Ultrasound in tropical pyomyositis

Luca Belli, M.D. 1, Alberto Reggiori, M.D. 2, Eugenio Cocozza, M.D. 2, and Luciano Riboldi, M.D. 1

1 Department of Radiology, Regional Hospital, Varese, Italy; 2 Cooperation Project, AVSI Team, Hoima Hospital, Uganda

Abstract. Tropical pyomyositis is an infection of muscles mainly presenting in black people, occurring in the trunk and limbs. At Hoima Hospital, Uganda, 58 patients (30 men and 28 women) with a mean age of 21 years have been investigated by ultrasound; a total of 81 lesions were present. Two different characteristic images were found; abscess was present in 65 cases while 16 patients showed a diffuse infiltration among the muscular fibers. These two different images correspond to the two stages of histologic and clinical progression described by other authors. Ultrasound is useful to demonstrate the progression of pyomyositis and to determine when and where to drain any abscess.

Key words: Tropical pyomyositis – Abscess – Ultrasound

Pyomyositis is a common suppurative infection of striated muscles in tropical areas [1, 2, 7]; black people, young adults and children of either sex are mainly affected. Single or multiple lesions can be present; the trunk and limbs are especially affected [2, 5].

A discrete invasive lesion of the muscle is the first sign of the disease; an abscess quickly develops in a few days with pain, swelling, and fever. General debilitation, vitamin lack, trauma, and parasites have been suggested as possible causative cofactors. Usually Staphylococcus aureus is present upon culture. Surgical excision plus antibiotics is the treatment of choice.

Results

A total of 81 lesions were investigated with ultrasound. In 42 cases the lesions were located on the trunk (chest and abdomen), 41 were in the proximal limbs (shoulder, groin, and buttock), while 25 lesions were equally divided between the upper and lower limbs (Fig. 1).

Two distinctive and complementary echographic patterns were observed (Fig. 2). In 65 cases a fluid abscess inside the muscle was detected; the collection was always hypoechoic and could reach the muscular fascia. Thin septa were sometimes identified.

In 16 cases no clear evidence of an abscess was visible, but muscular fibers were widely displaced and infiltrated by a moderate quantity of fluid distributed in the interstitial tissue between the fibers following the major axis of the muscle. In this interstitial pattern, the fibers themselves appeared slightly hypoechoic, probably due to edema.

Multiple lesions were present in 18 patients. The disease was always confined within muscle without involvement of surrounding structures or the perifascial connective tissue.

Each patient showed a rapid progress towards abscess formation; many patients attended a few days after the beginning of the symptoms. All were treated with antibiotics. Excision with surgical drainage was performed in 74 cases.

Our hospital had no microbiological laboratory facilities and correct identification of the microorganism was not possible. However, in all cases submitted to surgical excision, pus was found in varying quantities.

Discussion

Scriba (1885) and, soon after, Zeiman (1904) in New Guinea were the first authors to report on pyomyositis.
Fig. 1A–D. Different aspects of interstitial infiltration in pyomyositis: (A) gluteus, (B) quadriceps (C, D) long muscles of the back

Fig. 2A, B. Different aspects of abscess in pyomyositis: (A) abdominal wall and (B) anterior wall of the chest

[1]; subsequently many others have referred to cases in African or Asiatic countries [4, 6]. In Uganda, the incidence of the disease is high, and about 3% of surgical admissions to hospital are for this disease [3].

The common microorganism responsible for the disease is Staphylococcus aureus. It is probably bloodborne, setting in muscles previously damaged by trauma, hematoma, or ischemia.

Patients in poor general condition, with malnutrition or vitamin deprivation, are particularly affected. A higher incidence has been observed during the wet season. Black people are most prone to pyomyositis [5, 7].

The main localization of the disease is in the trunk and at the root of the limbs: anemia, septicemia with metastatic microabscesses, and osteomyelitis are possible complications.

Two different progressive phases have been described. The invasive one appears with general malaise, local pain, and hardening due to infiltration of the muscle by nonsuppurating intracellular myocytolysis.

Suppuration in the second phase is characterized by a well-developed intramuscular abscess with general signs of acute inflammation and leukocytic invasion of the muscle leading to abscess formation.

Pyomyositis is a frequent and important diagnostic problem for doctors working in tropical countries [6, 7].

To our knowledge, ultrasound has not been applied to the study of tropical pyomyositis. It allows a precise definition of the involvement of the affected muscle. It is possible to differentiate the two different phases of the disease and particularly to recognize the invasion corresponding to the interstitial phase detected at ultrasound examination.

The early detection of the disease allows early antibiotic treatment with the possibility of resolution before an abscess develops. Early ultrasound diagnosis was not possible in our group of patients because there were some days’ delay before they were able to reach the hospital. Ultrasound is also useful in the suppurative phase, because it can give important information about the position and size of the abscess in order to enable a decision to be made when and where to perform incision and drainage.