Case report

Bacterial pyomyositis in a patient with sickle cell trait and pityriasis amiantacea

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Case

A 24-year-old black woman with history of primary hypertension and sickle cell trait (SCT) presented to the hospital with fever (38.5°C) and painful right-sided swelling of her neck for 2 days. She had no history of immunocompromise caused by diabetes mellitus, hepatitis or human immunodeficiency virus (HIV) infection. There was no history of intravenous drug use, recent travel, insect bites, strenuous exercise or trauma to the area. Physical examination revealed erythema and tender edema overlying the right sternocleidomastoid muscle with impaired ipsilateral flexion and contralateral rotation (Figure 1, left), along with retroauricular and jugular lymphadenopathies. She also had generalized gray thick scales adhered to her scalp consistent with pityriasis amiantacea (PA) (Figure 1, right), which had been present for 6 months; they were pruritic and she had multiple excoriations from scratching. Laboratory studies showed leucocytosis (18.3 x 10⁹ cells/l) with neutrophilia, and no immature forms. Computed tomography of the neck showed inflammatory changes of the right sternocleidomastoid muscle and a small fluid collection (Figure 2). The diagnosis of stage two (suppurative) bacterial pyomyositis was made, and treatment with intravenous cefazolin was started.

After 2 days, there was significant improvement of the physical findings accompanied by reduction of the leucocytosis and resolution of the fever. HIV serology and blood cultures were negative. Ultrasound-guided drainage of the abscess yielded ~10 ml of purulent material. Additional searching for causes of immunocompromise showed normal levels of immunoglobulin isotypes, negative antinuclear antibodies and no signs of hepatitis. The patient was discharged home receiving oral cefalexin. Subsequently, the cultures from the abscess returned with growth of group A β-hemolytic streptococci (Streptococcus pyogenes) and she continued oral antibiotic for 7 days with sustained improvement.

Figure 1. (Left) Right-sided tender swelling of the neck. (Right) Shiny asbestos-like silvery scales binding tufts of hair covering almost the entire scalp, representing pityriasis amiantacea.

Figure 2. (Left) Coronal view of computed tomography of the neck showing diffuse inflammation of the right sternocleidomastoid muscle. (Right) Transverse view showing a small abscess within the muscle (arrow).
improvement. In regard to her scalp lesions, a superficial culture grew S. pyogenes, and she was discharged receiving 2% salicylate lotion with a referral to the dermatology service for further assessment; a skin biopsy was recommended, but the patient declined since the lesions disappeared after 1 month of therapy. After 7 months, she remains asymptomatic.

**Discussion**

Bacterial pyomyositis has been classified as tropical and non-tropical based on epidemiologic and geographic differences, but this separation has been questioned by a rising number of cases diagnosed among temperate regions.\(^1,2\) A previously injured question is whether the separation has been based on epidemiologic and geographic differences, but this separation has been questioned by a rising number of cases diagnosed among temperate regions.\(^1,2\) A previously injured muscle that is predisposed to infection and is seeded during bacteremia has been postulated as the pathogenic mechanism, although a minority of cases has a documented history of injury. Immunosuppression caused by autoimmune disorders, liver disease, diabetes mellitus, glucocorticoids, aplastic anemia, malignancy, renal disease and especially HIV infection, has been proven as a major risk factor for its development.\(^1\) In this regard, HIV prevalence is described as the major reason why bacterial pyomyositis is seen more often than before in non-tropical areas. However, roughly a third of these patients in temperate regions have no immunodeficiency or chronic underlying disease predisposing them.\(^1\)

In this sense, a search for potential immunocompromise in our patient did not yield a particular condition except from SCT, which traditionally is not considered a risk factor for infections. Moreover, the increase in pyelonephritis in pregnant women with SCT that was reported in the past was the result of confounding elements.\(^3\) However, Poehling et al.\(^3\) recently challenged the former concept after demonstrating an increased risk of invasive pneumococcal disease in children with SCT. The mechanism of such immunocompromise is obscure. So far, we know that SCT patients retain their splenic function and have normal levels of circulating antibodies, which is the opposite of sickle cell disease individuals.\(^5\) It is unclear for us if SCT was a factor for the advent of bacterial pyomyositis in our case, and, in light of the previous evidence, we cannot discard this potential association. Muscle injury elicited by SCT is another possibility, but this is typically seen as dramatic rhabdomyolysis in the setting of strenuous exercise,\(^3\) which was not the case for the patient.

The relationship of dermatologic lesions, such as varicella, drug injection sites and atopic dermatitis, with pyomyositis has been reported.\(^2\) To our knowledge, this is the first time PA has been linked to bacterial pyomyositis. PA is a rare scalp condition characterized by thick, silvery, adherent scales, which bind down tufts of hair. Its etiology is unknown and it might represent a reaction pattern caused by different inflammatory scalp diseases. It is associated with atopic dermatitis, seborrheic dermatitis, psoriasis and, less commonly, tinea capitis.\(^6\) While PA is entirely a clinical diagnosis, a biopsy is recommended to ascertain for latent conditions. Treatment is either targeted toward the associated condition or empirical with topical steroids and salicylate. Since our patient refused the biopsy, it is impossible to diagnose the potential etiology. Regardless of the cause, the proximity of the lesions makes PA as the port of entry for the streptococci that reached the sternocleidomastoid, indicating that continuous bacteremia might cause pyomyositis in individuals who are relatively healthy, something frequently observed in tropical areas.\(^1,2\)

The treatment of pyomyositis is targeted based on the immune state of the patient. Healthy individuals can be treated with intravenous oxacillin or nafcillin to cover staphylococci and streptococci, whereas immunocompromised patients should receive a broader coverage.\(^2\) If the condition is diagnosed as stage two or higher, the patients should invariably undergo incision and drainage for the abscess. Some rare cases can be recalcitrant and require months of therapy. Pyomyositis has a good prognosis with usual mortality rates of <1%, although some case series report death rates up to 10%.

In conclusion, our case adds to the evidence showing that cases of pyomyositis among temperate regions do not differ significantly in their epidemiology from tropical cases. Our patient was a relatively healthy woman, although SCT as a possible factor of immunocompromise remains an interesting suggestion. Finally, contiguous spread of bacteria from PA lesions causing pyomyositis is an association described here for the first time.

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**References**


