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Fungal brain abscess in the era of COVID-19: an experience from a tertiary care Neurosciences Institute in South India
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Poster presentation 2, September 22, 2022, 12:30 PM - 1:30 PM

Introduction: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is ruling the world for more than 2 years since 2020. In 2021, the second wave of COVID-19 arrived at the ‘delta variant’ except across India, causing significant morbidity and mortality. In addition, the epidemic of COVID-19-associated macromycoses affected the Indian subcontinent specifically, with a whopping 41,512 cases and 3514 deaths attributed to this dreadful disease.

Methods: The single-center retrospective cross-sectional study was aimed to determine the impact of COVID-19 on fungal brain abscesses at a non-COVID tertiary care Neurosciences Institute in South India. The study included all cases diagnosed with fungal brain abscesses microbiologically (microscopy and/or fungal cultures), supported by radiological findings or by histopathological examination. Cases of brain abscess which were negative for fungal elements by microscopy, culture, and imaging were excluded from the study. Fungal culture was done on routine mycological media as per standard protocols. Fungal identification was done by microscopic morphology, MALDI-TOF MS, and ITS sequencing.

Results: A total of 404 cases of brain abscesses were recorded between January 2020 and April 2022. Out of these, 26 (6.4%) were cases of fungal brain abscesses. In 2020, these turned out of 153 (32%) cases had a fungal etiology, while it was 10.4% (220/2111) in 2021 and 0.34% (62/1802) till April 2022. Overall, a male predominance was observed (2856, 77% were males). The cases had an even distribution from 6 to 62 years, with no predilection in any particular age group. The most common underlying comorbidity was type 2 diabetes mellitus (3126, 50%).

Conclusion: A significant increase in the incidence of fungal brain abscess has been observed in the COVID-19 era, particularly with each new wave of infection. Clinical features along with imaging and mycological findings are crucial in making an early diagnosis and deciding antifungal therapy. Accurate identification to the species level is necessary to guide optimal antifungal therapy as several species exhibit emerging resistance to antifungal drugs.

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Diagnostic dilemmas in Pneumocystis pneumonia in case of long COVID-19
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Background: To diagnose Pneumocystis pneumonia in an underlying COVID-19 infection is difficult because of the clinical and radiological indistinguishabilities of the presentation.

Case Presentation: We report the case of a 67-year-old male background of type 2 diabetes mellitus (DM) and hypertension (HTN), who presented to the emergency department for severe dyspnea for 6 days. He is treated with corticosteroids and other supportive therapy. Initially, the patient responded with that treatment but suddenly his hypoxia is increasing and getting uncontrolled. All possible causes of deterioration hypoxia were evaluated and came negative. Later stage, BAL was done and immunoassay test for PCT came positive. Sputum, bronchoalveolar started and gradually hypoxia improved and euthanasia was carried out.

Conclusion: Pneumocystis and COVID-19 co-infection would need serious consideration, particularly for patients with long-term COVID-19, even if patients do not have conventional risk factors for Pneumocystis pneumonia.

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COVID-associated invasive pulmonary aspergillosis (CAPA)— a case report
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COVID-associated invasive pulmonary aspergillosis is a severe fungal infection with a high mortality rate. The incidence of CAPA is on the rise possibly due to the prescription of corticosteroids and ticlopidine two repurposed drugs used for treating SARS-CoV-2. Diagnosis is challenging due to the non-specific nature of symptoms. Voriconazole is the mainstay of therapy. We present a case of a 42-year-old male presenting with left hydro pneumothorax post recovery from COVID infection, and later succumbed to this complication. Patients developing pulmonary aspergillosis after short-term intense therapy is uncommon. The possibility of aspergillosis in immunocompromised patients should be considered in those on systemic steroids and demonstrating pulmonary function.

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Dematiaceous fungi as a rare cause of fungal sinistus in a tertiary care center
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Objectives: To discuss the occurrence and diagnosis of dematiaceous fungi as a causative organism of fungal sinistus in patients at a tertiary care center in North India. Since there is limited data on its prevalence, this study was aimed to know the non-Angerpealeus causes of fungal sinistus focusing on the dematiaceous fungi.

Methods: A total of 451 nasal biopsies samples, from the department of pulmonary medicine ward and ICU were received over a period of 5 years, from January 2019 to December 2021. The samples were subjected to conventional mycological diagnostic techniques including direct epifluorescence and light microscopy, culture on solid media and visual identification of growth in cultures using lactophenol cotton blue mount.

Results: Out of 451 samples, no fungi were isolated from 299 samples (66.29%), Aspergillus spp from 63 samples (13.96%), dematiaceous fungi from 15 samples (3.33%), and other fungi from 79 samples (17.5%). Among the dematiaceous fungi isolated, 7 isolates were identified as Alternaria spp. (70%) and 1 isolates were identified as Cetraria sp (30%) and described.

Conclusion: Most reported cases of allergy and invasive sinistus were attributed to Aspergillus spp. However, in the current study, dematiaceous ‘black’ fungi like Alternaria and Cetraria, were also identified as causes of fungal sinistus in both immunocompromised and immunocompetent individuals, showing an increasing orthogonic spectrum. Hence a high index of clinical suspicion and appropriate laboratory diagnosis assures in initiating appropriate treatment such as surgical debridement, reducing immunosuppression, and antifungal treatment with newer azoles.

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Molecular epidemiology of clinical filamentous fungi in Qatar beyond Aspergillus and Fusarium
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Objectives: Due to an increasing number of patients at risk, (i.e., with a highly compromised immune system and/or receiving aggressive chemotherapy treatment), invasive fungal infections (IFI) are increasingly being reported. They are associated with significantly high mortality rates. Aspergillus spp., particularly A. fumigatus, is the major cause of mold-related IFI around the world followed by Aspergillus spp., however, other molds are emerging as human pathogens. The aim of this study was to explore the epidemiology and prevalence of the non-Aspergillus and non-Fusarium molds in human clinical samples over 11 years period in Qatar based tertiary hospital using molecular techniques.

Methods: A total of 91 clinical specimens positive for molds belonging to 90 patients were recorded in about 11 years (September 2011 to November 2022). The isolates were identified based on morphological characteristics and by sequencing the internal transcribed spacer 1 (ITS) gene. To confirm the identification, a phylogenetic tree based on ITS sequences was constructed.

Results: Most patients were males (72%), 6% were immunocompromised, 12% had IBD, and 7% died within 30 days of diagnosis. The fungal isolates were recovered from a variety of clinical samples, including blood, sputum, abscess, skin, wounds, respiratory samples, body fluids, eye, ear, tissue, abscess, and blood specimens. Dematiaceous fungi were most commonly the most isolated (5390, 36%), followed by dematiaceous (2390, 27%), Mucorales (1609, 18%), and other hyaline molds (1579, 19%; Fig. 1). Alternaria was the most isolated genus (2290, 24%) and Mucorales were the major cause of IFI (551, 45.5%). (Table 1). Superficial mycoses were caused by dermatophytes (64%) and non-dematiaceous (34%). Furthermore, rare fungi that are not commonly known to cause human diseases were recovered such as Rhizoctonia spp., Trichosporon spp., and Subbambula amarae, Dreschlera pirensis, and Quadramyces cyanococcus.

Conclusion: The current study highlights the epidemiology and spectrum of mold genera, other than Aspergillus and Fusarium, recovered from human clinical samples in Qatar, which can aid in surveillance of uncommon and emerging mycoses other than aspergillosis and fusariosis.