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Mycological profile of keratitis from tertiary care center in the state of Chattisgarh, India

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Objective: To assess the burden of fungal etiology of clinically suspected mycotic keratitis amongst the patient presented to the Ophthalmology department in a tertiary care hospital in Chhattisgarh.

Methods: This is a laboratory-based retrospective study of the corneal scrapings received for mycological processing between January 2020-December 2021. Demographic data were collected from patients and from their medical records. Corneal scrapings were aseptically collected from the margins of the ulcer using a sterile Kimura blade in the Ophthalmology department and the samples were processed by following the standard microbiology protocol. A wet mount examination with 10% KOH was done. Samples were also smeared onto a sterile slide for Gram stain. Samples were inoculated in a C-shaped manner on media on blood agar, chocolate agar, and Sabouraud's dextrose agar supplemented with chloramphenicol. Media were incubated in a 25°C aerobic incubator and observed for growth daily for a week and thereafter on alternate days. Blood agar was incubated at 37°C. Fungi were identified by the conventional method by Lactophenol cotton blue microscopy (LPCB) and slide culture. Antifungal susceptibility testing for Voriconazole with E-test was performed for *Aspergillus* and *Fusarium* species.

Results: A total of 37 patients with suspected mycotic keratitis were included in the duration of the study period. The demographic details hinted more predisposition of keratitis in females than in males; with a mean age of 49 ± 2 years and a range from 21 to 80 years. The predominant predisposing factor was trauma with organic matter in agricultural background. Amongst the total 37.8% (14/37) were positive for both KOH and culture, while 5.4% (2/37) were KOH negative but culture positive. There were 5 isolates that could hint toward low sample load or certain technical logistic issues could not be culture. Amongst culture-positive isolates, *Fusarium* species (37.5%) was the most common isolate showing predominance of *Fusarium oxysporum*, followed by *Acremonium* species and *Aspergillus* species 19%, with rare isolation of *Colletotrichum dematium* and *Scedosporium* species.

Conclusion: Culture remained the gold standard for the detection of fungal agents which will help to know the epidemiology of the local areas and guide the clinicians to prevent and treat the affected patients effectively. The tropical environment and agricultural occupation in Chhattisgarh present variability in the etiology of mycotic keratitis. With the predominance of *Fusarium* species, unusual fungal isolates of *C. dematium* and *Scedosporium* species from corneal ulcers were observed. Early detection is essential to initiate appropriate antifungal therapy and to minimize preventable ocular complications like blindness.

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Traumatic implantation keratitis with Schizophyllum commune in Central India

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Objectives: Documentation and dissemination of findings of difficult-to-treat fungal isolate in cases of Keratitis.
Methods: Both the cases received in 2019 and 2021 were followed and consent from the patient was obtained for documentation.

Case 1: A 30-year-old farmer from Raisen, Madhya Pradesh was admitted to AIIMS, Bhopal on December 16, 2019. He presented with eye ache, watering of eyes, and diminution of vision for 15 days. On day0 (D0) December 2, 2019 trauma to the eye by husk, diminution of vision and other symptoms and consulted nearby hospital, and started medication on D06. With symptoms worsening on D14 he was admitted to AIIMS Bhopal. Same day corneal scraping on KOH mount showed branched septate hyaline hyphae. Culture showed on D20 whitish wooly growth with central pale to pinkish growth. On LBCB mount hyaline septate hyphae with no sporulation and clamp connections observed. Based on whitish growth with raised fanning hairy structures and on microscopy some spicules tear drop like structures and resemblance as clamp connections no other sporulation provisional diagnosis of *Schizophyllum* species was given. Patient's condition worsened with no response to azoles and therapeutic keratoplasty was done.

Case 2: A 56-year-old female suffered trauma with a leaf. Around D10 was admitted in ophthalmology department of AIIMS, Bhopal with left corneal ulcer and hypopyon. Corneal scraping was sent but no fungal elements were seen. After 15 days white fluffy growth was observed on SDA with chloramphenicol. On LPCB mount it showed no sporulation and parallel hyphae with clamp connections were observed. Therapeutic keratoplasty was done. Graft failed and condition worsened. No response to intracameral voriconazole. Patient lost vision in both eyes. Case was identified as fungal keratitis with suspected *Basidiomycetes Schizophyllum* species.

Both the isolates were confirmed from PGIMER Reference Center at Chandigarh.
Result: In both cases surgical intervention was essential but therapeutic keratoplasty failed.
Conclusion: Recently surge in cases with *Schizophyllum* commune is observed with difficult management, Failure of therapeutic keratoplasty and infection of graft is a challenge.

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Fungemia in neonatal ICU of a pediatric hospital in NE India

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Objectives: To determine the prevalence of fungemia in a neonatal intensive care unit (NICU) during a period of 4 years and 4 months (January 2018 to April 2022) and to identify the causative fungal pathogens and analyze the associated risk factors.

Methods: A retrospective study was conducted by collecting records of neonatal fungemia occurring in 17 bedded NICU of Mother's Care Children Hospital and Research Centre, Imphal. Cases were identified by searching of computerized microbiology blood culture database. Blood cultures were carried out using automated BacT/ALERT (Biomérieux). Whenever flagged positive, immediate gram staining and subculture were carried in Blood agar, SDA, and MacConkey agar. The isolates were identified by their morphology, germ tube test, and biochemical test in VITEK-2 (Biomérieux) system. Antifungal susceptibility testing too was carried out in VITEK-2.

Results: A total of 2621 blood samples in pediatric blood culture bottles were received from NICU during this period of 4 years and 4 months. 21 samples showed growth of yeast cells. The isolates include *Candida parapsilosis* (10), *C. albicans* (7), *Wickerhamomyces anomalus* (3), and *C. krusei* (1). Low birth weight, premature rupture of membrane, antibiotic therapy, and prolonged hospital stay were main risk factors. Majority of the neonates recovered with antifungal treatment.

Conclusion: *Candida parapsilosis* was isolated with highest frequency. Fungemia is more common in low birth weight babies.

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Metastatic mold infections after COVID-19: the mold time -bomb

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Objective: COVID-19-positive patients are at risk of invasive mold infection. The portal of entry is presumably the lungs, but infection may disseminate to involve other organs as described in this case series.

Patients and Methods: Patients who presented with de novo mold infection (6 proven and 1 probable) involving kidney, spine, eye, knee joint, subcutaneous tissue within 10-180 days of COVID-19 infection were included in this series (Table 1).

Conclusion: These cases suggest that metastatic infection by molds involving various organs could result from a presumed primary source in the lungs. However, the precise connection between pulmonary and metastatic infection is difficult to establish.

COVID-19 patients should be carefully followed for such metastatic mold infections which need proper diagnosis and management.

Table 1.

	Primary	Interval b/w covid and mold infection	Embolic & additional involvement	Biomarker	Smear	Histopathology	Culture	Sequencing	Treatment & Outcome
1	Lung	25 days	Endophthalmitis without orbital involvement	BOG +ve GM +ve	Aspergillus & Mucorales in sinus	Aspergillus in eye, Aspergillus & Mucorales in sinus	-ve	ND	Enucleation of eye PCZ Good, still on treatment with PCZ
2	?	75 days	IE, large vegetation on aortic valve Brain abscess	BOG +ve GM +ve CSF GM +ve	ND	ND	Blood culture -ve	ND	Surgery refused VCZ + (Anidulafungin for 2 w) Survived at 6 m on treatment
3	?	45 days	Optic nerve & ? Medial rectus without orbital involvement	GM +ve CSF GM +ve	Aspergillus	Aspergillus	-ve	Negative	Debridement VCZ levels very low Changed to PCZ Cured
4	? Lung	180 days	Renal with discharge of fungal balls in urine	ND	Aspergillus	Aspergillus	Aspergillus flavus	ND	(Micafungin 14 days) + VCZ + SFC No recurrence for 15 months
5	?	60 days	Kidney parenchyma Material obstructing the renal pelvis	GM -ve	Urine Aspergillus	Material removed at Nephrostomy Aspergillus (Fig 1)	A. flavus	Not done	Nephrostomy VCZ Micafungin SFC Cured
6	?	30 days	Disks & vertebral osteomyelitis (Fig 2)	GM -ve	-ve	Inflammation	-ve	A. striatus	Debridement with fixation VCZ Good, still on treatment
7	Lung	12 days	Subcutaneous abscesses Septic arthritis knee	-ve	-ve	Inflammation	-ve	Sakseneatraspigoira	Debridement of subcutaneous lesions & joint PCZ Good still on treatment

IE: Infective endocarditis, GM: galactomannan, BOG: beta-D-glucan, VCZ: Voriconazole, PCZ: Posaconazole, SFC: S-Fluconazole, ND: Not done