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Cutaneous and Osseous Histoplasmosis caused by *Histoplasma capsulatum* var. *duboisii* in a Seemingly Immunocompetent Young Senegalese Woman

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

African histoplasmosis is a rare deep mycosis caused by *Histoplasma capsulatum* var *duboisii.* It can affect various organs such as the skin, lymph nodes, and bones. The diagnosis is often delayed due to its similarity to certain diseases such as tuberculosis, cryptococcosis, pyogenic abscesses, and even neoplasia. We report a case of cutaneous and osseous histoplasmosis caused by *H. capsulatum* var. *duboisii* in a seemingly immunocompetent 19-year-old senegalese woman who presented with chronic disseminated cutaneous abscesses, some of which had fistulised, and umbilicated papules on the face. The radiograph of the right forearm showed a metaphyso-diaphyseal osteolytic lesion of the ulna. Histology after biopsy of a facial papule confirmed the diagnosis of histoplasmosis caused by *H. capsulatum* var *duboisii.* The patient's condition improved with fluconazole treatment.

Keywords: Histoplasmosis; Histoplasma capsulatum var. duboisii; Saint-Louis; Senegal.

1. INTRODUCTION

African histoplasmosis is a rare deep mycosis caused by *Histoplasma capsulatum* var. *duboisii*. It is an endemic condition in West and Central Africa and Madagascar. Its prevalence is remains unknown. Most publications generally focus on clinical cases [1,2,3,4]. *H. capsulatum* var. *duboisii* is transmitted through the skin, rarely through the air (inhalation of spores) or digestive system. There is no human-to-human transmission [5].

The clinical picture is polymorphic, characterised by cutaneous, osseous and lymph node manifestations that can simulate tuberculosis, cryptococcosis, pyogenic abscesses or neoplasia [6,7,8].

Amphotericin B remains the reference molecule for therapy, despite its toxicity. Itraconazole is an alternative for localized forms. Fluconazole, at a dose of 400 mg, is also effective [1,3].

We report a case of cutaneous and osseous histoplasmosis caused by *H. capsulatum* var. *duboisii* in a seemingly immunocompetent 19-year-old senegalese woman that responded well to fluconazole.

2. CASE PRESENTATION

The patient, a 19-year-old female with no past medical history, consulted at the department of medicine of the Regional Hospital Center in Saint-Louis (Senegal) for multiple skin lesions, some of which had already fistulated, facial papules and significant weight loss. Symptoms began about 18 months ago, marked by the appearance of multiple cutaneous abscesses scattered over the body, on the elbows, thighs, right shoulder, abdominal wall and lower back, some of which had fistulated, releasing pus and leaving depressed scars. Then, painless papules appeared on the face, precisely in the region under the left orbit, on the left nose wing, and on the lower lip. All of this occurred in the context of intermittent fever, without a fixed schedule, with sweating but no chills, physical asthenia, non-selective anorexia, and significant unquantified weight loss. This condition motivated several consultations and medications without clinical improvement. On admission, physical examination revealed cold cutaneous abscesses on the posterior and medial aspect of the right forearm (Fig. 1). The patient presented with abscesses on the lateral aspect of the left forearm, anterior aspect of the left thigh, posterior aspect of the left leg, lateral aspect of the left thigh, and lateral aspect of the right thigh. Additionally, there were fistulized abscesses on the right shoulder and right thigh, as well as umbilicated papules on the face (Fig. 1). The patient also had right elbow ankylosis, cachexia, and poorly tolerated anemia syndrome. The biological assessment revealed a non-specific inflammatory biological syndrome with a neutrophil-predominant leukocytosis of 17000/µl, a CRP of 48 mg/L, and a microcytic anemia of 5.9 g/dL. Bacteriological study of the abscess pus and blood cultures were negative. The Genexpert MTB/RIF® (Cepheid, California) test for tuberculosis in the abscess pus was negative. HIV serology and fasting blood glucose were normal. The X-ray of the right forearm, taken from the front and side, showed an osteolytic lesion of the ulna, extending from the metaphysis to the diaphysis, affecting almost the entire olecranon, with thickening of the soft tissues and elbow ankylosis (Fig. 3). The histological examination after biopsy of a papule revealed a polymorphic granulomatous dermal inflammatory

infiltrate with multinucleated giant cells, partly squamous, and plasmocytes. Within the granuloma, there are multiple large, ovoid or yeast-like bodies with a typical double contour of *Histoplasma capsulatum* var. *duboisii*. Therefore, we have diagnosed cutaneous and osseous histoplasmosis caused by *H. capsulatum* var. *duboisii*. The patient was treated with fluconazole (400 mg/day) and received a blood transfusion. The patient's condition improved, marked by a regression of papules and abscesses, some of which had healed (Fig. 2).

Fig. 1. Papules with central depression on the face and abscess on the right forearm

Fig. 2. Regression of facial papules and healing of abscesses under fluconazole

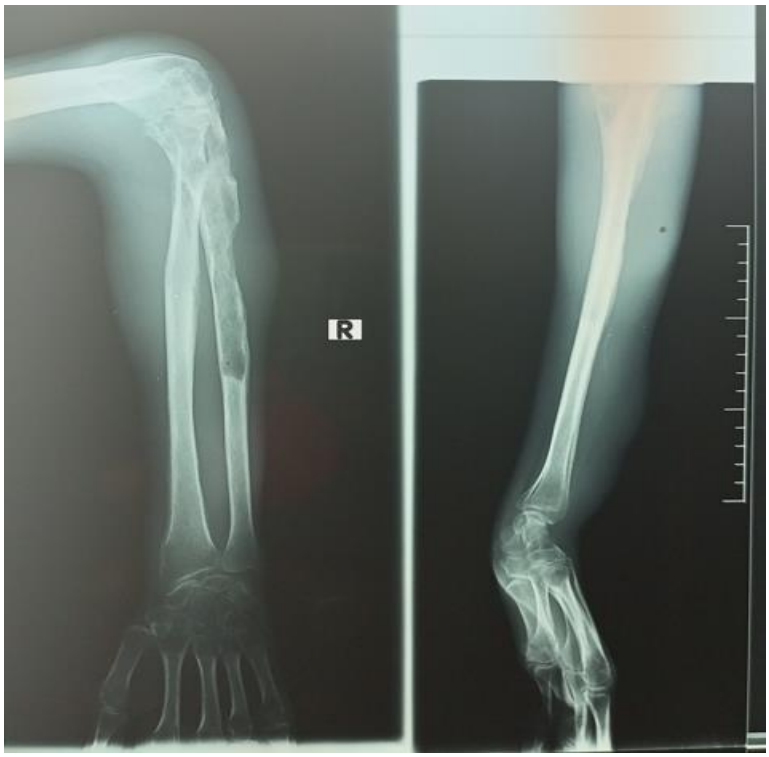

Fig. 3. Osteolysis of the upper end of the ulna with thickening of the soft tissues

3. DISCUSSION

Histoplasmosis is a deep mycosis caused by two varieties of *Histoplasma capsulatum*: *H. capsulatum* var. *capsulatum*, also known as the American variety, and *H. capsulatum* var. *duboisii,* also known as the African variety [1]. The former is influenced by host-related factors, such as immunosuppression (extreme ages, AIDS, malignant hemopathies, history of transplantation, immunosuppressive treatment, and congenital T lymphocyte deficiencies) and the degree of inoculation. The second one does not appear to [9,10,11]. Our patient seemed to be immunocompetent. African histoplasmosis, also known as histoplasmosis with large forms, occurs in Africa on both sides of the equator, between 20° north and 20° south latitude [12]. The first African case was described in French Sudan (now Mali) in 1945 [13]. African histoplasmosis is a rare condition. In fact, only 10 cases were reported in Congo over a period of 10 years [14]. In Togo, 17 cases of African histoplasmosis were reported over a period of 15 years [15]. In the Democratic Republic of Congo (DRC), 54 cases were diagnosed between 1954 and 2019 [16]. In South Africa, 24 cases of cutaneous histoplasmosis were recorded over 5 years in a retrospective study [17]. From 1998 to 2010, only three cases of African histoplasmosis were reported in Senegal, from the regions of Thiès, Kaolack and Casamance [4,18]. In 2016, Diadié S et al. reported another case in a seemingly immunocompetent 22-year-old senegalese male [7]. Our patient, a 19-year-old female, represents to our knowledge the first publication of African histoplasmosis in Saint-Louis (Senegal). Studies generally report a male predominance. Darré T et al. found a male predominance in their series, with 11 men and 6 women. This same trend was observed in the DRC, with a sex ratio of 2.1 [16]. This same trend was found by Khathali LC et al. with a sex ratio of 1.4 [17]. However, our case involved a female. Often confused with tuberculosis, malignant tumors, and pyogenic abscesses, histoplasmosis is frequently subject to diagnostic errors [8]. This explains the long evolution of symptoms (18 months) in our patient. There are two classic forms: the localized form (the most common) [19] and the disseminated form, which is less frequent in HIV-negative subjects [20]. The latter is accompanied by a general deterioration of health and fever [8]. Our patient presented with disseminated form, however, her HIV serology was negative despite being febrile and having an altered general state. It is worth noting that some authors have described disseminated forms in immunocompetent patients who are HIV negative [21,22,23,24].

On a clinical level, Histoplasmosis commonly manifests in the skin, lymph nodes, and bones [25,26]. Skin lesions of *H. capsulatum var. duboisii* infection include papules, nodules, ulcers and eczema etc. [17, 27]. The patient presented with umbilicated papular lesions and abscesses, some of which had fistulized. More than 50% of patients with African histoplasmosis experience bone lesions. These bone lesions are lytic in nature and specifically affect the skull, maxilla, femur, tibia and vertebrae and can present in a similar way to tuberculous spondylodiscitis [28,29]. The patient's ulna has a metaphyso-diaphyseal osteolytic lesion involving almost the entire olecranon.

On a histological level, the diagnosis is confirmed by the presence of intra- and/or extra-cellular yeasts surrounded by colourless halos after staining with haematoxylin and eosin, accompanied by granulomatous inflammation [30]. The diagnosis was confirmed by histology in our patient.

Treating histoplasmosis is a challenge in resource-limited countries where essential systemic antifungal drugs listed by the WHO, such as amphotericin B, itraconazole, voriconazole, and flucytosine, may not always be available [16]. This explains why fluconazole was used in our patient's case. Other molecules, such as terbinafine, voriconazole, ketoconazole, and posaconazole, can also be used [8,30,31]. In our patient, there was improvement with a reduction in papules and healing of abscesses. Barro-Traoré et al. (2017) reported therapeutic failure with fluconazole after 4 months and 21 days of treatment, marked by a progressive recurrence of cutaneous and lymph node lesions, worsening of bone lesions, and hepato-splenic extension [24]. Although no recurrence was observed in our patient, it is necessary to monitor lesions in patients treated with fluconazole, especially in countries where amphotericin B (the reference molecule) is not easily accessible [4].

4. CONCLUSION

African histoplasmosis is a rare condition that is rarely reported in Senegal. This is, to our knowledge, the first published case of histoplasmosis in Saint-Louis (Senegal). This condition often causes skin, lymph node, and bone lesions. Diagnosis is delayed due to its similarity with other diseases such as tuberculosis, cryptococcosis, pyogenic abscesses and neoplasms. Histology should be performed on any umbilicated papule in an endemic area to confirm the diagnosis. The availability and accessibility of antifungal drugs such as amphotericin B (reference molecule for treatment) would greatly improve patient prognosis.

CONSENT

The authors declare that the patient has given her informed consent for the publication of the clinical case.

ETHICAL APPROVAL

It is not applicable.

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We appreciate the patient who consented to the information reported in this article.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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