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## Case Report

# First case of *Magnusiomyces capitatus* endocarditis in South India

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### ABSTRACT

*Magnusiomyces capitatus* (previously known as *Geotrichum capitatum* or *Trichosporon capitatum*) is a rare cause of fungal infection in immunocompromised patients mainly seen in hematological malignancies.<sup>1,2</sup> We are presenting an extremely rare case of “*M capitatus* endocarditis” in an immunocompromised patient, a 15-year-old boy with Focal segmental glomerulosclerosis– Not otherwise specified, diagnosed after tricuspid valve vegetatectomy in south India. Fungal identification was performed at standard laboratory by phenotypic characteristics. He was successfully treated with combination of surgery and Inj. liposomal Amphotericin B with voriconazole.

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## 1. Introduction

*Magnusiomyces capitatus* is an *Ascomycetous* yeast-like fungus and belongs to the order *Saccharomycetales* in family *Dipodascaceae*. Majority of the patients were immunocompromised, at extreme age, with comorbidities and had history of close contact with livestock and poultry. Previously known as *Geotrichum capitatum*, *Dipodascus capitatus*, *Trichosporon captiatum*, *Saprochaete capitata*, or *Blastoschizomyces capitatus*,<sup>3</sup> is a rare cause of fungal infection in immunocompromised patients, mainly seen in haematological malignancies and causes invasive infections with increased risk of dissemination and high rates of mortality. *M capitatus* is extremely rare in immunocompetent patients because it is a component of normal human microbial flora. In addition, *Magnusiomyces* species are intrinsically resistant to echinocandins.<sup>4</sup>

Presented here is a case of infective endocarditis with *M capitatus* without underlying malignancies.

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## 2. Case

A 15-year-old boy presented with swelling of lower limbs and frothy urine with normal vitals was diagnosed with Alport’s syndrome as he had Sub-nephrotic proteinuria with microscopic hematuria, normal renal function, ANA, ANCA, Anti-GBM antibody done was negative and had normal C3 C4 levels. Diagnosis was confirmed using light and electron microscopy, immunofluorescence microscopy and genetic workup. Audiometry done showed bilateral sensory neural hearing loss. Kidney biopsy showed FSGS – NOS (focal segmental glomerulosclerosis-not otherwise specified). He was initiated on Hemodialysis and was treated with Inj. Rituximab 500mg -3 doses at weekly intervals, Inj.Methyl Prednisolone 1.5mg/kg given 1hr prior to first dose of rituximab followed by oral steroids (Tab prednisolone 1mg/kg/day for 1month followed by tapering dose was planned). Plasmapheresis – 3 sessions and Mycophenolate mofetil 750mg BD was given. He continued to be dialysis dependent and was discharged with regular follow-up. 2 months later he presented with

generalized seizures, MRI brain done was suggestive of Posterior reversible encephalopathy syndrome. Anti-hypertensives were adjusted (Tab. Prolomet XL 50mg OD, Tab clonidine 0.15mg BD, Tab. Nicardia retard 20mg BD, Tab. Frusinex 100mg 1-1-0, Tab. Minoxidil 5mg  $\frac{1}{2}$  -0-0) and Anti-epileptics (Tab. Sodium valproate 500mg BD, Tab Levipil XR 500mg BD) were added. A month later he presented with acute neutropenic febrile illness, was treated with antibiotics, antifungals, GM-CSF, multivitamins and minimized immunosuppression (MMF was withheld). 5 months later presented with high grade fever with chills, headache and generalized tiredness. He had severe anemia, neutrophilic leukocytosis, and thrombocytopenia. Routine fever workup done was inconclusive. 2D echo done showed vegetation attached to the tricuspid leaflets and extending in to Right Atrium, Grade 1 Tricuspid Regurgitation with moderate Pulmonary artery hypertension, Concentric LVH, Good biventricular function and No pericardial effusion. Serial blood cultures done were negative. He underwent tricuspid valve vegetatectomy and tricuspid valve repair surgery. Vegetation culture grew moderate growth of *Magnusiomyces capitatus*, long slender hyaline fungal hyphae with acute angled branching. He was treated with Inj. liposomal Amphotericin B 150mg in 5% dextrose OD and Tab voriconazole 200mg BD along with antibiotics.

Aggressive nutritional and physiotherapy support provided. Left brachio-cephalic AV fistula done and he was discharged home with follow up under nephrology and CTVS team and is currently awaiting for renal transplant.

### 3. Discussion

To our knowledge, this is an extremely rare case of *M. capitatus* endocarditis in an immunocompromised patient who suffered from fever identified as vegetation on 2D echocardiography. He was successfully treated with a combination of surgical repair and liposomal Amphotericin B + voriconazole. *Magnusiomyces capitatus* are often isolated from the environment and can be a constituent of the microflora of the skin and therefore the mucosa of the respiratory and digestive tracts.<sup>5</sup> It is an opportunistic mycotic pathogen and can cause an infection, especially in neutropenic haemato-oncology patients.<sup>6,7</sup> To our knowledge, this is the first case of *M. capitatus* endocarditis in South India.

The clinical presentation is analogous to the other fungi being persistence of fever despite antibacterial treatment. The yeast causes fungemia, but deep organs can be involved as well -the lungs, kidneys, liver, spleen, brain and endocardium,<sup>6</sup> as in our case.

Treatment should be started as soon as possible. Based on in vitro susceptibility and the limited clinical data available, any amphotericin B formulation with or without flucytosine can be recommended.<sup>8,9</sup> However In vitro studies with flucytosine, fluconazole, and itraconazole showed poor

susceptibilities.<sup>10</sup> Similarly, voriconazole can be used as well, alone or in combination.<sup>11</sup> *M. capitatus* is considered intrinsically resistant to echinocandins.<sup>12</sup> The newest triazole- isavuconazole demonstrated a superb in vitro activity against *M. capitatus*.<sup>13</sup> In our case, voriconazole is used as isavuconazole could be reserved for rescue therapy in the event that voriconazole did not improve clinical status.

The removal of central venous catheter also seems to be an important aspect of treatment, as removal was shown as a prognostic indicator for success in one study.<sup>7</sup> Other adjuvant therapies to improve the phagocytic activity such as colony-stimulating factors, granulocyte transfusions and interferon- $\gamma$  have been combined with antifungal drugs with some success.

In patients with profound neutropenia, mortality is greater than 90% and survival has largely coincided with the recovery of the neutrophil count.<sup>5</sup>

So prompt initiation of appropriate antifungal therapy, while avoiding echinocandin usage, is crucial to improve therapeutic outcome of patients with fungemia caused by arthroconidial yeast-like fungi.<sup>4</sup>

### 4. Conclusion

Emergence of *M. capitatus* infection in South India should alert clinicians and infectious disease specialists. All fungi recovered from immunocompromised patients should be identified and reported, to determine their clinical and epidemiological significance.

### 5. Highlights

*M. capitatus* is rare fungal infection seen mostly in immunocompromised and is considered intrinsically resistant to echinocandins. Hence identification and appropriate choice of antifungals is required for recovery from fungemia.

### 6. Source of Funding

None.

### 7. Conflict of Interest

The authors declare no conflict of interest.

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