.

**Conclusion:** The major presence of the *Klebsiella pneumonia* shows that there is a clear alteration in the accepted design of this complication in which the specie of the *Salmonella* were the main organisms as a cause of this disease previously.

**KEY WORDS:** Anemia, Temperature, Pneumonia, Hyposplenism, Neutrophil, Infected Limb.

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Please cite this article in press Muhammad Aftab Younas et al., *Osteomyelitis In The Children Suffering From Sickle Cell Anemia In Allied Hospital Faisalabad.*, Indo Am. J. P. Sci, 2019; 06(03).

**INTRODUCTION:**

A very common disease of the tropics is SCA [1]. One of the very severe disorder which requires hospitalization is osteomyelitis [1]. This enhanced defenselessness to the problem has a relation to anomalies in the mechanism of defense of these particular patients, with operational Hyposplenism [2] which is a disorder in the substitute lane of complement activities [3] & function of the faulty neutrophil [4]. Some of causative factors in the pathway of high frequency of the infections are Salmonella, Staphylococci, Pneumococci and E. coli [1]. The main infection site is metaphysis, where the flow of blood becomes inactive nidus for creating infection [5]. The cardinal symptoms of initial osteomyelitis re the swelling of the soft tissues with protecting willingly the infected limb [5].

Osteomyelitis of the sickle cell is the reason of great burden in the community. This is visible through the long treatment duration in the hospital and loos of working hours of men which utilized in the taking care of the infected children and financial burden on the family with the payment of bills of laboratory tests and hospital. We found scarcity of the information in our surroundings on child osteomyelitis among the SCA patients. The main objective of this research work was to assess the designs of the osteomyelitis among children suffering from SCA in the hospital of Faisalabad. This case work will also provide a helpful data for further case studies in our society.

**METHODOLOGY:**

The patients of SCA with less than 16 years of age who were suffering from osteomyelitis is to reviewed in Allied Hospital Faisalabad in this research work.

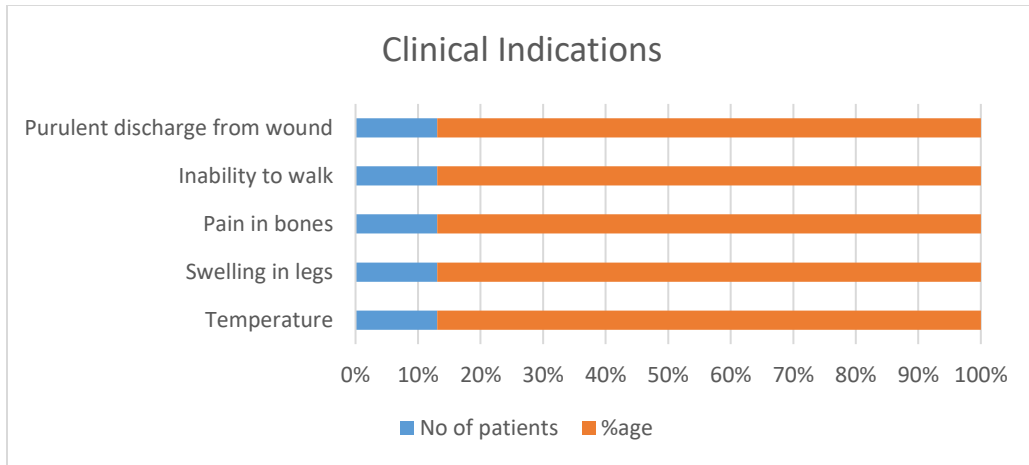
The duration of the study was from January 2014 to December 2018. The data gathering carried out from the records of the institute as well as personnel profile of the patients. Gathering of the information carried out from the record of the patients as age of the patient, sex, Hb genotype, features of laboratory and medical findings, detection and foundation of samples for the studies of microbiology. Osteomyelitis diagnosis was depending upon the medical and X-ray results. The modern methods for the detection of the osteomyelitis such as CT scanning, MRI and scans of bones did not carry out. Osteomyelitis was acute if the period of the problem was less than 14 days and it was chronic if the period was more than fourteen days. The diagnosis of the SCA was depending upon the medical traits as continuous pains in the bones, consistent jaundice, the swelling of feet and hands. The Hb electrophoresis confirmed these findings. SPSS V.14 was in use to enter the data and descriptive statistics was in use for the analysis of the collected information.

**RESULTS**

A sum of 187 patients of SCA reviewed and 15 patients among them found with osteomyelitis. This provided a rate of occurrence of 0.080%. Males were 105 and females were 82. The average age of the patients was  $6.950 \pm 4.230$  years. The median age was nine years for the patients of osteomyelitis. The infection of the lower limbs was present in 93.30% patients and tibia bone was the most common infected organ available in 53.0%. Other most influenced bones were femur (40.0%) & sacrum (7.0%). All the patients suffering from osteomyelitis appeared with temperature, swelling of limbs & pain in the bones as presented in Table-1.

**Table-I: Clinical Features at Presentation of the 15 Subjects with Osteomyelitis**

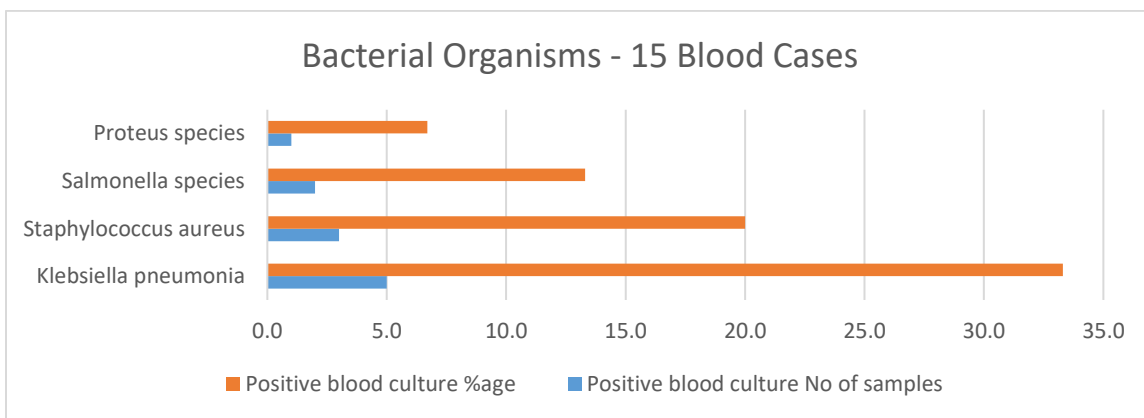
Indications	No of patients	% age
Temperature	15.0	100.00
Swelling in legs	15.0	100.00
Pain in bones	15.0	100.00
Inability to walk	12.0	80.00
Purulent discharge from wound	3.0	20.00



We found 66.70% (n:10) + cultures of blood while 33.30% (n: 5) appeared with –cultures of the blood. The most common organism, which was available in the blood samples, was *Klebsiella pneumonia* as showed in Table-2. Most patients suffering from osteomyelitis happened in first ten years. All the patients were at the start of the disease. The study based on radiological basis displayed that swelling of the soft tissues was present in 86.70% (n: 13) patients while film report of 2 patients were not present. The most effectual anti-bacterial medicines were ceftazidime (30.0%) & gentamycin (25.0%). There were some other agents which were also very effectual as cloxacillin, chloramphenicol & erythromycin. These agents were in use with various quantities depending upon the pattern of the sensitivity. Operational debridement conducted in 40.0% (n: 6) patients. The anomalies included septicemia in 66.70% (n: 10), limb shortening in 13.30% (n: 2) & fracture 6.70% (n: 1).

**Table-II: Bacteria organisms isolated from blood of the 15 cases of osteomyelitis.**

Organisms	Positive blood culture	
	No of samples	%age
<i>Klebsiella pneumonia</i>	5.0	33.30
<i>Staphylococcus aureus</i>	3.0	20.00
<i>Salmonella species</i>	2.0	13.30
<i>Proteus species</i>	1.0	6.70



**DISCUSSION:**

The occurrence of osteomyelitis in SCA patients was only 0.080%. This outcome was similar to the works of [6] in which he found 41 out of one hundred and ninety-two patients with SCA & then osteomyelitis. The only one series appearance was osteomyelitis. This can be the outcome of continuous checkups & early treatment of the disease. High temperature, swelling of bones and severe pains were the most frequent signs of this disorder. This is very much similar to the findings of other studies [6, 7]. The most common affected bone was tibia which is also similar in many case studies [8, 9]. We found humerus & femur as the most common site of infection in some series [10, 11].

The very frequent pathogen in the patients of osteomyelitis with SCD is debatable [12]. In this matter, Salmonella specie is the most common organism which is responsible for osteomyelitis [11-14]. Other case works have displayed that Salmonella is no more common for osteomyelitis [11, 15]. Aken'Ova reported the same findings [15] in which he declared the gram – bacilli as the 48.0% of separated creatures in the anomaly of osteomyelitis. In our study, the most common isolated organism was Klebsiella pneumonia. Staphylococcus aureus 20.0% (n: 3) was the next most common agent. Thanni [13] displayed that staphylococcal aureus was the most common reason linked with osteomyelitis in the children of Nigeria suffering from SCA.

We found a less occurrence of 13.30% (n: 2) for salmonella in this case study. The identification of the osteomyelitis is depending upon the investigations of laboratories & radiological testing. In our medical institute, we lacked the facilities of bone scanning & magnetic resonance imaging, we were only relying on the traditional methods of radiography which were helpful in displaying the area of destruction of bones from 7 to 10 days after the start of the infection of the bone. MRI & bone scanning is necessary to detect the infection in the early stage. The treatment with large dose against the identified microbes who are the cause of bone infection is necessary to tackle the issue in the start [16]. In this case study, the most effective against the 55.0% organisms were ceftazidime & gentamycin. This outcome is different from the Ebong [8]. He found the cloxacillin & chloramphenicol as the most valuable against 72.0% organisms which were isolated from the cultures. Surgery performs a vital role in the administration of osteomyelitis in very initial stages [16].

**CONCLUSION:**

We concluded in this research work that K. pneumonia is the most common and frequent reason of osteomyelitis in the patients suffering from SCA in our society. The amalgam or Amalgamation of the ceftazidime & gentamycin are very advantageous in the treatment of this disease.

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