

Cutaneous Blastomycosis Mimicking Squamous Cell Carcinoma of the Scrotum

M Jordan, S Martz, C Hollowell

Citation

M Jordan, S Martz, C Hollowell. *Cutaneous Blastomycosis Mimicking Squamous Cell Carcinoma of the Scrotum*. The Internet Journal of Urology. 2007 Volume 5 Number 2.

Abstract

Blastomyces dermatitidis is a dimorphic fungus, endemic to the North American Great Lakes, South America and Africa that initially involves the lungs, but can disseminate hematogenously to include skin, bone and central nervous tissue. Cutaneous eruptions are a common manifestation of extrapulmonary disease and can have an appearance similar to squamous cell carcinoma. We report a case of a verrucous scrotal lesion highly suspicious for squamous cell carcinoma, diagnosed after surgical excision as Blastomycosis dermatitidis.

INTRODUCTION

Blastomyces dermatitidis is a dimorphic fungus that causes pyogranulomatous disease.¹ Blastomycosis is a common fungal disease endemic to Missouri, Mississippi, and Ohio River basins. The initial infection is often subclinical and involves the lungs, but dissemination may occur hematogenously. Although pulmonary symptoms are most common, cutaneous eruptions are seen in approximately 40-80 percent of cases.¹ Blastomycosis is unique in comparison with the other systemic mycoses since it usually affects healthy, non-immunocompromised individuals.² Cutaneous manifestation of blastomycosis can pose a diagnostic challenge as it clinically mimics squamous cell carcinoma. We report a case of a scrotal lesion presenting as a verrucous lesion highly suspicious for squamous cell carcinoma diagnosed as Blastomycosis dermatitidis after surgical excision. While scrotal involvement of blastomycosis infection is rare the clinician should have a high index of suspicion for this disease as its treatment and clinical course differ radically from that of squamous cell carcinoma.

CASE REPORT

A 35 year old Caucasian male presented to our institutional emergency department with a complaint of a right sided superficial scrotal lesion present for the past six months that was now increasing in size and becoming increasingly more painful. The patient was referred to our urology clinic. The patient stated the lesion began as a small raised and red papule that had become larger and increasingly painful over

the previous three months. The patient denied constitutional symptoms including; fevers, recent weight loss, trauma to the area, previous history of cancer or history of sexually transmitted disease. The patient denied any past medical or surgical history and was not taking any medications. The patient had no known drug allergy or contact allergy. Socially, the patient was currently not working, but had worked most recently as an automobile mechanic. Physical exam revealed a raised red plaque measuring 4 cm x 3 cm x 2 cm, located on the lateral superior aspect of the right superior scrotum.

Figure 1

Figure 1: Right scrotal lesion on presentation



No inguinal lymphadenopathy was appreciated. Following the exam further laboratory work up revealed an institutional normal complete blood count and comprehensive metabolic panel. Urinalysis was negative and all liver function tests

were within normal institutional values. A CT scan of abdomen and pelvis revealed normal abdominal anatomy without evidence of metastasis or lymphadenopathy. A CT of the chest showed pulmonary fibrosis, but no evidence of pulmonary metastasis. Given the suspicious appearance of the lesion for squamous cell carcinoma surgical treatment options were reviewed and the patient elected to undergo radical excision of the scrotal lesion.

Figure 2

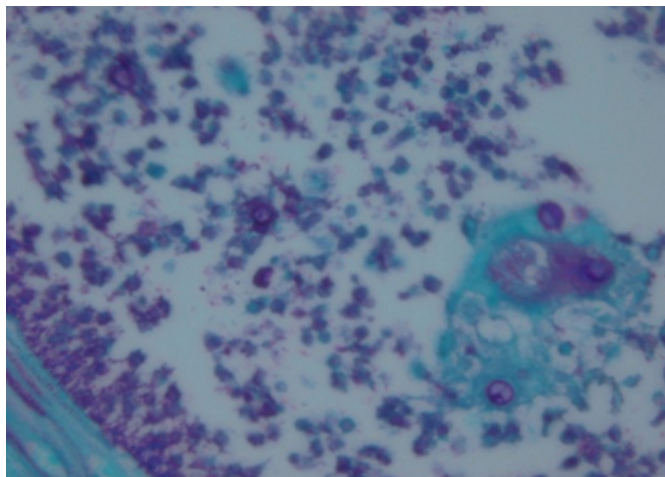
Figure 2: Excised scrotal specimen



After wide excision pathology demonstrated a suppurative and granulomatous dermatitis with numerous yeasts morphologically consistent with Blastomycosis dermatitidis. Confirmatory stains, Periodic acid Schiff (PAS) and Gomori methenamine silver (GMS), were done and also supported the diagnosis of Blastomycosis dermatitides. The patient was started on Fluconazole 400 mg PO daily for a total of 6 months.

Figure 3

Figure 3: High magnification of excised specimen demonstrating Blastomycosis appearance with Periodic acid Schiff (PAS) staining



DISCUSSION

After an extensive MEDLINE literature review from 1950 to the present, this represents the first reported case of scrotal cutaneous blastomycosis. Blastomycosis dermatitidis was first isolated in 1894 by Gilchrist and characterized as a dimorphic fungus which causes pyogranulomatous disease.¹ Most cases appear in the Great Lakes and Southeastern coastal areas of North America, Central America, Canada, India and Africa.^{2,8} In the state of Illinois, of the Great Lakes region, the incidence of blastomycosis infections is increasing.^{2,8} Farmers, outdoor manual laborers, automobile workers, and hunters, are at greatest risk for infection in endemic areas.³ Our patient had the risk factors of working as an automobile mechanic in an endemic area.

Blastomycosis is unique in comparison with the other systemic mycoses since it usually affects healthy, non-immunocompromised individuals.² Studies by Schwartz and Baum were the first to establish that usual portal of entry for human blastomycosis infections was the lungs.¹ Primary pulmonary infection occurs by inhalation of the blastomycosis conidia, which then convert to the active yeast phase within the lung. The incubation period is between 30 to 45 days.¹ In retrospect, the CT scan of the chest revealing pulmonary fibrosis on our patient is consistent with a pulmonary blastomycosis infection. From primary lung infections, which are often asymptomatic, the infection may spread hematogenously to extrapulmonary sites. Skin, bone, genitourinary and the central nervous system, respectively, are the most frequently involved extrapulmonary sites.⁴

Definitive diagnosis must be made by culture of the organism from tissue or secretions. Both Periodic Acid Schiff (PAS) stain and Gomori methenamine silver (GMS) stain are used to screen tissue for the presence of the distinctive yeast, but culture remains the gold standard.⁵

Treatment is by oral antifungal agents; ketoconazole at 400-800mg/day, fluconazole 400-800 mg/day, and Itraconazole 200-400 mg/day for a period of 6 months are effective alternatives for immunocompetent patients with mild to moderate disease.^{6,7} Before antifungal treatment was available mortality rates for Blastomycosis was upwards of 60 percent.⁶ Currently, successful outcomes can be seen in 95 percent of patients with at least 6 months of therapy.^{6,7} Apart from diagnosis, surgery plays little role in primary treatment of blastomycosis, especially for extrapulmonary manifestations. There are no specific guidelines about treatment after surgical excision of a cutaneous lesion. While

our patient had undergone surgical excision of the cutaneous lesion, we determined the patient should undergo six months of treatment for the presumed pulmonary infection as well as to reduce risk for recurrence and the associated morbidity without such treatment.

References

1. Chapman S: Blastomyces dermatitidis, in Mandell, Douglas, and Bennett's: Principles and Practice of Infectious Disease, 6th ed. Edited by GL Mandell, JE Bennett, R Dolin, Philadelphia, 2005 Elsevier, vol 2, Chapter 263, 3026-3040.
2. Furcolow ML, Chick EW, Busey JF, and Menges, RW: Prevalence and incidence studies of human and canine blastomycosis I: Cases in the United States, 1855-1968. Amer Rev Resp Dis 1970; 102: 60.
3. Trent, JT, Kisner RS. Identifying and treating mycotic skin infections. Adv in Skin Wound Care. 2003;16:122-129.
4. Ricciardi AR, Filice, K. Blastomyces dermatitidis of the perianal skin: a report of case. Dis of Colon and Rectum. 2007;50:118-121
5. Taxy JB. Blastomycosis: Contributions of morphology to diagnosis: a surgical pathology, cytopathology and autopsy pathology study. Amer J Surg Path. 2007;31:615-23.
6. National institute of allergy and infectious diseases study group: Treatment of blastomycosis and histoplasmosis with ketoconazole; Results of a prospective randomized trial. Ann Intern Med 1985; 103: 861-872.
7. Dismukes WE, Bradsher RW, Cloud GC, et al: Itraconazole therapy for blastomycosis and histoplasmosis. Am J Med 1992; 93: 489-497.
8. Dworkin, MS, Duckro AN, The Epidemiology of blastomycosis in Illinois and factors assoc. with death. 2005; 41:107-11.

Author Information

Michael D. Jordan, DO

Urology Resident, Stroger Cook County Hospital

Scott T. Martz, DO

Chief Urology Resident, Stroger Cook County Hospital

Courtney P. Hollowell, MD

Chairman, Division of Urology, Stroger Cook County Hospital