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Case Report

Tropical pyomyositis - a rare and life-threatening disease of the immunocompromised

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Introduction

Tropical pyomyositis is a rare infection of the skeletal muscles, characterised by intramuscular abscess formation. It usually arises from haematogenous seeding of bacteria, with *Staphylococcus aureus* being the most common organism [1]. Majority of cases are reported from tropical regions of Asia and Africa. Most often, this condition affects individuals who are immunocompromised. Non-specific clinical features often cause a delay in diagnosis and can lead to complications such as septic shock, acute respiratory distress syndrome, acute kidney injury and disseminated intravascular coagulation [2].

Case presentation

A 52-year-old male presented with gradual onset, progressively worsening, right lower back pain along with constitutional features for a period of two months. A dull ache in the right buttock area was a prominent complaint. He did not have morning stiffness or other features of inflammatory arthritis and did not have a past or close contact history of tuberculosis.

He had a history of epididymitis four months previously, with a positive blood culture for *Staphylococcus aureus,* which was treated with intravenous antibiotics for seven days. He was a patient with type 2 diabetes mellitus for 15 years and had decompensated cirrhosis due to heavy alcohol use. On examination, he was febrile and pale He had a body mass index of 22kg/m^2. He had severe local tenderness over the buttocks without oedema or erythema. There was no lower limb neurological deficit. Rest of the examination was unremarkable.

His full blood count revealed a neutrophil leucocytosis and a moderate normochromic normocytic anaemia. His inflammatory markers were high with blood cultures positive for methicillin-resistant *Staphylococcus aureus* (MRSA). The hip, sacroiliac joint radiographs and

ultrasound study of the gluteal region were unremarkable (Table 1).

Table1: Investigations

Investigations (Normal Range)	On admission	1 week after antibiotics	After drainage of gluteal abscess	On discharge
FBC				
WBC (4- 11 × 10^3/µL)	17.15	12.5	8.1	5.7
N(40- 60% %)	80.5	68.25	65	62.3
L(20- 40 %)	17.5	29.5	32	33.6
E(1-4 %)	0	0.25	0.4	0.2
Hb(13.5- 17.5g /dl)	10	9.7	9.8	10
Plt (150- 450 × 10^9/µL)	160	155	158	157
CRP (<5 mg /L)	120	85	60	6.5
ESR (<20mm/1st hour)	110	-	-	25
AST (5- 40 U/L)	35			32
ALT (7- 56 U/L)	25			25
ALP (40- 129 U/L)	230			160
Gamma GT(8- 61 U/L)	85			75
T. bil (0.3- 1.2 mg/dL)	2.1			2
D. bil (0.1- 0.3 mg/dL)	1			0.8
Total protein (6- 8.3 g/dL)	8.2	-	-	7.8
Globulin (2- 3.5 g/dL)	5.2	-	-	3.8
Albumin (3.4- 5.4 g/dL)	3	-	-	4
S. cr (0.74- 1.35 mg/dL)	1.8			0.8
SE				
Na (135- 145 mmol/L)	133			135
K (3.5- 5 mmol/L)	4.3			4.5
Corrected Ca (2.2- 2.6 mmol/L)	2.3			
Blood culture	MRSA +			No growth
Pus culture	Methicilin- resistant Staphylococcus aureus isolated. Fungal growth not detected. Xpert MTB/RIF- negative.			
Blood picture	Normochromic normocytic anaemia with moderate rouleaux formation			
SPEP	Albumin band diminished. Polyclonal increase in gamma globulins			
Mantoux	< 5mm			
Chest X ray, X ray lumbosacral spine, hip, sacroiliac joint, skull	Reported normal. No lytic lesions seen			
Meliodosis Ab	Not detected			
HIV 1 and 2 Ab	Not detected			
CECT chest abdomen and pelvis and upper thigh	Intramuscular collection in the right adductor magnus muscle (10× 1.3× 5cm). No other abscesses or evidence of an occult malignancy. Evidence of liver cirrhosis with no focal lesions. Splenomegaly of 14cm with hilar varices seen.			

FBC, full blood count; WBC, white blood cells; N, neutrophils; L, lymphocytes; E, eosinophils; Hb, haemoglobin; Plt, patelets; CRP, c-reactive protein; ESR, erythrocyte sedimentation rate; ALT, alanine transaminase; AST, aspartate transaminase; ALP, alkaline phosphatase; Gamma GT,gamma glutamyl transferase; T. bil- total bilirubin, D. bil, direct bilirubin; S. cr, serum creatinine; SE, serum electrolytes; NA, sodium; K, potassium; Ca, calcium; SPEP, serum protein electrophoresis; Ab, antibodies; HIV, human immunodeficiency virus

The patient was started on IV teicoplanin based on the culture sensitivity pattern. He had a satisfactory response initially with resolution of fever. However, his pain over the buttock worsened and C-reactive protein level (CRP) was persistently elevated.

Ultrasonography revealed a hypoechoic intramuscular collection in the gluteus maximus muscle (7cm × 6cm ×1.9cm). A diagnostic and therapeutic aspiration was done which revealed growth of MRSA. Patient improved symptomatically after aspiration. Pus for Xpert MTB/RIF for tuberculosis was negative. Melioidosis serology was also non-reactive.

A contrast enhanced computer tomography (CECT) of chest abdomen and pelvis done 2 weeks later revealed an intramuscular collection in the right adductor magnus muscle (10× 1.3× 5cm) (Figure 1).

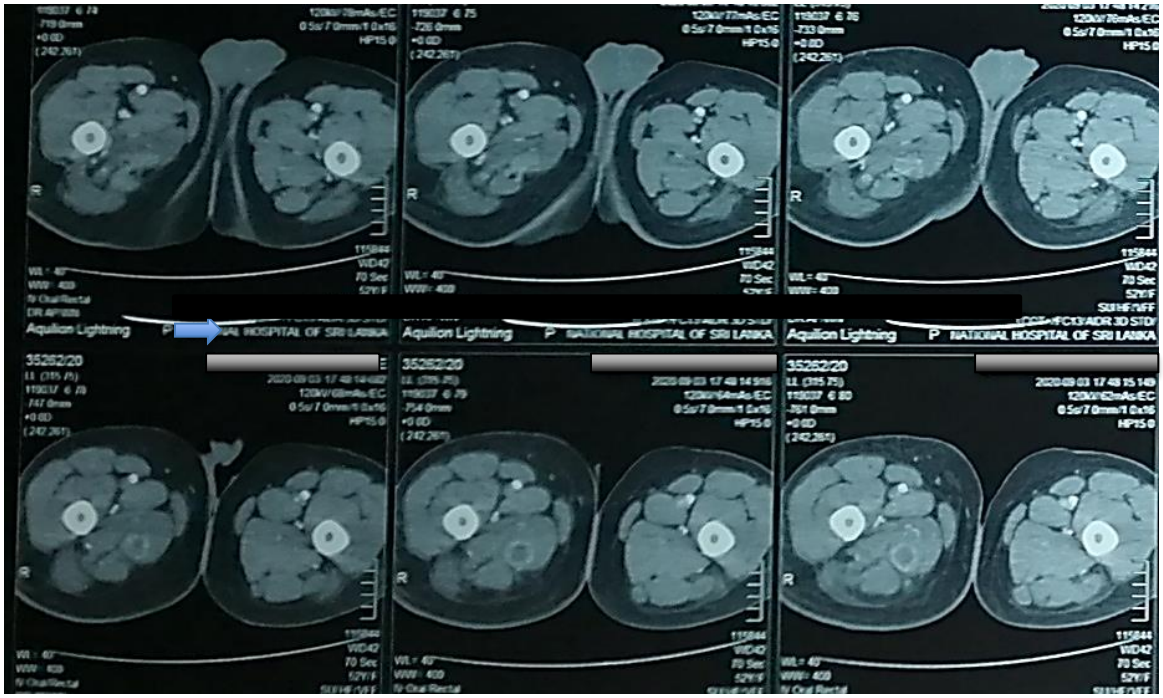

Figure 1: CECT of anterior thigh showing right adductor magnus intramuscular collection.

After a surgical consultation and multi-disciplinary input, it was decided for the patient to receive intravenous antibiotics for a total of six weeks. Patient clinically improved with resolution of pain and a weight gain of two kilograms. Repeat blood cultures at the end of treatment were negative. Repeat US study showed no residual collections.

Discussion

Pyomyositis is a suppurative infection of the skeletal muscles. Immunodeficiency states such as human immunodeficiency virus (HIV) infection, diabetes mellitus, malignancy, chronic renal and liver diseases are recognised predisposing conditions [3].

The main causative pathogen is *Staphylococcus aureus* which is responsible for 90% of

infections in tropical regions [1]. As in this patient, MRSA has been increasingly recognised as an important cause, especially with a history of past hospital admissions [4]. Less common causes of infection are Gram negative enteric bacilli, pneumococci and streptococci [3]. Muscles of thigh, calf and gluteal region are frequently affected as was seen in this patient [5].

Pyomyositis has three stages [6]. Stage one is characterised by low grade fever and cramping local muscle pains. Fever, muscle tenderness and oedema are seen in stage 2 which is the suppurative stage. Stage 3 is the severe stage characterised by systemic toxicity caused by staphylococcal bacteraemia. Septic shock, septic emboli, pneumonia and brain abscess are recognized mostly with MRSA infection [7]. Delay in recognition is an important risk factor for development of severe disease, especially in immunosuppressed patients. Mortality as high as 10% has been reported [7].

Treatment comprises of drainage and IV antibiotics [6]. In the setting of deep infection or muscle necrosis surgical intervention may be required. In immunocompromised individuals, the empirical treatment should include agents against Gram negative and anaerobic organisms.

This patient was treated with IV teicoplanin which is a good alternative for vancomycin with a similar efficacy, less toxicity and once daily dosing.

Conclusions

Morbidity and mortality due to pyomyositis is preventable if recognized early. A high index of clinical suspicion is needed. Repeated assessment and imaging may be required for the diagnosis. Lack of awareness of this disease entity may contribute to delays in diagnosis which can lead to fatal outcomes.

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References

1. Chauhan S. Tropical pyomyositis (myositis tropicans): current perspective. Postgraduate Medical Journal. 2004;80(943):267-270. https://doi.org/10.1136/pgmj.2003.009274
2. Crum N. Bacterial pyomyositis in the United States. The American Journal of Medicine. 2004;117(6):420-428.
3. Lin M, Rezai K, Schwartz D. Septic Pulmonary Emboli and Bacteremia Associated with Deep Tissue Infections Caused by Community-Acquired Methicillin-Resistant Staphylococcus aureus. Journal of Clinical Microbiology. 2008;46(4):1553-1555. https://doi.org/10.1128/JCM.02379-07
4. Ruiz M, Yohannes S, Wladyka C. Pyomyositis Caused by Methicillin-Resistant Staphylococcus aureus. New England Journal of Medicine. 2005;352(14):1488-1489. https://doi.org/10.1056/NEJM200504073521417

5. Shepherd J. TROPICAL MYOSITIS: IS IT AN ENTITY AND WHAT IS ITS CAUSE?. The Lancet. 1983;322(8361):1240-1242. https://doi.org/10.1016/S0140-6736(83)91281-3
6. Cheidozi L. Pyomyositis Review of 205 cases in112 patients. The American Journal of Surgery. 1979;Volume 137:255- 259. https://doi.org/10.1016/0002-9610(79)90158-2
7. Sharma A, Kumar S, Wanchu A, Sharma K, Sharma N, Singh R et al. Clinical characteristics and predictors of mortality in 67 patients with primary pyomyositis: a study from North India. Clinical Rheumatology. 2009;29(1):45-51. https://doi.org/10.1007/s10067-009-1277-x