

Black grain eumycetoma of the breast misdiagnosed as fibroadenoma

Sir,

Mycetoma is a chronic subcutaneous localized infection characterized by the triad of swelling, discharging sinuses and discharge of grains that may be caused by bacteria (actinomycetoma) or fungi (eumycetoma). Although it most commonly involves the foot, lower

leg or hand, involvement of the head or back may also occur.^[1] The incidence is low in other parts of the body because of the lower risk of trauma as the initiating factor. We report an adult woman with multiple nodules in the breast misdiagnosed as fibroadenoma and later proved to be eumycetoma.

A 26-year-old woman presented with multiple asymptomatic subcutaneous nodules in the right breast for 4 years. Initially she developed a solitary asymptomatic subcutaneous nodule in the right inferior-medial quadrant near the areola, followed

by a similar lesion in the central quadrant within the next 6 months that was diagnosed as fibroadenoma by a surgeon. Ultrasonography revealed two sonolucent areas of 25.2 × 11.5 mm and 20.7 × 9.3 mm in the infero-medial and central quadrants, respectively in the peri-areolar region. Excision biopsy of the small central nodule showed fibrocystic disease. The larger inferior-medial nodule was then excised. The patient continued to develop new lesions until she presented to us with multiple, non-tender, coalescing soft to firm, subcutaneous nodules in the infero-lateral side of the breast that varied from 2 to 4 cm in size. The overlying skin was intact except for the scars of previous excisions [Figure 1a]. No discharging grains or sinuses were seen. Excision biopsy of the nodules revealed multiple black grains between nodules surrounded by fat globules [Figure 1b]. The grains were sent for fungal culture, while the intact nodule was sent for histopathology.

Histopathology from the excised nodule showed a chronic granulomatous inflammatory reaction with neutrophil abscesses and scattered giant cells [Figure 2a and b]. The center of the nodule showed round to oval shaped grains, variable in size and containing fungal colonies comprised of broad, non-septate hyphae with round, vesiculated chlamydoconidia embedded in a brown cemented matrix [Figure 3a]. Many fungal hyphae were also seen on Gomori methenamine silver stain [Figure 3b]. Fungal culture did not grow any organism even after 4 weeks. Based on the color of grains, histopathology and special stains, we diagnosed eumycetoma of the breast. We treated her with itraconazole, 200 mg twice a day. There was no significant change after 15 days of treatment and she was subsequently lost to follow-up.

Mycetoma usually involves parts of the body that come in contact with soil during daily activities.^[2] The foot is the most commonly affected site, being involved in 70% of patients while the hand, the next most commonly affected area, is involved in 12% of patients. Less frequently, the knee, arm, leg, head and neck,^[3] inguinal area^[4] and the perineum,^[5] are affected in descending order of frequency. Rarely, sites such as the chest^[6] and abdominal walls,^[7] facial bones, mandible,^[8] testes,^[9] vulva,^[10] paranasal sinuses^[11] and eyelids^[12] may be affected. For poorly understood reasons, actinomycetomas are more frequent than eumycetomas at uncommon locations

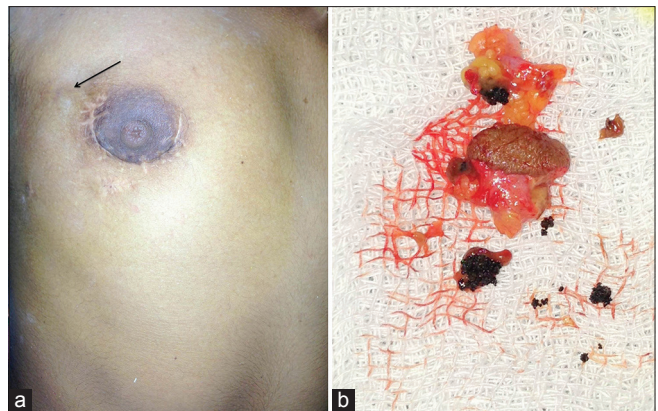


Figure 1: (a) Scar mark of previous excision biopsy and surgery over right breast around areola. Arrow indicates site of current excision biopsy from subcutaneous nodule and (b) Multiple black-brown hard grains surrounded by fat tissue on excision biopsy from nodule

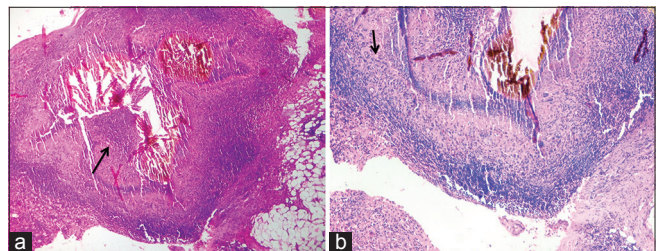


Figure 2: (a) Area of suppuration with grains in center ×100 and (b) surrounded by chronic granulomatous inflammatory infiltrate ×200. Hematoxylin and eosin

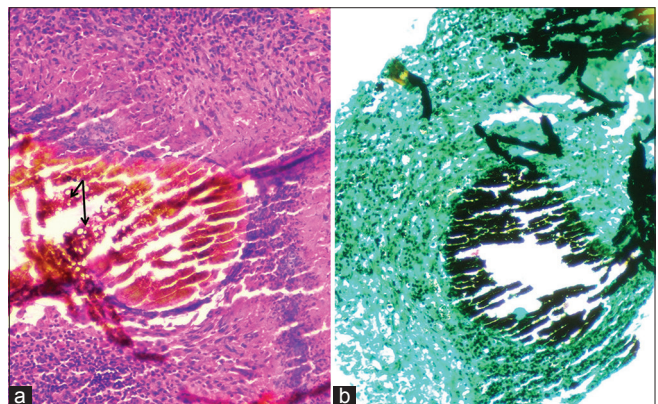


Figure 3: Round to oval shaped grains, variable in size and containing fungal colonies comprised of broad, nonseptate hyphae with round, vesiculated chlamydoconidia embedded in a brown, cemented matrix. (a) Hematoxylin and eosin, ×400 and (b) Grocott's methenamine silver stain, ×200

such as the abdominal wall, chest, head and neck. Maiti, *et al.* showed that mycetomas that occurred on covered parts of the body significantly differed from mycetomas occurring in exposed areas and the former were almost always actinomycetomas.^[2]

The diagnosis of eumycetoma in our case was based on the black color of grains with fungal colonies, which were embedded in a brown matrix as seen on histopathology and Gomori methenamine silver stain. On histopathology, it is difficult to differentiate between eumycetoma and actinomycetoma unless a grain is seen, as the host reaction is similar. An inflammatory nodule typically centers on an area of suppuration containing numerous polymorphonuclear cells with or without granulomatous inflammatory reaction in the dermis and subcutaneous tissue. When grains are noted, eumycotic colonies are more frequently surrounded by fibrotic tissue than in actinomycetoma. Furthermore, the shape, size, macroscopic color and affinity for stains of the grains are useful in preliminary characterization of the mycetoma. In contrast to actinomycetoma granules that are 20 µm to 4 mm in size, eumycotic mycetomas usually have larger grains, up to 5 mm in diameter, composed of fungal hyphae that are septate, 2–6 µm thick, often with distorted shapes, and spherical, thick-walled, terminal chlamydoconidia. The presence of an amorphous matrix narrows the diagnosis to consideration of three eumycotic agents, *Madurella mycetomatis*, *Madurella grisea* and *Leptosphaeria*. If this amorphous matrix is present throughout the colony imparting a grainy appearance it may suggest *M. mycetomatis*.

This presentation of eumycetoma as coalescing, subcutaneous, breast nodules unaccompanied by any surface changes such as discharging sinuses and grains in spite of disease lasting 4 years is distinctly unusual.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Access this article online	
Quick Response Code:	Website: www.ijdvil.com
	DOI: 10.4103/0378-6323.162329

How to cite this article: Kothiwala SK, Purohit S, Meena M, Jindal A. Black grain eumycetoma of the breast misdiagnosed as fibroadenoma. *Indian J Dermatol Venereol Leprol* 2015;81:521-3.