

Madura foot

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Introduction:

Mycetomas are a chronic granulomatous infection that is present worldwide and endemic in tropical and subtropical regions. The infection is caused by the traumatic inoculation of a fungus (eumycetoma) 40 % or a bacterium (actinomycetoma) generally remains localized, causing cutaneous and subcutaneous tissue swelling, nodule formation, and drainage through sinus tracts and later fasciae and bones can be affected.¹⁻⁴.

The epidemiology of the disease, which is characterized by an endemic region located between the latitudes of 15 degrees south and 30 degrees north, Male predominance is a constant finding in mycetoma, the sex ratio being 3.7:1⁶⁻⁷. This finding is commonly attributed to the greater risk of exposure to organisms in the soil during outdoor activities. No age is exempted, but the disease usually affects adults between 20 and 40 years of age.⁶

The clinical presentation and treatment of mycetoma; focused on the differences between eumycete and actinomycete infections. Diagnosis is established by identifying the type of grains found in the discharge, which guides treatment. The color of these grains has diagnostic value. Green grains identify *Aspergillus flavus* as the most likely causative agent, whereas white grains are usually produced by *Pseudallescheria boydii*, *Aspergillus nidulans*, or *Acremonium kiliense*. Brownish grains are produced by *Neotestudina rosatii*, while deep-black grains are produced by species such as *Curvularia lunata*, *Exophiala jeanselmei*, *Pyrenochaeta romeroi*, *Leptosphaeria senegalensis*, *Madurella grisea*, and *Madurella mycetomatis* Mycetoma caused by bacteria can usually be managed effectively with antibacterial medication alone, while infections with fungi require antifungal medication and surgery. Without proper treatment, mycetoma can lead to deformity, amputation, and death.⁵

Case Report:

Our patient is a 35 years old African male farmer from Sudan presented for the first time to the, Dermatology Clinic, I Iamad Medical Corporation, on May 2007 with multiple skin lesions on the right foot of 6 years duration. History started on 2001 when he was in Sudan after trauma, when he started work in the farm with bared feet. After a period of time the patient noticed small painless skin colored lesion in his right sole, with time new similar lesions developed and progressed slowly in number and size.

The lesions were discharging some fluids and small dark granules on squeezing them. The patient otherwise was healthy with no other complains nor similar family history. Temperature of the infected right foot was normal, slightly swollen, with multiple discrete pigmentation and skin colored warty like keratotic papulo-nodular lesions; some of the lesions accumulate with small sinuses in between, located on the sole extending to the lateral aspect of the foot. Regional lymph nodes are small and shotty.

The clinical diagnosis was: Mycetoma (Madura foot). X-Ray to the affected foot shows no bone involvement. Skin swab and skin biopsies were taken for histopathological examination and for mycological cultures. Blood laboratory investigations were within normal limits all cultures and stains for actinomycetes were negative.

Surgical treatment was decided and the mycetoma was extensively debrided by surgical excision and reconstruction by flap was done, the gross appearance for the excised tissue showed, Cutaneous and Subcutaneous nodules with black grains, fig // . Samples from the deep area were sent to the microbiology laboratory for fungal cultures. However, again fungal cultures showed growth of *Madurella* species. Part of the specimen was fixed in 10% formalin and sent to histopathology laboratory. Surgical treatment Combined with systemic antifungal (itraconazol). During the postoperative follow up visits, the patients doing well and the lesions healed completely without any oozing or discharge.

Mycologic findings: The tissue was ground with sterile saline in a stomacher Lab-Blender Model (Sewaed-UK) using plastic bag. A drop of the homogenate from the tissue was viewed in 30% KOH under light microscope at X400 magnification. Branched septate hyphae were evident in this preparation. The remainder of the homogenate was inoculated onto two sets of Sabouraud dextrose agar +40 U/ml streptomycin and 20U/ml penicillin, and Sabouraud dextrose agar (without antibiotics). Fungal colonies started to appear within three days on all plates with continuous slowly growing the color

was yellow-brown, reverse, was dark brown.

The fungus was identified as *Madurella* species. Part of the tissue was imbedded in paraffin and used for preparing histological slides, a combination of histological stains, hematoxylin and eosin (H&E), and Gomori methan silver (GMS) were used to visualize fungal hyphae.

Discussion:

In our patient fungal identification and histopathology confirm the diagnosis of eumycetoma after the primary clinical diagnoses which depend on the triple features of diagnosis (grains, tumefaction, and draining sinuses). We identified, *Madurella* species; which is the most prevalent mycetoma agent in Sudan⁸. The precise mechanism of infection remains enigmatic, but it is frequently suggested that traumatic inoculation of fungus-containing soil, assisted by the presence of plant materials such as thorns, provides a likely route of inoculation.⁸⁻¹¹

Our patient as a farmer was exposed to trauma while working in Sudan, then traveled to Qatar, which is not an endemic area and after six years he seek medical advise when the lesions grew fast draining small black granules. *Madurella* species is a dematiaceous (phaeoid, or dark-walled) filamentous fungus found in soil, particularly in tropical and subtropical areas of Africa, India, and South America are among the causative agents of human mycetoma.

Strains belonging to this genus are isolated specifically from cases with black-grain eumycetoma like our patient (discharging black granules). Very limited data are available. In a previous in vitro assay, *ketoconazole* and *itraconazole* MICs appeared to be lower than those of *econazole* and *miconazole*¹². In a more recent study,

voriconazole MICs were found to be considerably low, while those of *itraconazole* were variable.¹³

Surgical treatment was decided especially after the exclusion of the bone involvement combined with systemic antifungal (*itraconazole*) and the flow up of the patient after three months of operation revealed that he is clinically still free, and since of the presence of percentage of recurrences we are planning to continue regular clinical flow up with systemic antifungal for at least six months putting in mind Ultrasonic imaging and a fine needle aspiration (FNA) for any suspected recurrences, (FNA)

The technique is simple, cheap, rapid, sensitive and can be tolerated by patients. It can be used not only in routine diagnosis but can be used as an effective mean in collection of material for culture and immunological studies. Due to the simplicity of the technique it can be used in epidemiological survey of mycetoma and for detection of early cases in which the radiological and serological techniques may not be helpful¹⁴.

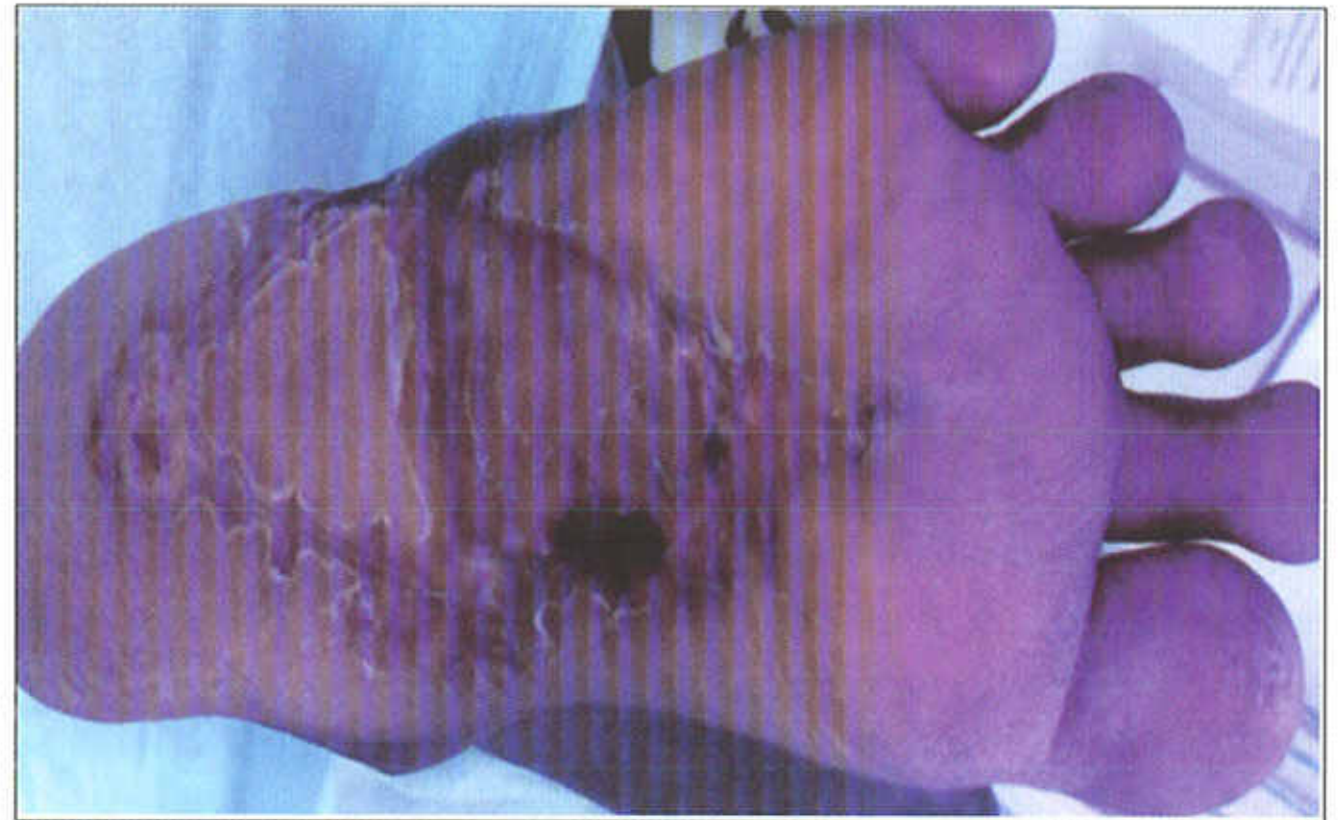
According to our records for the last 15 years we had only four proved cases three males and one female all of the patients were originally from endemic countries such as Yemen and Sudan also they had, including our patient, a history of injuries of the foot with indolent progressed disease, all of the site of inoculation were in the foot which is the commonest site for mycetoma is the foot (79.2%), most of the lesions are seen on the dorsal aspect of the forefoot and for unexplainable reasons the left foot is affected more. The hand ranks as the second commonest site (6.6%), the right hand is more affected. This may imply a traumatic basis of the infection in this site. In endemic areas other parts of the body may be involved but less frequently in the four patients fungi was the causative organism.

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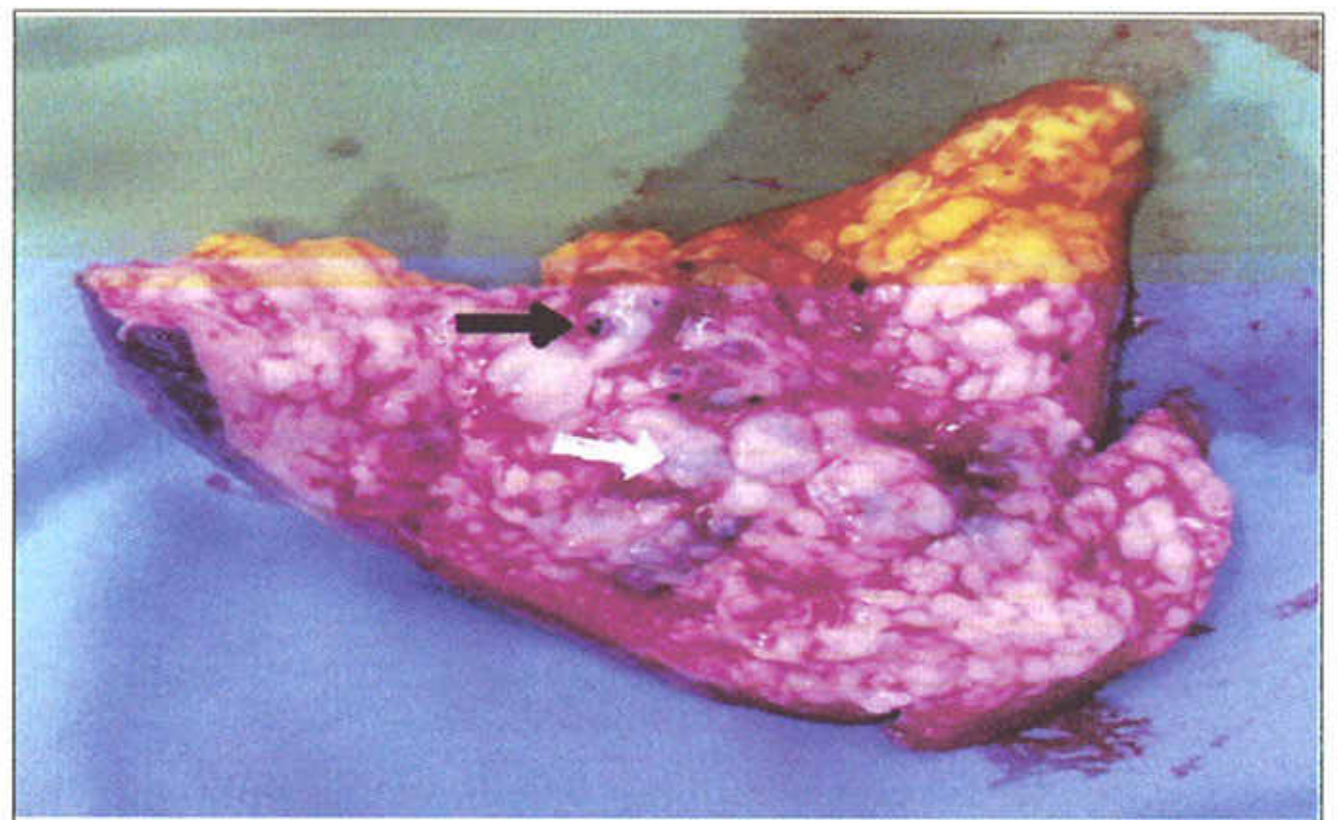
Clinical appearance of the affected foot.



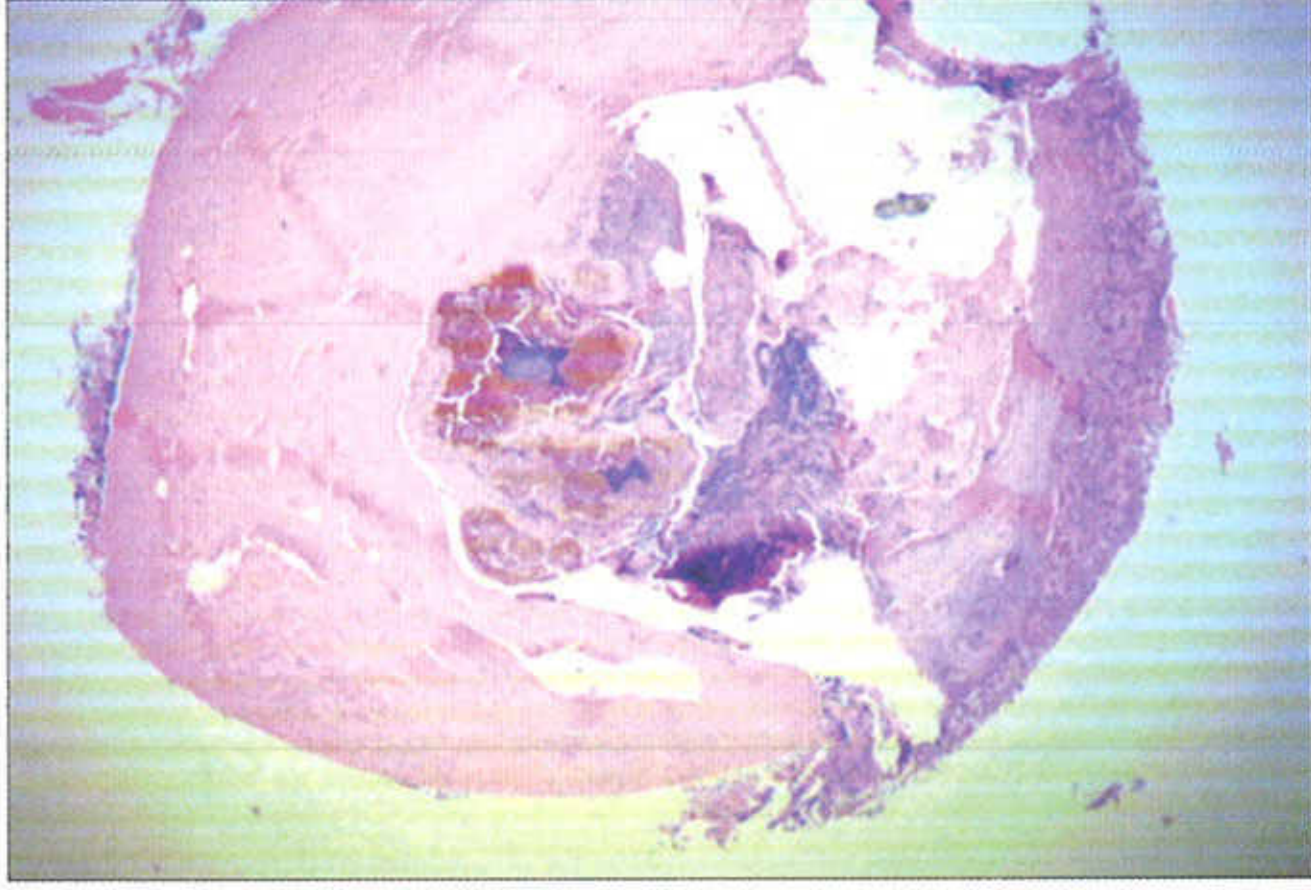
Clinical appearance of the lateral aspect of the similar foot.



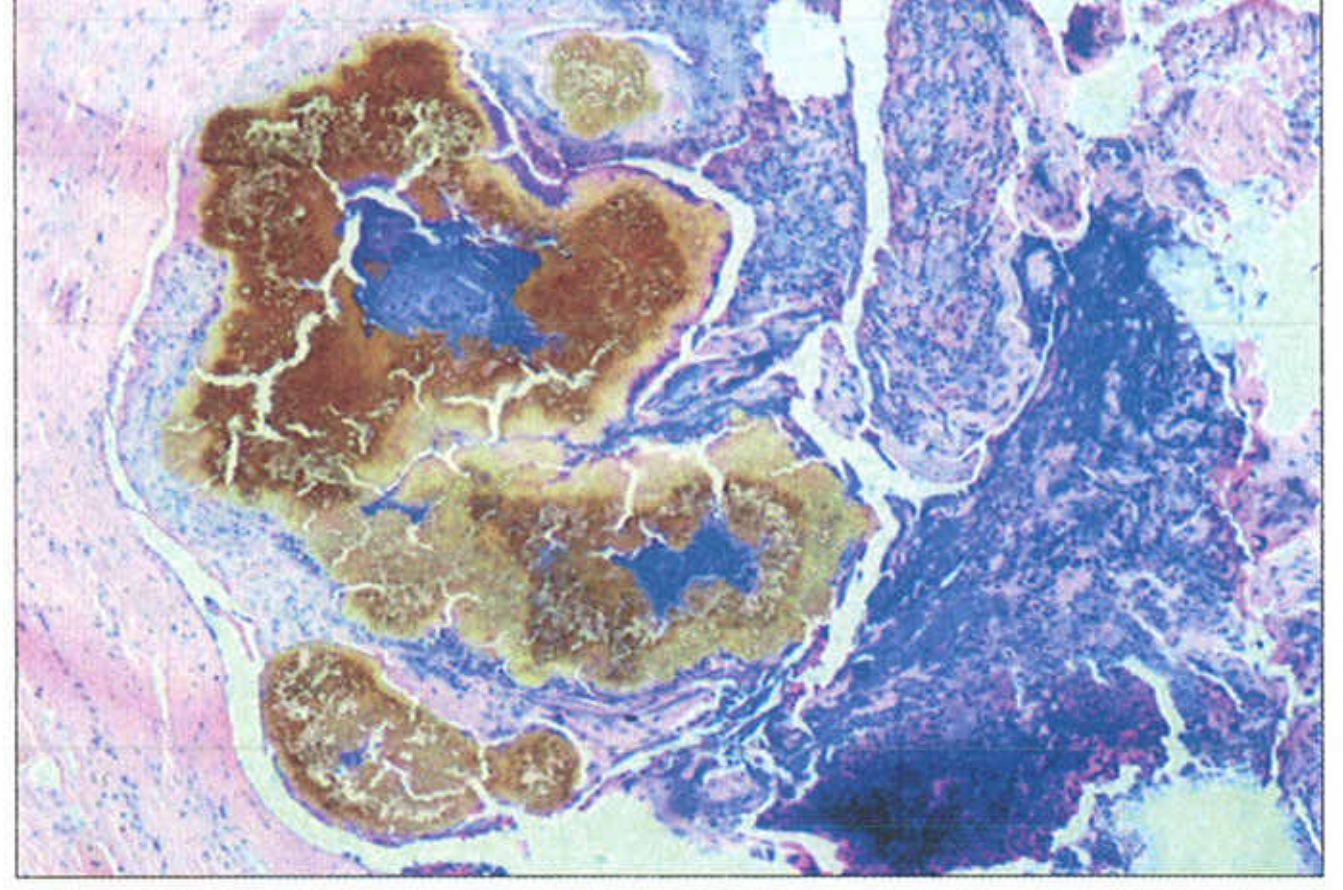
The similar affected foot after surgery.



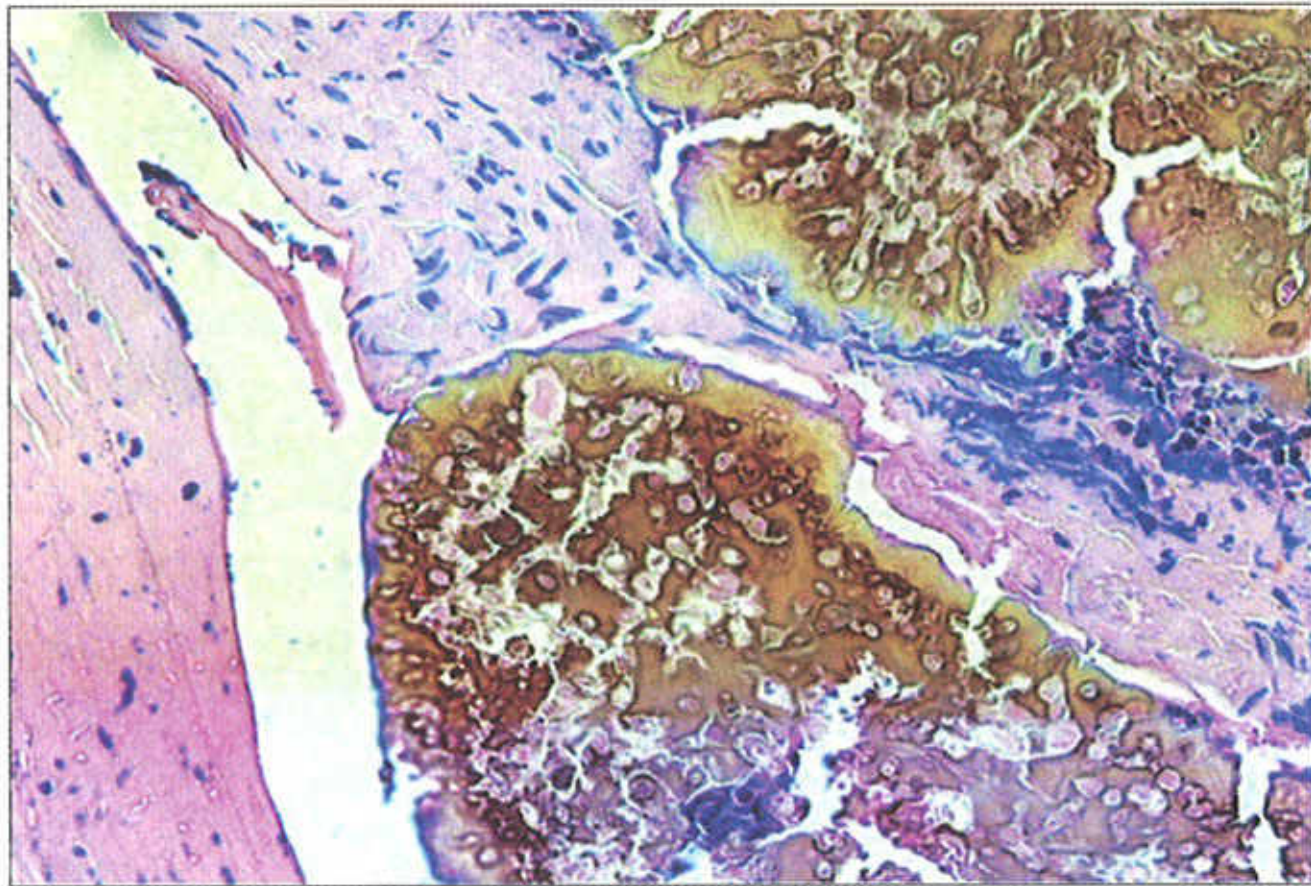
Cut surfaces of the surgically removed nodule. Black granules (grains) are seen .



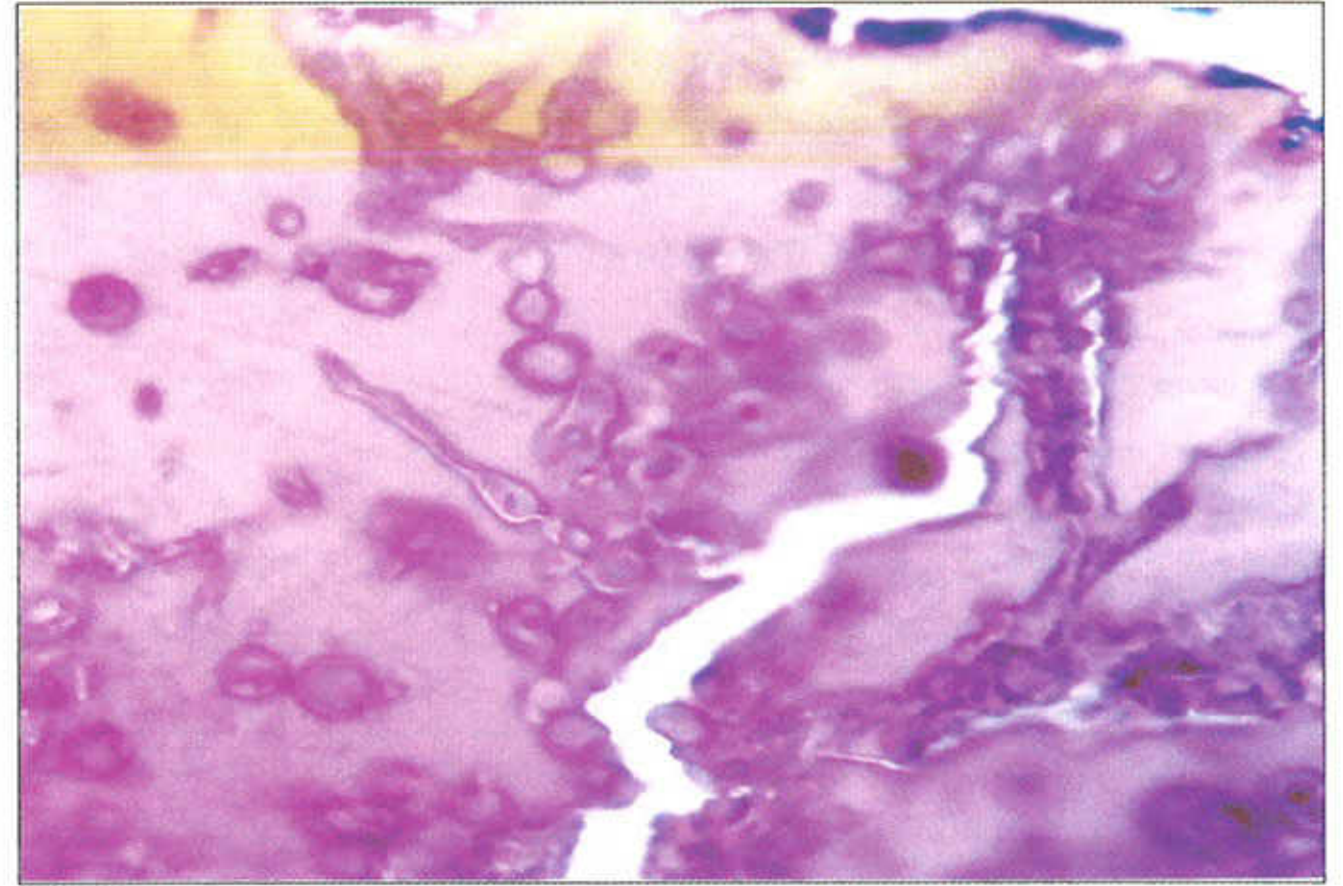
Histopathology showing the pigmented grains (HE, low power).



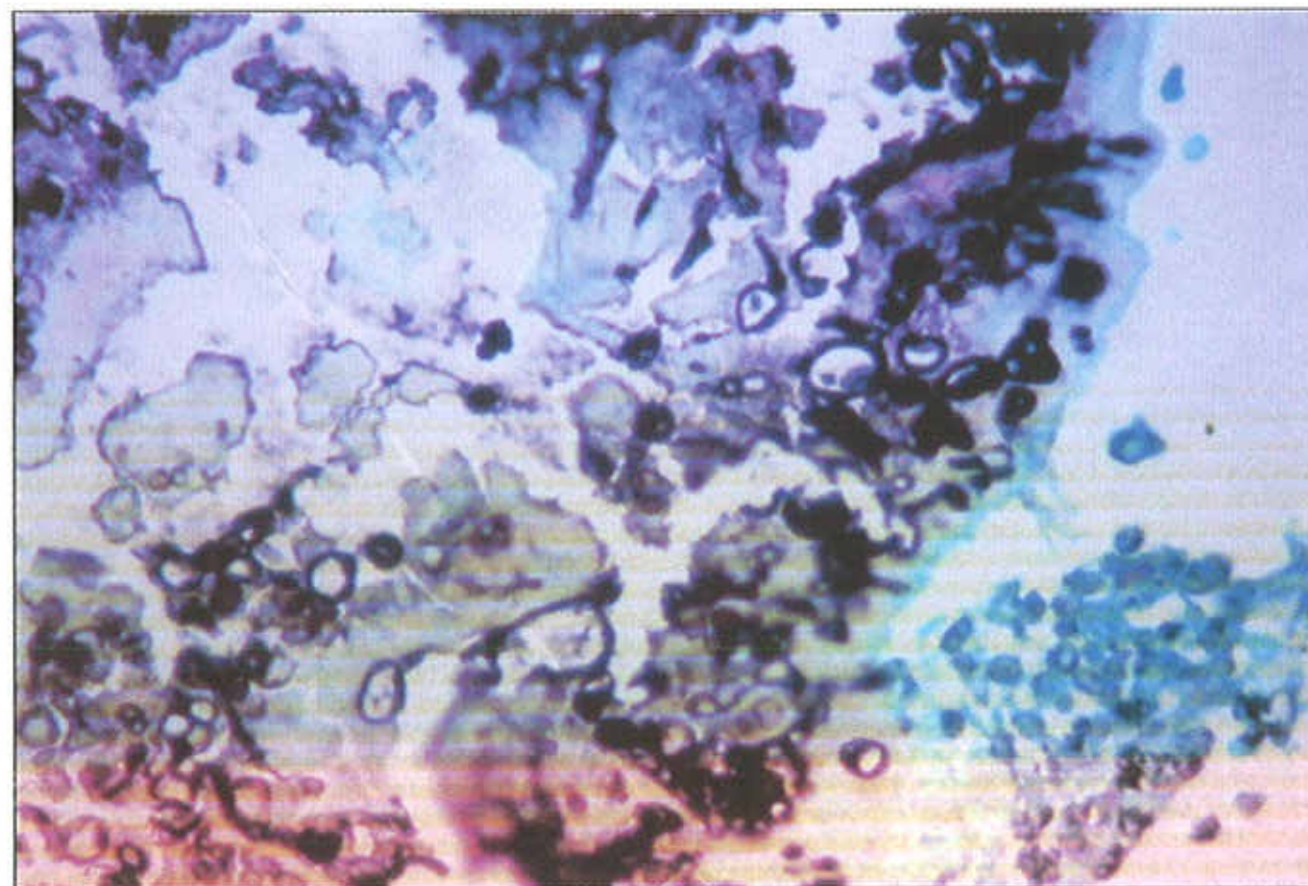
Histopathology higher magnification (H & E, X 20).



Higher magnification.



Invasion of fungal hyphae into the tissue. H&E (X400)



400X GMS stain.