

Penicillinosis: a Histoplasma Mimic in the Bone Marrow of Two Immunocompromised Asian Males

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INTRODUCTION

Penicillinosis is a disseminated infection endemic to Southeast Asia and China caused by *Penicillium marneffii*, a dimorphic fungus and an intracellular pathogen for humans. *P. marneffii* infection was first isolated from the bamboo rat, *Rhizomys sinensis*¹ in Vietnam in 1956. Human beings get infected from organisms in contaminated soil². *P. marneffii* has emerged as a major opportunistic infection in AIDS patients that present with fever, anemia, leukopenia, weight loss and hepatosplenomegaly. Characteristic molluscum-contagiosum like lesions are seen on the face, neck and trunk. Diagnosis is made by presence of the organism skin lesions, blood and bone marrow. However, these elements can histologically mimic *Histoplasma capsulatum*, and occasionally *Cryptococcus neoformans* or *Leishmania sp.* We present here two cases of Penicillinosis diagnosed at Memorial Hermann Hospital in the Texas Medical Center one year apart in patients who were recent immigrants, a 31-year-old man with AIDS and a 4-year-old boy, from Southeast Asian countries.

TWO CASES

The 31-year-old Burmese man with AIDS was hospitalized for fever, malaise, and weight loss three days, and a CD4 count of 8 cells/ml, after he had arrived from a refugee camp in Thailand. He had multiple excoriated and umbilicated skin-colored papules on the face and right antecubital fossa. Each papule was about 2-3 mm (Figure 1). The 4-year-old Vietnamese boy was HIV-negative, but had two previous episodes of pneumonia and IgG of 180 mg/dL. He presented with persistent fever, cough, and flu-like symptoms for 2-3 weeks, significant hepatosplenomegaly and similar circular, nonerythematous papules with central umbilication (molluscum contagiosum - like) on forehead and back. He was treated with IV Amphotericin and IVIG.

RESULTS

Both patients had the following findings in the skin and bone marrow. Punch biopsy of the skin lesion showed intracellular yeast-like forms in the dermis (Figure 2 and 4). A bone marrow exam showed intra- and extracellular yeast forms not unlike *H. capsulatum* (Figure 3) and fungal culture grew downy grey-white colonies surrounded by diffusible red pigment (Figure 5). Microscopic examination of the culture showed brush-like clusters of septate hyphae with terminal conidospores (Figure 6) of *Penicillium marneffii*. The Histoplasma urine antigen test was positive in both cases. Both patients responded to high dose intravenous antifungal treatment.



Fig. 1. Molluscum – like skin lesions.

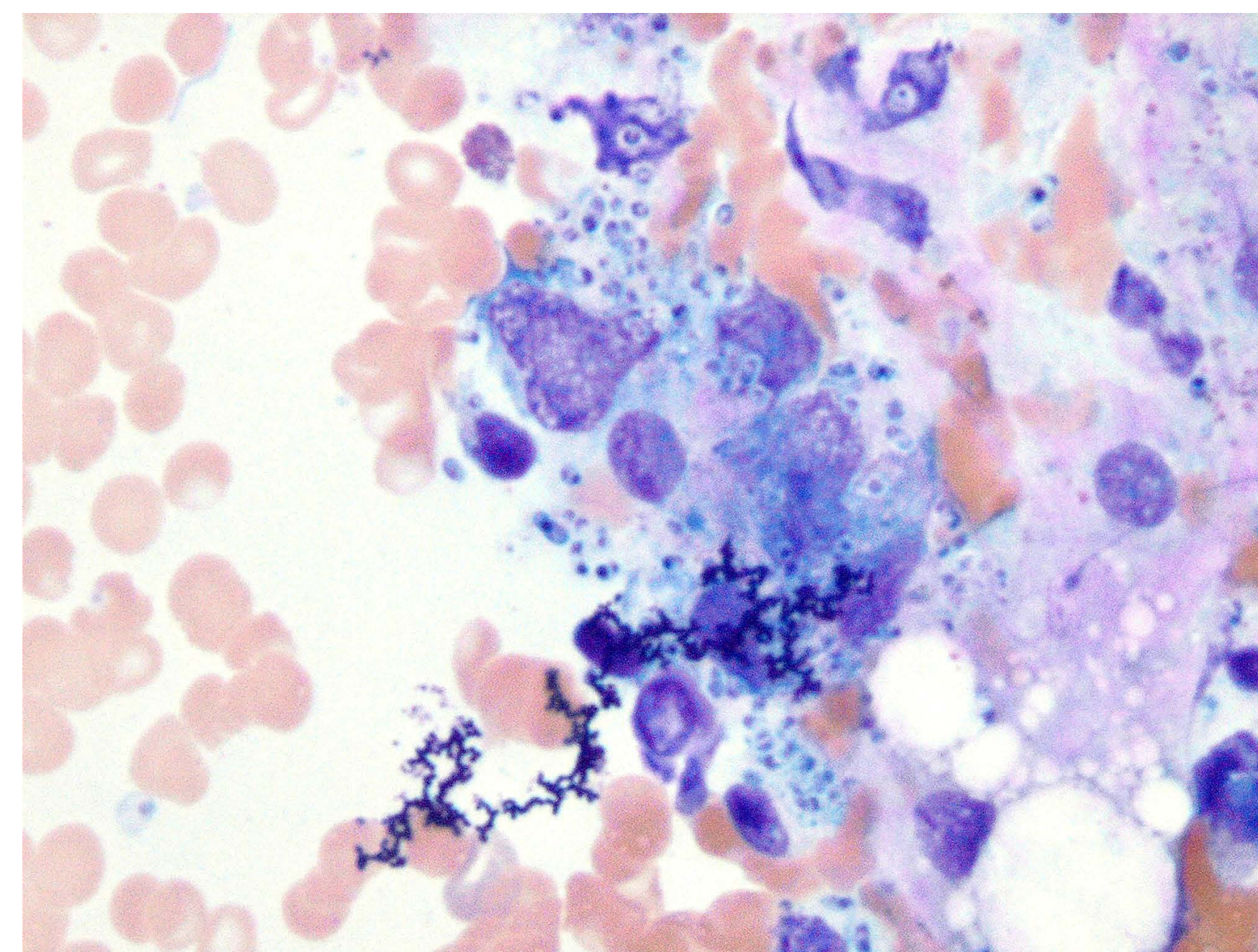


Fig. 3. Bone Marrow, Blue-purple intra- and extracellular organisms, Wright-Giemsa stain, 20X.

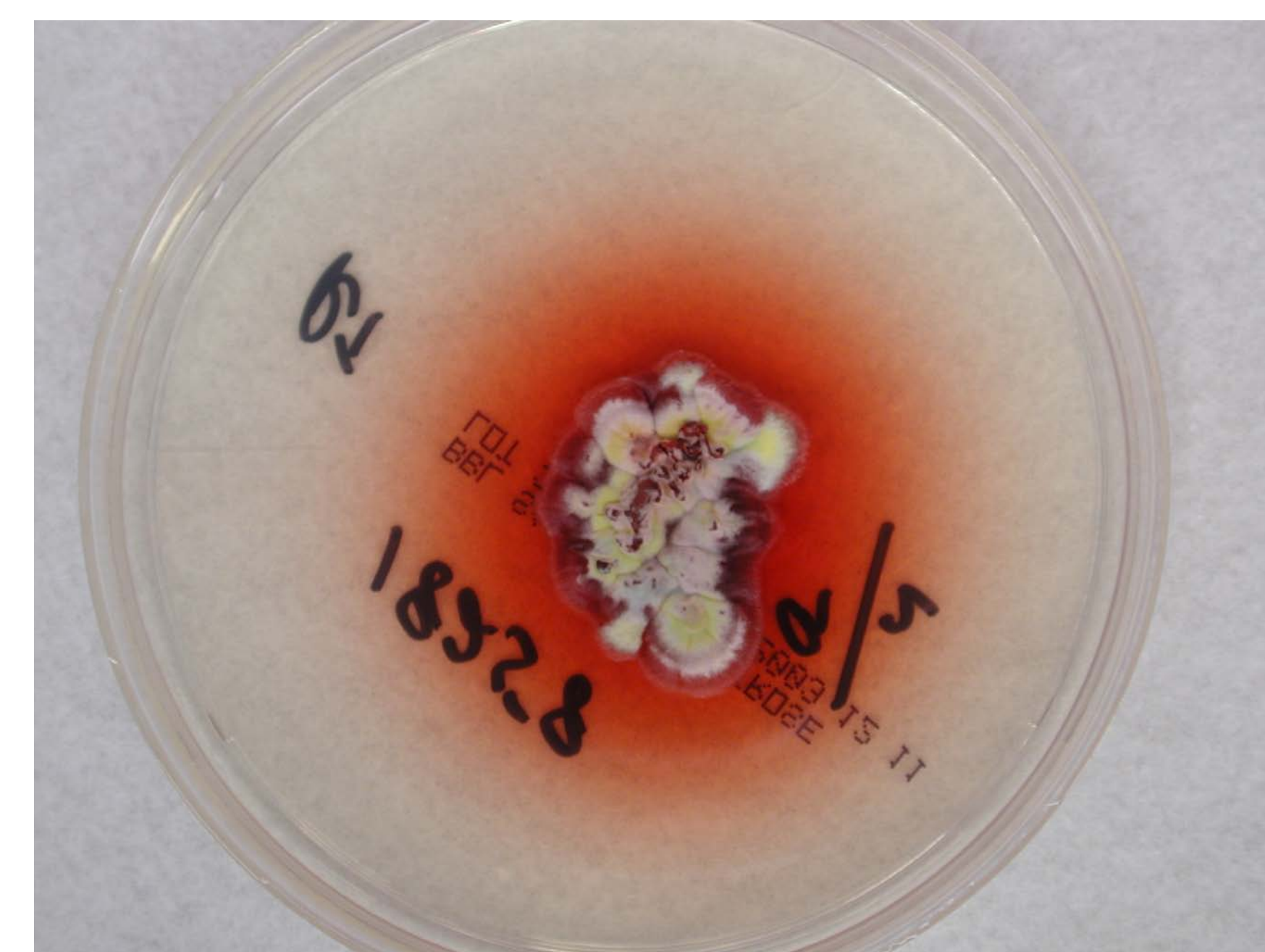


Fig. 5. Colony appearance of *P. marneffii*.

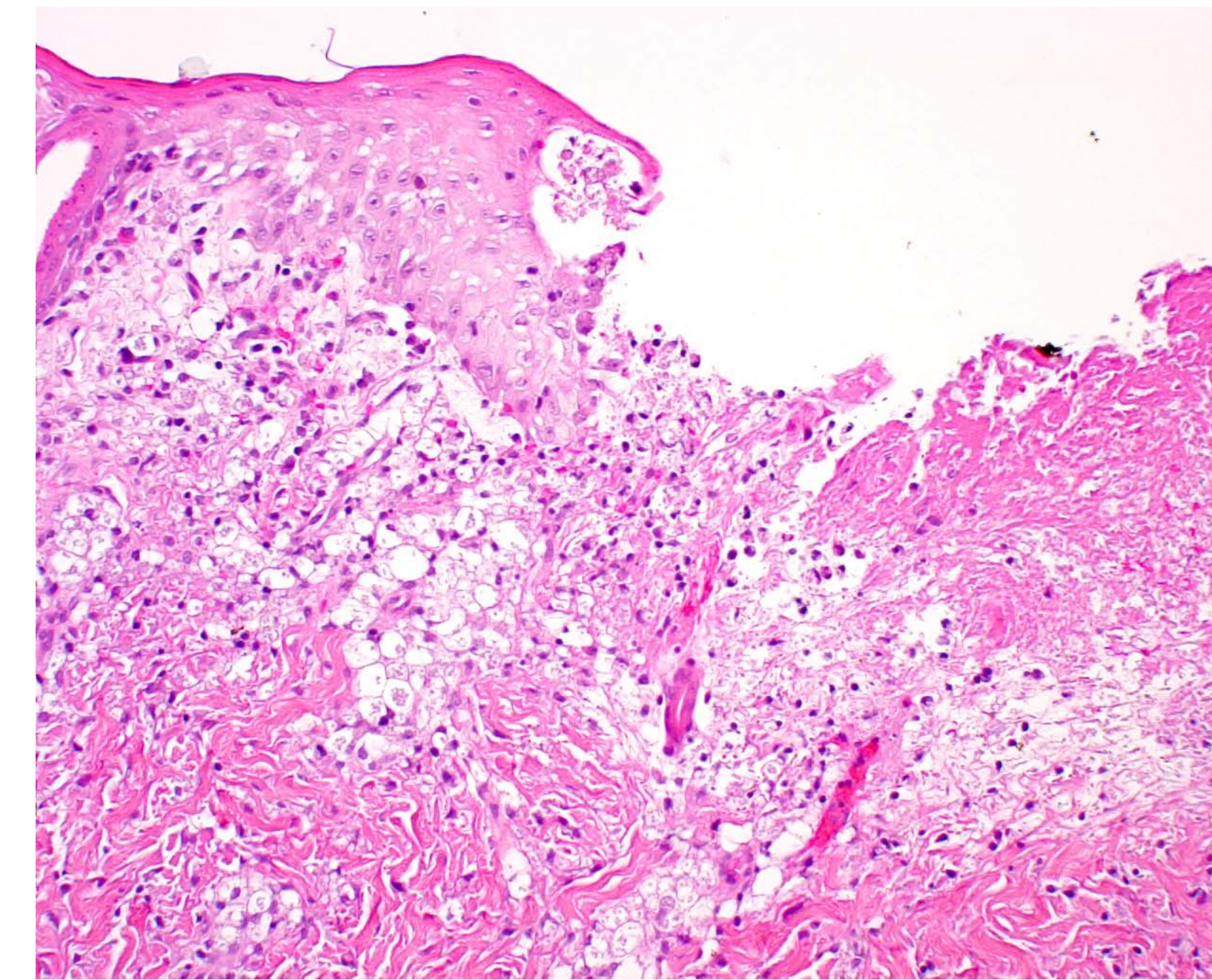


Fig. 2. Skin ulceration, intracellular and extracellular fungal organisms, H & E, 4X.

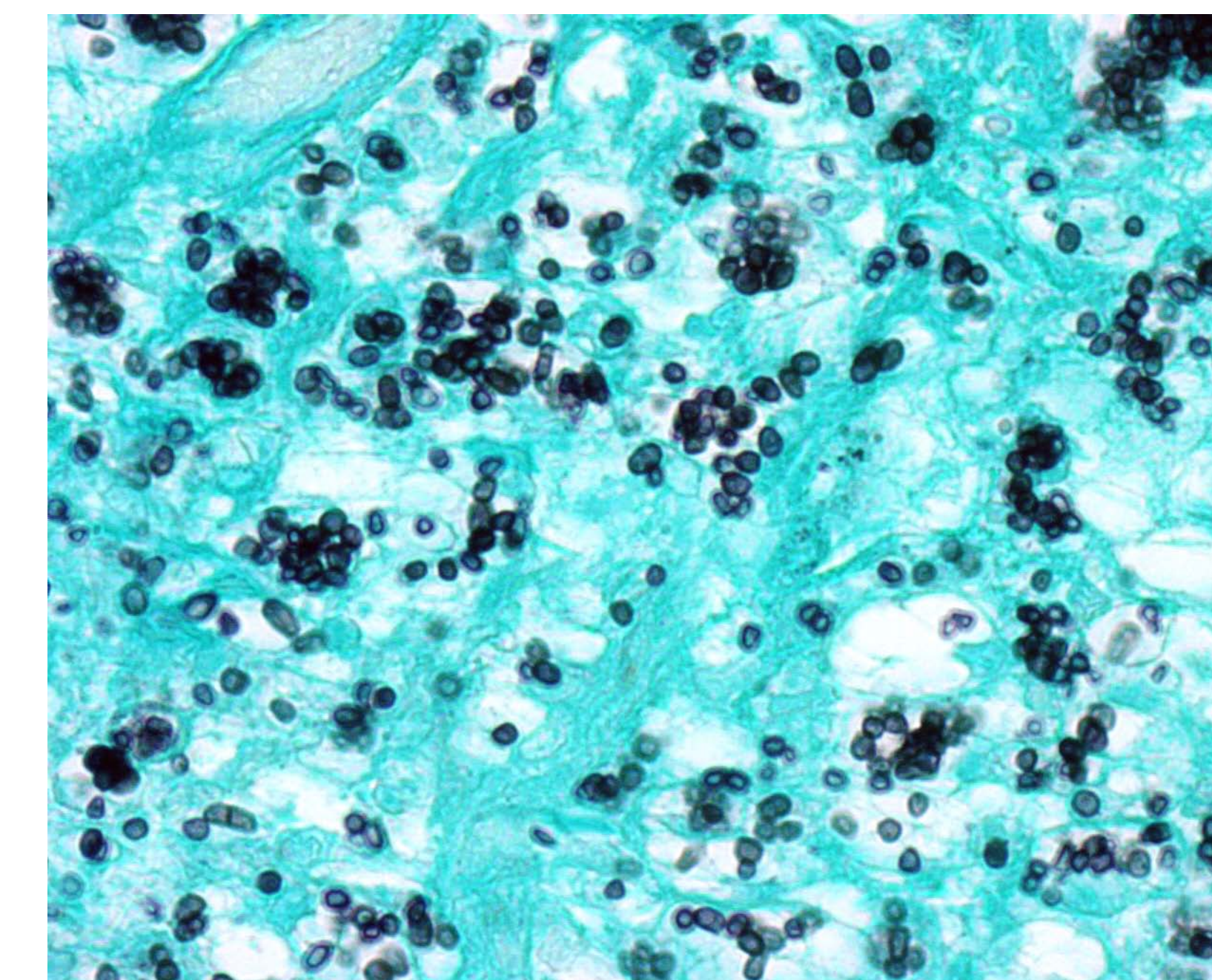


Fig. 4. Skin, oval yeast with prominent septum, Grocott's Methenamine Silver (GMS), 20X.

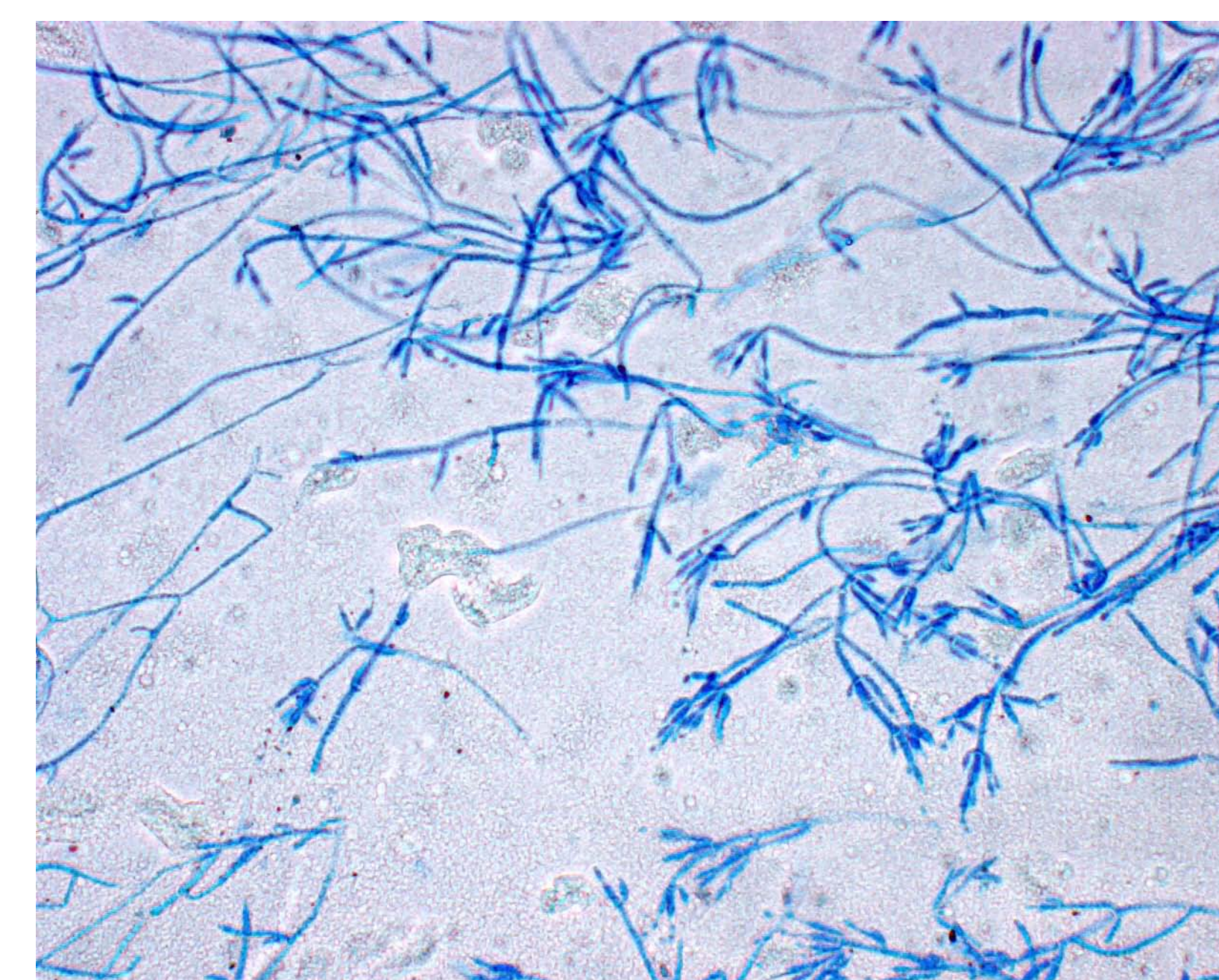


Fig. 6. Microscopy of mold form of *P. marneffii*.

DISCUSSION

Penicillinosis affect immunocompromised patients and occasionally immunocompetent individuals who live in endemic areas of Southeast Asia. As seen in these two cases, the skin lesions occur on the face, especially the forehead, and there may also be mucosal lesions³. Histologically, *P. marneffii* are seen as intracellular and extracellular oval yeast forms with septa resulting from binary fission¹. Having a histologic appearance similar to *H. capsulatum*, *P. marneffii* is however quite distinct in its mycological characteristics. It is a thermally dimorphic fungus that produce fluffy grey-white colony with soluble deep-red pigment at 25-30C. On microscopy, this mold form demonstrates smooth conidiophores with 4 – 5 terminal metulae (penicilli)¹ each bearing 4 – 6 phialides resulting in structures resembling a paint brush. At 37C they form single-celled arthroconidia (3-5 μm) that reproduce by binary fission⁴. Due to antigen crossreactivity, the Histoplasma antigen test can be falsely positive. Initial treatment of *Penicillium marneffii* infection is with Amphotericin B and itraconazole. Relapses occur and hence the patient should be given life long prophylaxis treatment⁵.

CONCLUSION

Penicilliosis is an AIDS-defining disease usually found in Southeast Asia and Southern China and rare in the Western world. The urine antigen test for *H. capsulatum* can be falsely positive and the organisms have morphologic similarity to Histoplasma. Making the distinction is based on the clinical exam and distinct fungal growth characteristics.

References

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