

## Primary haemophilus influenzae pyomyositis in an infant: A case report

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Pyomyositis is a term used to denote primary pyogenic infection of the skeletal muscle. Because striped muscle tissue is normally resistant to bacterial infection, pyomyositis is very rare. In tropical countries, pyomyositis accounts for about 4% of hospital surgical admission, but it is far less common in temperate climates. It is more common in adults and especially in men, but it can occur at any age. We would like to present an 8-month-old infant to make pediatricians aware of the possibility of pyomyositis in cases of a mass over muscle, or of children complaining of joint pain or muscle aches even in the infancy period.

*Key words:* pyomyositis, infancy, limb, muscle aches.

Pyomyositis is a term used to denote primary pyogenic infection of the skeletal muscle. Because striped muscle tissue is normally resistant to bacterial infection, pyomyositis is very rare<sup>1</sup>. Although the first case was documented by Scriba in 1885 from Japan<sup>2</sup>, it is predominantly a disease of tropical countries, and hence is also referred to as tropical pyomyositis or myositis tropicans<sup>3</sup>. On the other hand, there have also been reports from Europe, America, Japan and other non-tropical countries<sup>4,5</sup>.

In tropical countries, pyomyositis accounts for about 4% of hospital surgical admission<sup>1,6</sup>. But it is far less common in temperate climates where it is responsible for 1/3,000 pediatric admissions<sup>1,7-9</sup>.

Pathogenesis of the disease is not known, but trauma, malnutrition, viral and parasitic infections, bacteremia, immunodeficiency or chronic illness and other factors may have a predisposing role<sup>5</sup>. It is more common in adults and especially in men<sup>10</sup>, but it can occur at any age<sup>1</sup>. In Nigeria the peak incidence in children was between 2 to 5 years of age<sup>5</sup>, but North American studies have shown that most cases occur in older children, mean age

of 8.4 years (range 1 to 16 years)<sup>4</sup>.

The occurrence of pyomyositis is very rare, especially in infancy, and diagnosis of it can be difficult in view of the indolent presentation. We would like to present an 8-month-old infant to make pediatricians aware of the possibility of pyomyositis in cases of a mass over muscle, or of children complaining of joint pain or muscle aches even in the infancy period.

### Case Report

An eight-month-old previously healthy and well developed boy presented with a mass at his right calf. Parents recognized the mass 15 days before admission and it became progressively larger. The child did not have fever or any other symptoms before or during this period. On physical examination a hard mass was palpated on the gastrocnemius muscle with little redness or hotness. Laboratory findings were hemoglobin 11.3 g/dl, hematocrit 36.4%, white blood cell count 17,000/mm<sup>3</sup>, platelet count 520,000/mm<sup>3</sup>, and erythrocyte sedimentation rate 60 mm/hour; alkaline phosphatase, creatine phosphokinase, and liver transaminases were within normal limits. Plain roentgenogram was also normal.

Ultrasonographic examination of the region revealed a hypoechoic lesion of 2x1 cm in diameter in the gastrocnemius muscle that was considered to be a fluid collection around which there was hyperechogenicity. Abscess formation and pyomyositis were suspected and the patient was hospitalised. The region was surgically debrided the same day. The drainage material was yellowish white pus. Microscopic examination of the material revealed many polymorphonuclear leukocytes, but no micro-organism was seen on Gram stain. Biopsy from drainage site showed acute inflammation without any specific findings. Intravenous sulbactam ampicillin was started at a dose of 100 mg/kg in four doses. The culture of the purulent material yielded *Haemophilus influenzae* type b and it was susceptible to sulbactam ampicillin. The patient was searched for an underlying immune deficiency state. IgA was 55.3 mg/dl, IgG 1310 mg/dl, IgM 128 mg/dl, IgE 5.557 IU/ml and NBT was 100%, all in normal ranges. The patient was hospitalised for 10 days for parenteral antibiotic therapy and the treatment was continued orally for another four days, after which he was completely recovered.

## Discussion

Pyomyositis generally occurs in older children. The incidence is different according to regions. Although in tropical countries peak incidence was at 2-5 years of age<sup>10</sup>, in North America, a mean age of 8.4 years with a range of 1-16 years was reported<sup>4</sup>. It is especially rare in the first year of life. With our best effort, we found only a few cases with pyomyositis under one year of age. One of them was a three-month-old baby reported by Echeverria and Vaughn<sup>10</sup> whose infection was due to *S. pneumoniae* and the other two were newborns, one of whom was HIV(+)<sup>10</sup>. In our case *H. influenzae* type b was cultured from the pus.

A male preponderance is found in almost all series, with a male: female ratio usually reported around 2:1 to 3:1<sup>1,5-7,13</sup>; our patient was also male. The male preponderance may be partly associated with trauma<sup>13</sup>, although in our case there was no apparent history.

Pyomyositis was originally described in the tropics and is much more common there. The clinical features and microbiologic profile of the disease are similar regardless of age and

geographic distribution<sup>13,14</sup>.

The disease natural history can be divided into three stages. At the invasive stage, there are low-grade fever and swelling of muscle which becomes tender and indurated. Palpation of the affected muscle gives the sense of wood or hard rubber. Most cases are not recognized at this stage as the signs of inflammation are minimal. In fact most of the patients are admitted at the suppurative stage, having high-grade fever, tenderness of the muscles involved and fluctuance on palpation. Although our patient had no history of fever, he was in this stage. At the late stage, the patient has a toxic appearance and septicemia and/or coma is present occasionally<sup>3,4,10</sup>.

*Staphylococcus aureus* is the most common organism in all studies, responsible for 50-95% of cases in all age groups; *Streptococcus pyogenes* is second at 25%<sup>1,2,13</sup>. In the immunocompromised host, a range of other organisms have been cultured: Gram-negative enteric organisms, anaerobes and even fungi can be responsible<sup>10,15</sup>. *Haemophilus influenzae* type b was isolated in our patient. He had not been vaccinated for *H. influenzae*. Although our patient was in the infancy age group and *Haemophilus influenzae* infections are most commonly seen in this age, it is a rarely an isolated agent in cases of pyomyositis. Two other cases of pyomyositis caused by *H. influenzae* have been reported: one was a 46-year-old woman who was using prednisone and had a pyogenic infection of the iliopsoas muscle. The other was a five-year-old girl who had an abscess at her thigh. Both also had pyarthrosis and were treated with antibiotics and surgical debridement<sup>10,16</sup>. We could not find any focus for this microorganism such as otitis media, pneumonia, septic arthritis, osteomyelitis or cellulitis. Occult *H. influenzae* bacteraemia was probably responsible.

We also could not reveal a predisposing factor in our patient. At the beginning, cellulitis or hematoma was suspected but ultrasonographic examination revealed pyomyositis in the gastrocnemius and pus was then aspirated from the muscle and appropriate antibiotic treatment was given. Imaging studies are of paramount importance in the diagnosis of pyomyositis. Plain radiographs are rarely useful, and in our case ultrasound findings were conclusive. When ultrasound is inconclusive and high index of suspicion persists, magnetic resonance imaging

scan is indicated in preference to a computerized tomography scan because of the former's greater resolution<sup>17</sup>.

The thigh is most commonly affected but the gastrocnemius, soleus, psoas, gluteal and paraspinal muscles and other muscles can be involved<sup>5</sup>. Excluding psoas abscess, the most common single site is the thigh, representing 36% of North American and 44% of Nigerian cases<sup>4</sup>. Usually a single muscle is affected but multiple site involvement has been described<sup>10</sup>.

Early diagnosis of pyomyositis is very important. As it is difficult to differentiate pyomyositis from some more common diseases like muscle hematoma, arthritis, cellulitis, acute appendicitis, thrombophlebitis, rhabdomyosarcoma and fever of unknown origin, especially in the early stages, a thorough investigation must be performed. Ultrasonography, gallium scanning, computerized tomography and magnetic resonance imaging findings are helpful for both differential diagnosis and guided needle drainage<sup>14</sup>.

In conclusion, although pyomyositis is rare in the infancy age group, in patients who do not have a predisposing condition, it should be suspected and investigated because suspicion and early diagnosis can be lifesaving for this disease, which has an excellent prognosis when treated in the early stages.

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