International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Acute Pyomyositis: Diagnosis and Treatment of 5 Cases along with Clinical Outcome

Dr. Omprakash Kumar[1], Dr. Sunny Kumar[2], Dr. Abhimanyu Kumar[3]

[1]Associate Professor, Department of Orthopedics NMCH, Patna

[2]Senior Resident, Department of Orthopedics NMCH, Patna

[3]Junior Resident (Academic), Department of Orthopedics NMCH, Patna

Abstract: ***Background: pyomyositis is a bacterial infective condition with primary involvement of the skeletal muscles associated with abscess formation. Methods: This study was conducted on the patients admitted between 2022-2023 at NMCH Patna. Result: The mean age of the patients was 11.2 years (range 5-20 years). Among 5 patients, 4 patients were male and one patient was female. Gluteal region and thigh were the region most commonly involved (4 out of 5) f/b iliopsoas (1 out of 5). Aggressive management combining appropriate antibiotics along with surgical debridement and drainage of pus is recommended. Notwithstanding the advances in diagnosis and treatment, mortality due to the disease varies from 0.5% to 2%. [16, 17] However, no patient in the present series succumbed to the disease and all of them had excellent recovery. Conclusion: pyomyositis associated with abscess formation is a rare and very dangerous condition in children. The clinical presentation can mimic symptoms of other pathologies like osteomyelitis or septic arthritis, so many times it is hard to identify. The therapy involves the antibiotics and if possible abscess drainage.***

Keywords: pyomyositis, staphylococcus aureus, abscess formation, surgical debridement and drainage, clinical outcome

1. Introduction

Pyomyositis is a microbial infection of the muscles and contributes to the local abscess formation at a single or multiple intramuscular site. Staphylococcus aureus frequently causes pyomyositis in about 90% cases with positive blood cultures in 40%, and the strain that produces Panton-valentine leucocidin (pvl) seem to be associated with poorer outcomes (1-3). It was originally reported from tropical regions of Asia and Africa and is being increasingly reported even in temperate region. It is most common in young age group and various case series showed the male predominance. Predisposing risk factors for pyomyositis include immunodeficiency virus infection, diabetes mellitus, alcoholic liver disease, corticosteroid therapy, hematologic malignancies, renal failure, autoimmune disease, trauma and rigorous exercise. Blood culture is positive in only 5-35% cases: therefore identifying the pathogen is often challenging in cases without abscess formation. it is more common in young age group. The disease entity progresses through three distinct clinical stages; stage 1 or the invasive stage, stage 2 or the suppurative stage of illness followed by late stage 3 or disseminated form of disease. Majority of patient are seen during suppurative stage of illness. Its clinical presentation is similar to that of other osteoarticular diseases including fever, pain and limping which may result in delayed diagnosis. The exact pathogenesis is not elucidated yet. It has been postulated though that transient bacteremia in the setting of preexisting or concurrent muscular injury leads to implantation and growth of bacteria leading to pyomyositis. Pyomyositis usually involves the muscles of pelvis and lower extremities. Hence this study was planned tolook at the spectrum of the disease and the clinical outcome in these patients.

2. Methods

This study was carried out at a N. M. C. H Patna a tertiary care hospital in Bihar. Number of patients was 5 in number and was admitted through NMCH opd. Primary pyomyositis was defined as an intramuscular infection involving one or more of the skeletal muscle groups in absence of adjacent skin, soft tissue, or bone infection. age, sex, history, presenting symptoms, physical symptoms, investigations included complete blood count, differential blood count, erythrocyte sedimentation rate (ESR), liver and renal function test, gram stain and culture of pus from muscles, acid fast bacilli (AFB) stain / culture and blood culture reports were also recorded. The findings were collaborated with magnetic resonance imaging in 3 of the cases. The aspirated pus was sent for culture in all 5 cases. Intramuscular abscesses secondarily extending to the muscle from adjoining tissue and occurring in the background of septicemia were excluded from this study.

3. Results

The mean age of the patients was 11.2 years (range 5-20 years). Among 5 patients, 4 patients were male and one patient was female.

The presenting feature was high grade fever (102 degrees F) and muscle pain in all 5 patients. gluteal region and thigh were the region most commonly involved (4 out of 5) f/b iliopsoas (1 out of 5).3 patients had a prior history of blunt trauma. No patient in this series had presented with toxic shock syndrome, spinal cord compression or acute abdomen.

Table 1: Patient Variable

Characteristics		N
Age	10-20	3
	5-10	2
Gender	Male	4
	Female	1
History of Trauma	Present	3
	No Present	2
Location	Gluteal Region	2
	Thigh	2
	Iliopsoas	1

Table 2: Clinical Feature

Characteristics	N
Muscle Pain	5
Fever	5
Back Pain	1
Swelling	4
Muscle Swelling	5

Ultrasound examination was the first imaging modality used for screening in all 5 patients, which showed altered echogenecity and evidences of fluid collection. The wall of the hypoechoic intramuscular abscess was thick and no septa were found in the majority of cases. The findings were collaborated with MRI in 3 patients, which was superior to ultrasound in the soft tissue delineation and exclusion of bony or joint space involvement.

The diagnosis was confirmed with aspiration of pus in all 5 patients. Culture of the aspirate showed growth of s.aureus in 3 patients, klebsiella pnumoniae in one patient and failed to show any growth in 1 patient. All the isolates of S aureus in the present series were methicillin-resistant. The diagnosis of tropical pyomyositis was confirmed with muscle biopsy in that 1 patient who did not yield any growth in culture of aspirated pus; it showed perimysial and endomysial inflammation along with myophagocytosis and muscle fibre necrosis. HIV serology was negative in all 5 patients.

All patients had anemia and polymorphonuclearleucocytosis with shift to lef, along with raised ESR, CRP. Patients with staphylococcal pyomyositis were treated with intravenous (iv) injection vancomycin in a dose of 15mg/kg to a maximum of 1 gm, given every 12 Hours along with surgical debridement and drainage of pus (in 3 cases). Patient of pyomyositis caused by Klebsiella pnemonia was treated with a third generation cephalosporin along with an aminoglycosides along with surgical debridement and drainage of pus. The antibiotics were continued for 10 days after patient became afebrile. All the patient were discharged in favourable condition with subsidence of fever and leucocytosis and improvement of hemoglobin profile.

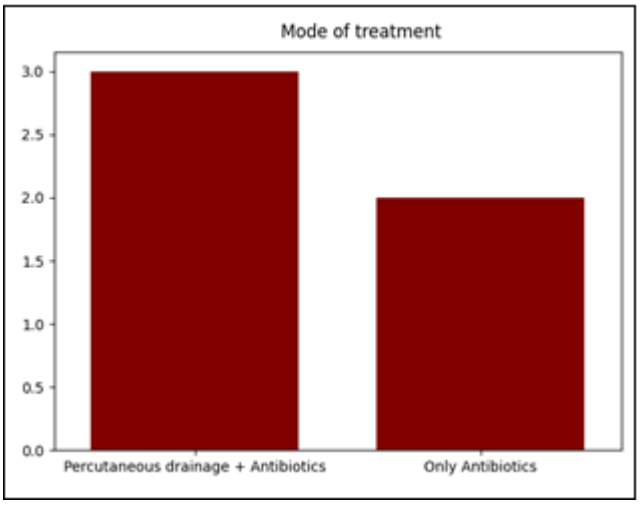

Table 3: Distribution of Causative Organisms from the culture of aspirated pus from the patients of tropical pyomyosities (n = 5)

Causative Organism Isolated	No. of Patient	Percentage
Staphylococcus aureus	3	60
Klebsiella pneumonia	1	20
No growth (sterile plus)	1	20

4. Discussion

As this entity is characteristically found in tropical areas, various terms such as tropical pyomyositis, myositis tropicans, tropical skeletal muscle abscess and tropical myositis are used. However, with increasing recognition from temperate regions, it is also referred to as non-tropical myositis, infectious myositis, or spontaneous bacterial myositis. The classical presentation is with muscle abscess while the hallmark of the disease is the finding of myositis on a biopsy specimen of involved muscle. Therefore, some authors prefer the term myositis instead of pyomyositis. The disease is seen in all age groups, although young males are the most susceptible group. Ashken and Cotton found that muscles, which are frequently involved in tropical pyomyositis include quadriceps, glutei, pectoralis major, serratus anterior, biceps, iliopsoas, gastrocnemius, abdominal and spinal muscles. [12] In our series, gluteal region and thigh were the common muscle to be involved followed by iliopsoas. S. aureus is the organism most commonly cultured from the abscess. Christin and Sarosi [11] mentioned that it is seen in up to 90% of cases in tropical areas and 75% of cases in temperate countries. S. aureus is the most common organism causing tropical pyomyositis in the present series, which has been isolated in 3 out of 5 cases.

Gupta et al. mentioned that serum levels of muscle enzymes, which include aldolase, CPK, aminotransferase and LDH are normal or slightly raised despite evidence of muscle destruction. [15] In our series also no patient had any elevation of serum CPK and LDH. Raised CPK along with characteristic electromyography changes (short duration, low amplitude polyphasic potentials) usually favor the diagnosis of polymyositis.

The natural history is progressive suppuration with either spontaneous drainage and gradual resolution or eventual

bacteremia and secondary infection leading to fatal outcome. Aggressive management combining appropriate antibiotics along with surgical debridement and drainage of pus is recommended. Notwithstanding the advances in diagnosis and treatment, mortality due to the disease varies from 0.5% to 2%. [16, 17] However, no patient in the present series succumbed to the disease and all of them had excellent recovery.

5. Conclusion

In conclusion, this study reemphasizes the fact that primary pyomyositis is not an uncommon disease entity. . Primary pyomyositis is not an uncommon infective disease entity. Differences in clinicoepidemiologic profile seen previously in these patients from temperate and tropical regions is getting increasingly blurred, which is reflected in disease nomenclature as well.2. Patients with comorbidities should initially receive empirical antibiotics effective for gram negative organisms besides coverage for usual gram positive pathogens.3. Primary pyomyositis patients with positive pus culture and hypoalbuminemia should be aggressively managed as these patients were more likely to have higher hospital morbidity.

References

[1] Bickels J, Ben-Sira L, Kessler A, Wientroub S. Primary pyomyositis. J Bone Joint Surg Am 2002; 84-A: 2277-2286.
[2] Chauhan S, Jain S, Varma S, Chauhan SS. Tropical pyomyositis (myositis tropicans): current perspective. Postgrad Med J 2004; 80: 267-270.
[3] Agarwal V, Chauhan S, Gupta RK. Pyomyositis. Neuroimaging Clin N Am 2011; 21: 975-983.
[4] Brown ML, O'Hara FP, Close NM, Mera RM, Miller LA, Suaya JA, et al. Prevalence and sequence variation of panton-valentine leukocidin in methicillin-resistant and methicillin-susceptible Staphylococcus aureus strains in the United States. J Clin Microbiol 2012; 50: 86-90.
[5] Dumitrescu O, Boisset S, Badiou C, Bes M, Benito Y, Reverdy ME, et al. Effect of antibiotics on Staphylococcus aureus producing Panton-Valentine leukocidin. Antimicrob Agents Chemother 2007; 51: 1515-9.
[6] Traquair RN. Pyomyositis. J Trop Med Hyg 1947; 50: 81-9.
[7] Scriba J. Beitrangzur, Aetiologie der myositis acuta. Dtsch Z Chir 1885; 22: 497-502.
[8] Levin MJ, Gardner P, Waldvogel FA. An unusual infection due to Staphylococcus aureus. N Engl J Med 1971; 284: 196-8.
[9] Gibson RK, Rosenthal SJ, Lukert BP. Pyomyositis. Increasing recognition in temperate climates. Am J Med 1984; 77: 768-72.
[10] Christin L, Sarosi GA. Pyomyositis in North America: Case reports and review. Clin Infect Dis 1992; 15: 668-77.
[11] Ashken MH, Cotton RE. Tropical skeletal muscle abscesses (pyomyositis tropicans). Br J Surg 1963; 50: 846-52.
[12] Shepherd JJ. Tropical myositis: Is it an entity and what is its cause? Lancet 1983; 2: 1240-2.
[13] Brown JD, Wheeler B. Pyomyositis. Report of 18 cases in Hawaii. Arch Intern Med 1984; 144: 1749-51.
[14] Gupta B, Khanna SK, Sharma BK. Pyomyositis. J Assoc Physicians India 1980; 28: 91-4.
[15] Chiedozi LC. Pyomyositis. Review of 205 cases in 112 patients. Am J Surg 1979; 137: 255-9.
[16] Smith PG, Pike MC, Taylor E, Taylor JF. The epidemiology of tropical myositis in the Mengo Districts of Uganda. Trans R Soc Trop Med Hyg 1978; 72: 46-53.