Case Report

Tropical Pyomyositis with Staphylococcal Scalded Skin Syndrome

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Introduction

Tropical Pyomyositis (TP) is a bacterial infection of skeletal muscle, more commonly seen in the tropics, characterised by muscle pain and swelling. It is being increasingly recognized in temperate climates as well, wherein 60% of patients are immunocompromised. *Staphylococcus aureus* is the predominant causative organism in over 80% of cases [1]. A number of other organisms are also found with increasing frequency in nontropical and HIV-associated cases. Early diagnosis and correct management are imperative in this potentially fatal disorder and requires a high degree of clinical suspicion [2].

Staphylococcal Scalded Skin Syndrome (SSSS) is a vesiculobullous disorder commonly occurring in children under the age of five years but rarely in adults having immunosuppression, overwhelming sepsis and kidney failure. Even a distant focus of infection with *Staphylococcus* (most commonly phage group II) causes damage to the skin by epidermolytic toxin (exfoliatin). A rare instance of an adult with TP caused by methicillin-resistant *S aureus* (MRSA) causing SSSS while on antibiotic therapy in hospital is reported.

Case Report

A 19 year old boy presented with a weeklong history of an abscess over the left buttock associated with fever and bodyache treated with antibiotics by a civil practitioner. Fever was high grade and did not subside after rupture of the abscess. Bodyache was generalised and associated with severe malaise. He also had diffuse swelling and redness over the limbs. There was no history suggestive of any preceding illness, trauma or drug abuse.

Examination revealed an averagely built pale individual who was toxic, with high grade fever, hypotension, tachycardia and tachypnoea. A ruptured abscess over the left gluteal region, with pus discharge, was seen. There was marked oedema, erythema, raised local temperature and induration

extending almost over the whole of all four extremities.

Investigations revealed raised ESR, polymorphonuclear leucocytosis with peripheral smear showing toxic granules. Pus swab from the lesion over the buttock revealed Gram positive cocci. X-ray chest showed mild bilateral pleural effusion and ultrasound abdomen revealed ascitis. He was found to be HIV negative.

He was provisionally diagnosed as a case of septicaemia and in spite of using systemic broad spectrum antibiotics, continued to have fever and over the next 2 days in hospital, developed increase in the swelling of both legs. He developed multiple abscesses over the right leg discharging pus (Fig 1 & 2). He also developed generalised tenderness of the skin followed by an erythematous scarlatiniform eruption, initially over the face, followed by the axillae, groins and the rest of the body. These lesions were followed by wrinkling and cracking of the skin, leaving behind raw erosions (potato-chip desquamation) and a few flaccid bullae. No oral/mucosal lesions were seen. Nikolsky's sign (separation of areas of the epidermis in response to shearing pressure on the skin) was positive. A Tzanck preparation (microscopic examination of a smear from the base of freshly deroofed bulla) from a freshly denuded area revealed a number of epithelial cells with no inflammatory cells, suggesting a diagnosis of SSSS.

At this point, fluctuation in the calf and triceps muscles was seen. Ultrasound of the limb muscles to localise the infection revealed fluid planes amongst the muscle fibres of the lower limbs. Aspiration of the muscles revealed serosanguinous fluid. Culture of the pus from the gluteal region revealed coagulase positive MRSA. Blood culture revealed no growth.

With these clinical, laboratory and imaging findings, a diagnosis of TP with SSSS was made and he was put on Inj teicoplanin with surgical drainage. Antibiotics were continued for a period of 4 weeks. In 10 days, the peeling skin lesions subsided. In the third week of therapy, the patient became afebrile, with regression of the abscesses. The total leucocyte count became normal, with no evidence of toxic granules. A repeat ultrasound showed no fluid collection in the muscles.

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Fig. 1 : Frontal view of multiple abscesses over the right leg discharging pus

Fig. 2 : Right lateral view of the same

The patient, made satisfactory recovery.

Discussion

TP, a disease of varied aetiology, has been reported frequently from Africa and Latin America and has been responsible for 3-4% of hospital admissions in some tropical countries [3]. There are only a few reports from India. However, in one of the largest series of cases reported from Chandigarh, the disease was found to be more common in young adults with male to female ratio being 5:2. In majority, as in our case, presenting features were muscle pains (100%) and fever (81%). The diagnosis was confirmed by aspirating pus from the involved muscle. Blood cultures were positive in 14.3% of cases. The common complications were bronchopneumonia (23.1%), empyema (19.2%) and venous thrombosis (15.4%). The overall mortality was 7.7% [4].

The most frequent presentation is single-muscle involvement in the buttock, thigh, calf, shoulder, arm and back. However, all four extremities have been known to be simultaneously involved [5]. This condition should be considered in the differential diagnosis of patients with a toxic appearance having joint pains or muscle

aches.

Pyomyositis can be divided into three clinical stages [6]: Stage 1 is characterized by crampy local muscle pain, swelling and low-grade fever. Fluctuation is not present and aspiration of the muscle will not yield purulent material. Only 2% of patients present at this stage. Stage 2 is characterized by fever, exquisite muscle tenderness and oedema. Aspiration of the affected muscle typically yields pus. More than 90% of the patients are seen at this suppurative stage. Stage 3 is characterized by bacteraemia and a toxic appearance. Complications of *S aureus* bacteraemia such as septic shock, endocarditis, pneumonia, pericarditis, osteomyelitis, septic arthritis, brain abscess, acute renal failure, rhabdomyolysis and anterior uveitis may be present.

Haemocultures are seldom positive but needle aspiration may confirm the diagnosis. Ultrasound, CT scan and MRI allow early detection. Ultrasound is useful to demonstrate the progression of pyomyositis and to determine when and where to drain any abscess [7]. Gallium scan can be useful in securing the diagnosis or in localizing an occult abscess. Muscle biopsy, which is not required for diagnostic purposes, shows suppurative

changes (pus) or non-suppurative myositis. Muscle necrosis, cellular infiltration with polymorphs and haemorrhage in-between muscle fibres are also seen [8].

Treatment is antibiotic therapy and surgical drainage/needle puncture of abscess cavities [1]. Prolonged antimicrobial therapy may be required in cases in which there is involvement of multiple muscle groups. Although no firm recommendations are available to prevent pyomyositis, nasal carriage of *S aureus* should be eliminated with topical mupirocin formulation [9]. If mupirocin is unsuccessful, oral antibiotic regimens such as the combination of rifampicin and cloxacillin in adequate doses for 10 days should be considered. Treating staff must also be screened for staphylococcal carriage. SSSS, which presented in its characteristic morphology and distribution in this patient, while in hospital, is similar clinically to toxic epidermal necrolysis (TEN) from which it is distinguished by the absence of mucosal lesions in SSSS and the level of bulla which is between the granular and spinous layer of the epidermis in case of SSSS and sub-epidermal in TEN. A Tzanck preparation from a freshly denuded area may be helpful. In SSSS, there are a number of epithelial cells with no inflammatory cells, whereas, in TEN, there are a large number of inflammatory cells with only a few rounded epithelial cells.

SSSS though common in children due to their less efficient metabolism and excretion of the causative toxin [10], also affects adults in whom, predisposing factors include renal failure, malignancy, immunosuppression and alcohol abuse. A local or distant staphylococcal infection is the initial event in almost all cases, as in this case. The condition usually heals in 7-14 days. Swabs and culture of the blister fluid usually do not grow the bacilli as the blisters are toxin mediated. The organism is grown from the original septic site as in our patient. Immunological methods such as polymerase chain reaction (PCR) to detect and identify the causative toxins

have been described. Treatment is with parenteral antibiotics to which the organism is sensitive, usually with a penicillinase resistant penicillin analogue. The mortality rate in adults is higher than in children.

No case of TP with SSSS has been found in the reviewed literature. Our patient had presented in stage 3 TP with complications in the form of pleural and peritoneal involvement. As far as we know, this is the first case of TP or of SSSS where peritoneal involvement has been seen. These two conditions, both staphylococcal in etiology, had developed together and though facilities of phage typing and toxin analysis were not available, circumstantial, clinical, radiological evidence and results of muscle aspiration along with Tzanck smear were sufficient to clinch the diagnosis. The patient responded when started on appropriate antibiotics.

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