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A case of missed primary pyomyositis, complicated with compartment syndrome of the left forearm

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ABSTRACT

Primary pyomyositis is a rare clinical entity of a subacute and deep bacterial infection of skeletal muscle that is not secondary to a contiguous of the skin, bone, of soft tissues. We describe the case of a one-year-old boy, with no known comorbidities and a missed primary pyomyositis of the left forearm. Due to the delay in diagnosis, no emergency surgical drainage was performed and the child continued to develop full-blown compartment syndrome. Circulation to the left hand was restored through a timely fasciotomy. However, the wound further deteriorated due to inadequate drainage of the abscess, resulting in the necrosis of the flexor muscles with exposed styloid processes of both radius and ulna and with distal radioulnar joint disruption. The wound presented a challenge for us and required a multidisciplinary team approach and multiple surgeries to achieve complete wound closure. Careful attention to medical history, meticulous physical examination, and judicious use of imaging methods are essential in diagnosis; therefore, prompt treatment should be instituted for a favourable evolution of the patient, able thus to prevent possible severe complications.

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Introduction

Primary pyomyositis (also known as purulent infectious myositis, pyogenic myositis, tropical pyomyositis, myositis purulenta tropica) is a subacute, profound bacterial infection of the skeletal muscle and is not ancillary to a contiguous of the skin, bone, of soft tissues [1-8]. This condition is prevalent especially in the tropics, but is being increasingly recognized in temperate regions. It can be encountered in all age-groups, primarily in the first and second decades of the life, with an insignificant male predominance [1, 4, 9, 10]. It often presents as a local abscess, and there are also cases where it presents as a rapidly developing myonecrotic process [8, 11]. Due to the elusive clinical manifestation, unfamiliarity with this condition, atypical presentation and a wide range of differential diagnoses, prompt diagnosis is often missed. The consequences of delayed diagnosis are that it can lead to compartment syndrome, extension and destruction of an adjacent joint, sepsis and in the worst case, death [8, 12, 13]. The main therapeutic directions of primary pyomyositis implies drainage of the abscess followed by the administration of proper antimicrobials. We describe a case of a one-year-old boy with a missed primary pyomyositis of the left forearm, who continued to develop a completely blown compartment syndrome that requires urgent fasciotomy. The subsequent wound presented as a challenge to us and required a multidisciplinary team approach and multiple surgeries to achieve complete wound closure.

Case Presentation

A one year and six months old boy was referred to our center from a tertiary hospital in Perak. He was born at term via lower segment cesarean section for placenta praevia, with a birth weight of 2.29 kg. He presented with a 9 days history of fever that was associated with left forearm swelling and lethargy. He had no prior trauma or insect bites to the left forearm. He had no previous trauma or insect bites on his left forearm. Upon the first presentation

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at the secondary hospital, it was found that the child was in sepsis and had to be intubated for stabilization. Post intubation, he was immediately transferred to a tertiary level hospital in Perak for continuation of care. In the Paediatric Intensive Care Unit, it was noted that there was a gradual worsening of the left forearm region, which eventually became a full-blown compartment syndrome characterized by tense compartment, dusky discoloration of the hand, cold extremities and impalpable radial and ulnar pulses. Therefore, on the 3rd day of hospitalization, they proposed the child for fasciotomy and release of the carpal tunnel, which led to the restoration of circulation in the left hand.

The orthopedic team attempted secondary suturing of the wound 5 days post fasciotomy, but it was only able to reduce the size of the wound only because of significant tissue edema. Nine days later, the Plastic Surgery team was requested for definitive wound coverage. However, intra-operatively they found that there was pus discharge coming out from the left elbow which communicate with the posterior compartment of the forearm. Arthrotomy washout and incision with drainage were performed. Subsequently, the child was once again brought into OT for wound debridement and negative-pressure wound therapy (NPWT) application by the PRS team. Upon removal of the NPWT 3 days later, they found that the flexor muscles have undergone necrosis and the styloid processes of both radius and ulna were exposed with distal radio-ulnar joint disruption. The decision was made to refer the patient to HUSM.

In our center, the child has been found to be active, and not with a septic state. Vital signs were within the normal range, and the patient was afebrile. He was brought into OT for wound debridement and examination under anesthesia. On closer inspection of the left upper limb, there were 2 wounds over the anterior and posterior areas of the forearm (Figure 1).

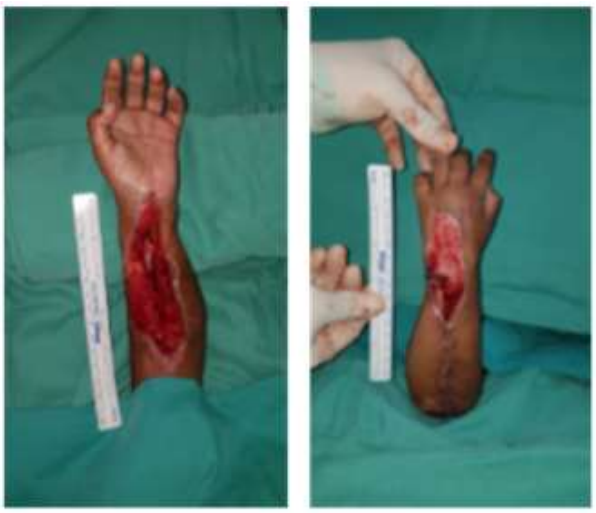

Figure 1. Anterior & posterior view of the left forearm prior to wound debridement

The wound measures 11cm x 5cm and 15cm x 5cm respectively. Slough tissues are seen in the posterior compartment and exposing the whole ulnar bone, with the end of the radius exposed distally. There was distal radio-ulnar joint disruption distally, and the elbow joint capsule was breached with the ulnar bone being totally dislocated from the joint without any attachment. Significant fibrosis was also noted between the muscle plane and all tendons in both compartments which were devitalized and debrided. Elbow joint and distal radio-ulnar joint was stabilized using Ethibon 2/0 sutures. After debridement, the wound was down-sized and wet aquacell Ag dressing was applied over the raw areas. The child underwent another 2 cycles of wound debridement and NPWT application, and finally, split-thickness skin grafting was performed for definitive wound coverage (Figure 2).

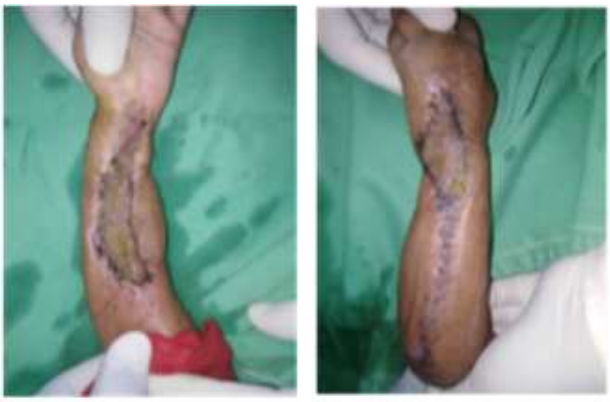

Figure 2. Final outcome after wound coverage with split-thickness skin graft

Discussions

Primary myositis can involve any muscle group in the body. Generally, only a single muscle group would be affected, even though, some studies have proposed that up to 11% to 43% of patients could involve several muscle groups/ regions [4, 8, 14]. Many reviews have shown that pyomyositis usually involves the largest muscle groups located around the pelvic girdle and lower extremities (like the quadriceps, gluteal and iliopsoas muscles), and only 1.3% from the patients studied presented pyomyositis in the forearm region [3,4,15].

Plain radiography can be an appropriate investigation for initial screening, although only a part of the patients would present with positive findings that suggest an abscess formation. However, its importance lies in the elimination of primary bone lesions, such as subacute osteomyelitis or primary bone sarcoma, which may mimic the clinical presentation of primary pyomyositis [16].

Better imaging modalities in diagnosing primary pyomyositis would be computerized tomography and ultrasonography, which are able to better delineate the muscle structures. They also have the added benefit of enabling guided percutaneous needle aspiration and

drainage [17, 18]. Interestingly, this patient did not have any form of imaging studies performed when he first presented to the tertiary hospital, which would have contributed to the delay in the diagnosis of pyomyositis, which later presented as acute compartment syndrome.

Treatment choice depends on the stage of presentation. Antibiotics alone are sufficient to treat the diffuse inflammatory changes during the early stage [19]. The development of abscesses requires adequate drainage in order for antimicrobial treatment to be effective. Conventionally, drainage of the abscess is attained by open operative methods. However, recent advances in technology show that drainage can also be achieved percutaneously under ultrasonographic or computerized tomographic guidance, and operative intervention is only obligatory when complete drainage cannot be performed percutaneously [20]. A prompt therapeutic intervention will ultimately result in complete recovery with no long-term sequelae in the majority of cases [21].

Conclusions

Primary myositis is a rare clinical entity that makes the diagnosis very challenging without a preliminary clinical suspicion. A special attention to the medical history of the patient, meticulous physical examination, and adequate use of imaging modalities are essential in the diagnosis. In this way, a prompt therapeutic intervention is possible and necessary, to prevent as much as possible the onset of complications. Nevertheless, abscess formation necessitates appropriate drainage associated with antibiotic therapy. Prompt treatment will ultimately result in complete recovery with no long-term sequelae in the majority of cases.

Conflict of interest disclosure

There are no known conflicts of interest in the publication of this article. The manuscript was read and approved by all authors.

Compliance with ethical standards

Any aspect of the work covered in this manuscript has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

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