CASE REPORT

Skin botryomycosis – case report in Minas Gerais, Brazil

Botriomicose cutânea – relato de caso em Minas Gerais, Brasil

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ABSTRACT

Botryomycosis is a chronic infectious suppurative and granulomatous disease caused by Gram-positive and Gram-negative bacteria that form pseudo mycotic grains. The skin lesions are plaques and multinodular tumors with ulceration and formation of fistulae that can eliminate grains. The infection affects the skin, with possible dissemination to viscerae. It is relatively rare, and its diagnosis can be achieved through the biopsy of lesions and culture of granules from positive Gram-positive and Gram-negative cocci secretions. This description shows a case of skin botryomycosis in Brazil caused by Staphylococcus aureus.

Key words: Granulomatous Disease, Chronic; Staphylococcal Skin Infections; Bacterial Infections; Staphylococcal Infections; Staphylococcus aureus.

RESUMO

Botriomicose é doença infecciosa crônica granulomatosa e supurativa causada por bactérias Gram-positivas e Gram-negativas que formam grãos pseudomicóticos. As lesões cutâneas são placas e tumores multinodulares com ulceração e formação de fístulas que podem eliminar grãos. A infecção acomete a pele, com possível disseminação para vísceras. É doença relativamente rara e seu diagnóstico pode ser alcançado por meio de biópsia das lesões e cultura dos grânulos nas secreções positivas para cocos Gram-positivos ou Gram-negativos. Esta descrição apresenta a botriomicose cutânea em brasileiro causada por Staphylococcus aureus.

Palavras-chave: *Doença Granulomatosa Crônica; Infecções Cutâneas Estafilocócicas; Infecções Bacterianas; Infecções Estafilocócicas; Staphylococcus aureus.*

INTRODUCTION

Botryomycosis is a chronic bacterial infectious disease, suppurative and rare, usually affecting the skin and subcutaneous tissue in humans and animals and may spread to organs such as liver, lungs, kidneys, heart, prostate, and lymph nodes, especially in debilitated patients.[1] It is caused by filamentous bacteria that form botryomycotic pseudo mycotic grains, which may be confused with actinomycotic or eumycotic grains.[2]

CASE REPORT

Male patient, a 25-year-old handyman, born and living in São Sebastião do Paraíso, Minas Gerais, Brazil. He was treated at the clinic of infectious and parasitic diseases of the General Hospital of the Federal University of Triângulo Mineiro com-

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plaining of diffuse subcutaneous nodules throughout the body starting five years ago. It started with a hard nodule on the right elbow that increased in size and developed into similar nodules that appeared in the upper and lower limbs associated with local signs of inflammation and suppuration. He was diagnosed with actinomycosis in another medical facility and underwent treatment with itraconazole 100 mg twice daily for one month without improvement; subsequently, with amoxicillin 500 mg three times a day for three months also without improvement.

He presented nodular lesions, crusty, partially with scarring, of soft consistency, non-adhered to deep layers, painful on palpation, and serosanguineous secretion output in the right and left heels (Figures 1 and 2). He underwent several additional tests such as serology, culture, biochemical exams, and biopsy of lesions.

Figure 1 - Lesions with fistula and scarring aspects.

The histopathological examination revealed skin with mild acanthosis of the epidermis and dermis with nodular suppurated areas surrounded by epithelioid granulomas and mononuclear cells centered by "sulphurous" grain with the center formed by eosinophilic material, amorphous and granulous containing tiny aggregate coccoid structures with abundant eosinophilic substance scattered around, compatible with the Splendore-Hoeppli phenomenon (Figure 3). Research on fungi and mycobacteria using the Grocott and Fite-Faraco techniques resulted negative. Staining by the Brown-Brenn method revealed Gram-positive cocci (Figure 4). *Staphylococcus aureus* was isolated in culture from lesions secretion. The findings of the histopathological examination of the skin biopsy associated with the isolation of *Staphylococcus aureus* in culture confirmed the diagnosis of cutaneous botryomycosis.

Figure 2 - Nodular, crusty, and softened lesions.

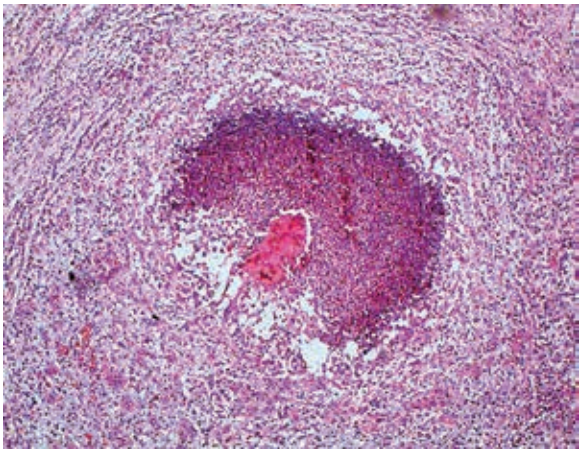

Figure 3 - Splendore-Hoeppli phenomenon.

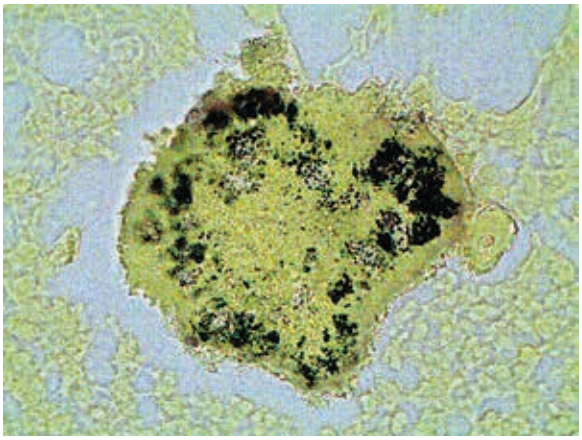

Figure 4 - Gram positive bacteria (Brown-Bren staining).

Figure 5 - Scarring aspect of lesion after treatment.

DISCUSSION

Botryomycosis is a chronic granulomatous bacterial infectious disease, suppurative and rare, which often involves the skin and subcutaneous tissue and, rarely, organs.[3,4] It generally occurs in patients with some degree of immunodeficiency such as that found in alcoholism, diabetes mellitus, infection with human immunodeficiency virus, cystic fibrosis, idiopathic chronic granulomatous disease, trauma, and surgery.[5] The treatment requires antibiotic therapy and in most cases surgical debridement.[5,6] The choice of antibiotic should be guided by the culture result according to the isolated bacteria. The bacteria most commonly causing botryomycosis is *Staphylococcus aureus*; and, rarely *Pseudomonas aeruginosa, Escherichia coli, Proteus, Streptococcus,* and *Micrococcus sp.*[7,8] The bacteria isolated in the secretion culture was *Staphylococcus aureus* in this case.[9,10]

The pathogenesis of the disease is not well understood, however, it may be related to the low virulence of agents, great local bacterial inoculum, alterations in the specific cellular immunity (decrease in T-lymphocytes such as in diseases with agammaglobulinemia, aplastic anemia, agranulocytosis, and AIDS) or humoral immune response (decreased IgA or increased IgE).[1,4]

Even in the absence of immunodeficiency, the antibiotic therapy alone may not be sufficient.[4] In this study, the complementary investigation found no immunological defect and the patient responded well to the antibiotic treatment instituted after the histopathological diagnosis, however, he required multiple surgical debridements probably due to the long duration of the disease and incorrect therapy used before the correct diagnosis (Figure 5).

The histopathological examination from the lesions' biopsy was of great importance for the differential diagnosis of botryomycosis with true mycetoma from other granulomatous diseases such as tuberculosis and even cancer. The use of specific histochemical techniques for screening bacteria, fungi, and mycobacteria assists this differentiation. The culture of secretions is indicated to isolate the causative agent and choice of the appropriate antibiotic therapy. Skin botryomycosis is the least frequent and most rare dermatosis among its differentiated diagnostics.[10,11]

CONCLUSION

The diagnosis of botryomycosis, because of its rarity and difficult clinical differential diagnosis of other granulomatous diseases caused by other fungi, including cancer, constitutes a clinical challenge. In this context, the histopathology examination is essential.[12] The treatment of botryomycosis requires antibiotic therapy guided by culture and sensitivity tests and, in most cases, surgical debridement.

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