

Abstract

Article Title: Giant Mycetoma of the Scalp: A Reconstructive challenge regarding a clinical case

Keywords: Giant Fibrous Mycetoma, Scalp Reconstruction, Head and neck reconstruction, Infectious diseases, Tropical Infectious diseases

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Topic: Clinical/Surgical anatomy

Abstract (300words):

Mycetoma is fungal soft tissue lesion that is mainly a diagnosed in tropical countries and affect mostly the feet, limbs and periocular regions. The scalp is rarely affected. Its characterized by chronic induration, draining sinuses, and discharge of granules.

A 15-year-old male was transferred to Hospital Dona Estefânia in Lisbon from São Tomé e Príncipe due to large exophytic granulomatous lesions with gradual increase over the course of three years, spanning the whole scalp and involving the upper left eyelid. Past medical history was irrelevant. He was submitted to long term antibacterial therapy in his primary hospital without any sign of regression. The initial diagnosis workup excluded HIV, HBV, HCV, Tuberculosis, Lymphoma and connective tissue disease. Initial biopsy studies revealed no spores or evidence of fungi. Broad-spectrum antibacterial and antifungal agents were initiated and serial excision and reconstruction with advancement rotation flaps was performed. Surgical intervention allowed for the exposure of deeper pockets where fungi were able to be identified in the anatomopathology exam

Mycetoma is still a rare diagnosis in developed countries, requiring both surgical and medical treatment and a multidisciplinary effort in order to properly diagnose and treat.

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Introduction:

Mycetoma is fungal soft tissue lesion that is mainly diagnosed in tropical countries. It's a neoplastic or quase neoplastic mesenchymal lesion with fibroblastic and histiocytic differentiation, more commonly located in the dermis that is characterized by chronic induration, draining sinuses, and discharge of granules, however this typical triad may not always be present. It's either actinomycotic, if caused by bacteria, or eumycotic, if caused by fungi, in origin. It originates from microorganism from the soil and stale water that are able to colonize and proliferate in the deeper layers of the skin, generally following a trauma. Therefore, the most commonly affected regions are those most exposed such as the feet, eyelids, paranasal sinuses, mandible, perineum and testis. The affection of the scalp is rare and presents an ablative and reconstructive challenge.

Current diagnosis workup starts with exclusion of other exophytic granulomatous lesions namely soft tissue sarcoma and lymphocytic neoplasms. Secondly, all efforts should be made to access the extension of infection and identification of the agent and its susceptibility to antimicrobial therapy regimens. Differential diagnosis with other fungal infection such as aspergillosis, botryomycosis, chromoblastomycosis and sporotrichosis is paramount.

Treatment regimens vary widely due to local fungal species. In most cases of mycetoma, the mainstay treatment is medical with pulse and cyclic antibiotic therapy. However, in the case of Eumycetoma, due the nature of quiescent spores and hinf structure, surgical debridement is generally necessary alongside the cycling antimicrobial therapy.

Clinical Case:

A 15 years old male, without any known medical history, was transferred to Hospital Dona Estefania in Lisbon from São Tomé e Príncipe in August 2020 for chronic, destructive, granulomatous lesions of the scalp and upper left eyelid, with three years of evolution.

Initial evaluation excluded tuberculosis, connective soft tissue disease, granulomatous diseases, HIV, HCV and HBV and lymphoproliferative disease. Chest Radiography and abdominal and renal ultrasound showed no alteration. CT Scan and MRI imaging showed soft tissue mass with sclerosing alteration of the sphenoid, frontal and occipital bone, without invasion of the cortical plates. The soft tissue mass of scalp was in continuity from the occipital pole to the glabella promoting multiple breaks in the scalp skin with protruding exophytic lesion. The upper left eyelid mass invaded the intraconal space with mass effect on the intraocular muscles and protrusions into the epineural space.

Initial biopsies revealed no spores of mycelia. Broad-spectrum antibiotics and antifungal therapy were started empirically with continuous worsening over the course of two weeks. In an effort to obtain tissue samples, serial debridement and reconstruction of the scalp was undertaken. After several sessions of debridement, it was evident that the scalp was enveloped in itself, allowing for the creation of safe havens for fungi proliferation that were not reached by systemic or topical antibacterial and antifungal therapy. The release of the entire scalp with discharge incisions and rotation advancement flaps allowed for the complete debridement of the granulous tissue and primary closure of the scalp wounds.

Follow up and Outcomes:

After several debridement sessions, a prolonged course of antimicrobial therapy and hyperbaric chamber treatments allowed for the complete epithelization of the scalp.

Treatment for mycetoma is medical and surgical. Actinomycetoma has a good response to medical therapy with pulsed and cycling antimicrobial therapy. However, eumycetoma, due to the quiescent nature of fungal spores generally requires surgical debridement.

Currently, surgical treatment of mycetoma is restricted to isolated lesions that can be excised completely without morbidity or large lesions to increase the efficacy of the antifungal and antimicrobial therapy. In selected cases there is evidence of usefulness of external beam radiotherapy.

Conclusions:

Eumycetoma of the scalp is a common infection tropical country. The current clinical case presented a diagnostic challenge due to the abnormal anatomical area, the uncharacteristic exofitic lesions, the absence of the typical abscess formation or any mycobacteriology results in the most superficial swabs. The primary differential diagnosis were hematologic malignancies, granulomatous soft tissue disease and sexual transmitted infection

Surgical treatment was of utmost importance in order to destroy the quiescent spores and to allow for the correct realignment of the scalp

Annexes:



Image 1-3: Patient at admission



Image 4-6: Patient after serial debridement and advancement rotation flap

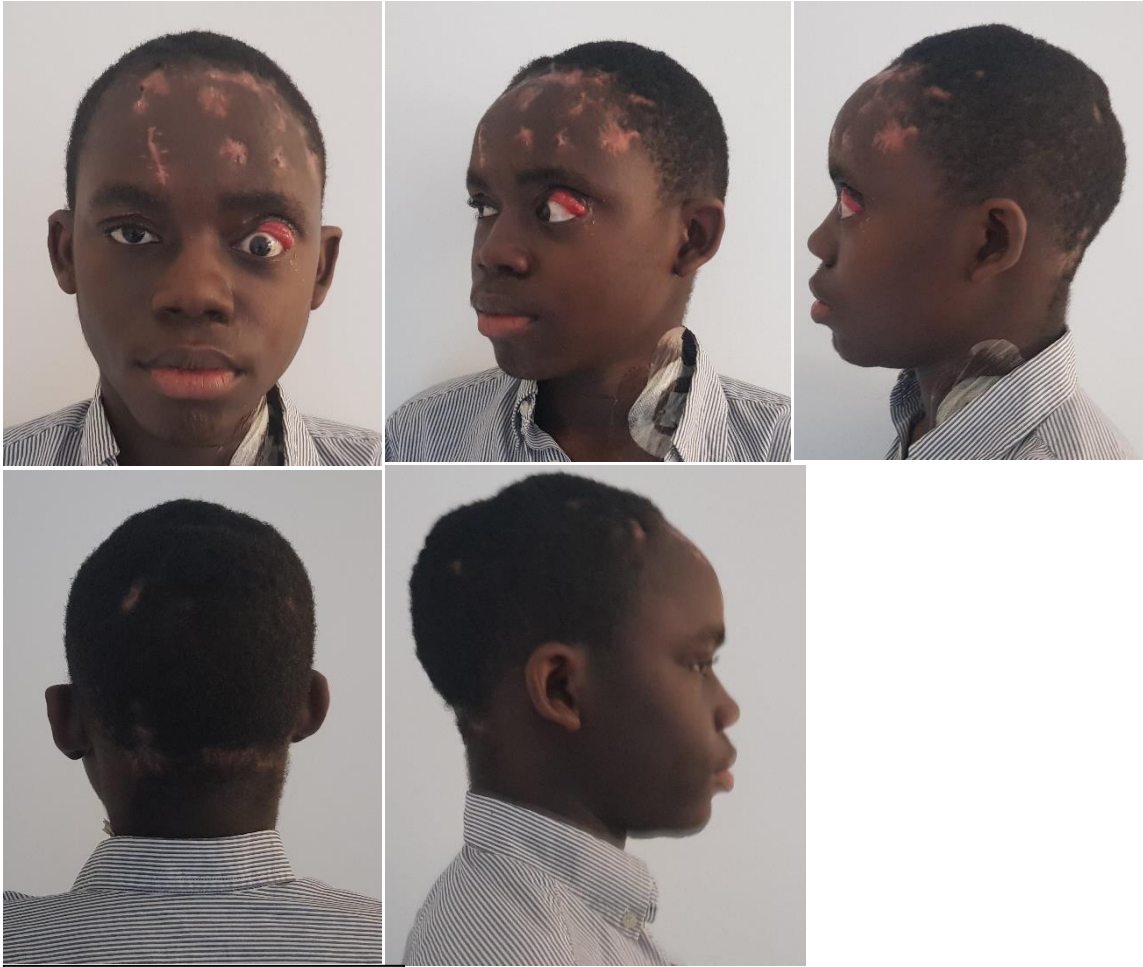


Image 7-11: 1 Month post Op

Informed Consent was signed according to international standarts on scientific publication and clinical case revision

This study was performed in accordance to the Declaration of Helsinki. Ethics approval of was obtained by the Lisbon Central Hospital Center Ethical Committee.