 skin, further highlighting the importance of considering the corneal reference when evaluating the function of second microbial strains.

5.1d Challenges in diagnosing and management of invasive fungal infections during the pandemic

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5.1f Infections in Asia, bringing it out of the dark, September 22, 2021, 11:00 AM - 12:30 PM

Invasive fungal diseases are increasing in Asian countries. Recent advances in medical care such as solid organ and stem cell transplants, chemotherapy for cancer treatment, and cancer immunotherapy, resulted in the increased prevalence of invasive mycoses. Invasive aspergillosis, mucormycosis, and endemic mycoses are among the most common blood infections in Asia. Non-clinical and non-rapid risk factors of invasive fungal diseases have been increasingly recognized in Asia. In contrast to the classical neutrophilic patients, most of the patients with invasive mycoses who had non-clinical risk factors are mostly non-neutropenic and may present with an atypical clinical manifestation. These non-rapid risk factors include biological agents or work-related agents. As the data for cancer treatment and fungal treatment based on nonspecific pathogenic search systems such as throat swab or corneal disease 2019 (COVID-19) pneumonia. Recently, COVID-19-associated aspergillosis (CAPA) and COVID-19-associated mucormycosis (CAM) have been described. These particular fungal infections had high mortality. Treatment of CAPA and CAM is a critical factor to COVID-19 patients’ mortality. However, the interaction between transplants and drugs used for the treatment of COVID-19 must be taken into consideration.

5.1d Cryptococcus qPCR assay: the future for routine mycology labs and clinical trials dealing with cryptococcosis

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5.1f Infections in Asia, bringing it out of the dark, September 22, 2021, 11:00 AM - 12:30 PM

Background: Routine laboratory testing for cryptococcal meningitis currently consists of Cryptococcus antigens (Ag) testing in blood and cerebrospinal fluid (CSF), CSF India ink and CSF fungal culture. Quantitative cryptococcal culture (QC) is laborious, time-consuming and not feasible in most settings.

Objectives: We evaluated quantitative (qPCR) and reverse transcriptase PCR (RT-qPCR) assays to quantify Cryptococcus load in CSF, plasma, and blood. We also investigated the dynamics of fungal DNA and RNA detection during antifungal treatment.

Methods: We developed a qPCR assay that can differentiate serotypes A, D, and B/C of Cryptococcus neoformans and C. gattii based on the amplification of a unique nuclear locus serotype specific primer (QPCR) and a multiplex 28S RNA gene and evaluated the assays on 205 patient samples from the AMFET-con trial in Benin and Malawi (2018-2021). CSF, plasma, and whole blood samples were stored at −80°C, and were used at 0 (baseline), day 7 and 14 for CSF and at day 1, 3, 5, and 7 for plasma and whole-blood post antifungal treatment initiation. A Roche LightCycler 480 and GeneAmp were used for data analyses.

Results: A total of 205/209 (98%) of Benin patients (85 from Benin, 124 from Malawi), were used. For QPCR, QPCR was used in CSF, 138 (67%) were serotype A, 28 (14%) were serotype B/C, and 18 (8%) were a mixed infection of serotypes A and B/C. PCR was not amplified in 16 (7.7%) samples. There was no difference in fungal loads of D, D7, and D14 between serotypes A and B/C with the QPCR assay, and QQC showed a good correlation with QPCR quantification with QPCR (slope = 0.979, R2 = 0.73) and with 28S RNA qPCR (slope = 0.771, R2 = 0.777) assays. The fungal load at D0 was significantly higher in patients who died at week 2 (n = 22) and at week 10 (n = 13) compared with patients who lived to week 10. There was no post-week 10 load increase to initial treatment in both treatment regimens (P < 0.05). Detection of Cryptococcus DNA (28S RNA qPCR) in plasma or whole blood within the first 24 hours of treatment was significantly associated with D1 mortality and at week 10 or mortality and alive at week 10 (P < 0.01). QQC assay showed a good correlation with detection of fungal DNA was due to viable fungal cells as the quantification of QQC in whole brain tissues was significantly higher (X2 > 5) than that of DNA.

Conclusion: Quantification of C. neoformans and C. gattii load in CSF and plasma at D0 is useful in identifying patients at risk of death and may be a promising tool for monitoring treatment response in the future.

5.1d Epidemiology of mycotic keratitis in developing countries

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5.1.f Mycotic keratitis, September 21, 2021, 11:00 AM - 12:10 PM

Mycotic keratitis (corneal infection due to a fungal etiology) is a well-recognized ophthalmological emergency warranting rapid initiation of specific antifungal therapy. However, the magnitude of the problem of mycotic keratitis in the community, especially in the Indian subcontinent and the developing world, is, however, apparent. A national annual incidence estimate of 1051, 748 cases (23,000,000 population) globally has recently been reported, with the highest rates being in Asia (33,500,000 people, an absolute number of 535,899) and Africa (13,500,000 people, 79,219), if all culture-negative cases are assumed to be fungal, especially where the incidence of mycotic keratitis is known to be high, then the annual incidence would be about 1480 946 cases. A fungal etiology has been found to account for a very high proportion (45%) of microbial keratitis cases and are still on the rise in the world. Consequently, mycotic keratitis may be closer to meeting the criteria of being an emerging microbial threat and may bring some evidence of an increasing trend in the proportion of all microbial keratitis cases being diagnosed as mycotic keratitis. Even from a single geographical location, cases of mycotic keratitis may be higher than the yearly average or certain times of the year, such as the change in the harvest season of the coconut and other cabbages. A dermatophyte infection may note that in 8%-11% of patients with mycotic keratitis, the affected eye needs to be removed, representing an irreversible annual average of 84 145 203 cases. It is recognized that many people suffering from mycotic keratitis in rural distant communities may not even reach or be capable of medical care, and while the actual number of cases extended by dermatophyte infections, mycotic keratitis, may not be too low to result in its ultimate disease rate, and reduced quality of life due to permanent disability (corneal scarring) in the Indian subcontinent and developing countries requires further study.