Incidence of mixed fungal infections in post-COVID-19 outcome of Macrolides

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1 Update on Macrolones, September 21, 2022, 3:00 PM – 4:10 PM

Introduction: Post-COVID-19 chronic orofacial macrolides has emerged as an important life-threatening complication adding to mortality. Fungal infections are a major health challenge, especially in the immunocompromised. Macrolides are a second-line treatment for the management of these cases could be the coexistence of use of medicines in the management of cardiovascular disease. 2019 (COVID-19) patients and extensive dypoglycemia immune response due to severe acute respiratory infection (SARS-CoV-2) infection. A prompt diagnosis is vital for the effective management of invasive chronic fungal infections due to their propensity for angiogenesis and destructors spread with brain involvement.

Materials and Methods: A total of 110 surgical pathology specimens received with a clinical suspicion of invasive fungal infection were assessed for the presence of macrolides. The pathologists to this department, the administration of histopathology. The cases were reserved for the presence of Aspergillus fungi by senior pathologists and microbiologists- sponsored kit and using synovial fluid samples, fungal blood cultures were noted and correlated with the fungal BORH and culture. The tissue reaction pattern, presence of candidiasis, and morphology of the fungal hyphae were also noted in each case showing Aspergillus fungi.

Results: A total of 8 out of 15 cases (53%) showed the presence of Aspergillus fungi. The histopathological diagnosis given in these 8 cases was-Aspergillus (1), combined Aspergillus and Mucormycosis (2). Two types of fungal hyphae were noted in all seven cases of combined infection. Gram-negative tissue reaction was noted in two out of seven cases of combined infection. Calcium oxalate crystals were noted in the single case of Aspergillus and was absent in all cases of mixed infection.

Conclusion: To conclude, Aspergillus fungi are found in a small but significant number of cases of post-COVID-19 Rhino-Oral inflammatory mixed infections so while reporting the surgical specimen with clinical suspicion of post-COVID-19 macrolides we should be aware of the possibility of mixed fungal infections and look for Aspergillus fungi as a rare but important differential. Macrolides can trigger fungal infections. Preventive measures are needed to prevent the true incidence of mixed fungal infections for which immunodysfunction and polypharmacy are needed.

2.2a African histoplasmosis

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2.2b Histoplasmosis and talasromycosis, September 21, 2022, 12:00 PM – 4:10 PM

African histoplasmosis caused by Histoplasma capsulatum var. duboisii in Africa with few cases reported from outside this region. It is antimycotic treatment but can be recognized far beyond the traditional endemic areas. Talasromycosis is thought to be exclusively associated with African histoplasmosis. However, an increasing number of T. marneffei infections have been reported in non-African infected patients. The incidence of talasromycosis in Africa is 10-15%. The clinical presentation of the disease is similar in patients with invasive and non-invasive disease, with symptoms and signs of fever, weight loss, and anemia. Risk factors include malnutrition, HIV infection, and malignancy.

Histoplasma capsulatum var. duboisii is found in Africa and South America. H. duboisii has been identified as the causative agent of histoplasmosis in Africa. The disease is more common in rural areas, particularly in the dry season, and in those who live in close contact with African wildlife.

Histoplasma capsulatum var. duboisii is a dimorphic fungus that can exist in two forms: a yeast form and a hyphal form. The yeast form is typically found in the lungs and other tissues, while the hyphal form is found in the blood and bone marrow. The disease is usually acquired through inhalation of the fungal spores. The incubation period is variable but can range from a few days to several weeks. The disease can be severe in immunocompromised patients, including those with HIV or malignancies.

Histoplasma capsulatum var. duboisii is a common cause of pulmonary histoplasmosis, particularly in the setting of HIV infection. The disease can also involve other organs, such as the liver, spleen, and meninges. The diagnosis is typically made through the identification of characteristic fungal structures in tissue biopsy specimens or through serological testing for antibodies to Histoplasma capsulatum var. duboisii.

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Methods: The Au-Fe co-culture was prepared on an 8-chamber Lab-Tek II slide as described previously. Anti-β1G and anti-CD34 antibodies were obtained from the American Type Culture Collection (ATCC) and used in the 3D structure of GaM and GM in the ECM of the bioreactor. The polysaccharides were analyzed by fluorescence confocal microscopy at 24 h.

Results and Conclusion: GM was found, as expected, in the hypof Al cell wall but was very little the EGM. GaM was also found in the cell wall but mainly formed a heavily fibrous network between the hepatocytes, showing the importance of this polysaccharide cell wall interaction and the stimulation of AL of GM. GaM could be the surface receptor for Fe, which would promote strong adhesion between Fe and M in the bioreactor.

Sources: 1. Mollined R et al. Front Microbiol. 2018; 2. Basanas A et al. Microb Sci. 2015; 3. Fournier T et al. J Exp. 2021; 4. Brind B et al. Mycologia 2014.

S2.4e Pythiosis: An emerging disease in Hong Kong

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S2.4 Veterinary mycology research, September 21, 2021, 1:00 PM - 4:00 PM

Overseas is an emerging disease of humans and animals caused by opportunistic in the Samarium-Allobasid-Rhodotorula super group, mainly Pythium maritimum and occasionally Lagardea gigantea or Endoaspephiaceae species. In surface fresh- water, oospora produce mono-thallic infoldable asexual sporonts with marked chromophobic attraction to epithelial surfaces of wounds. Infection is the result of exulence and invasion of damaged skin or gastrointestinal mucosa.

Of 4200 cases of pythiosis reported globally between 1990 and 2021 only ~20% involved humans while ~90% involved animals, mainly in freshwater systems. Human cases were scarce in India and Thailand, whereas most animal infections were reported in the United States and Brazil. Pythiosis has been reported in mainland China, but the burden of the disease is low and comprises <1% of overall cases in humans.

Neither pythiosis nor lagardea has previously reported in humans or animals in Hong Kong. From January 2018 to January 2021, the Veterinary Diagnostic Laboratory of City University of Hong Kong diagnosed 10 cases of oospora (1 cat, 5 fish, 2 bird, 1 invertebrate, 1 turtle) and 1 case of Pythium maritimum in a fish, both in freshwater fish. The first case was a freshwater fish with a mucosal cyanosis, characterized by a tiny ulcer on the inner surface of the mucosa.

We, herein, describe the first case of human infection with Pythiosis as a case report.

A 62-year-old man presented with a 6-month history of a firm, painless, subcutaneous nodule on his right forearm. The lesion was located on the thenar eminence of his right hand, and was asymptomatic. The lesion was excised, and histopathological examination revealed a pythiosis-like lesion. The patient was treated with antifungal therapy and had an uneventful recovery.

This case highlights the importance of considering pythiosis as a differential diagnosis for subcutaneous nodules, particularly in areas with a high prevalence of the disease. Further investigations are needed to confirm the diagnosis and to understand the potential risk factors for human infection.

S2.5c Exophiala spp.

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S2.5 R years, January 21, 2022, 10:00 AM - 11:00 AM

The black yeast Exophiala dematitidis is an opportunistic pathogen, causing phaeohyphomycosis in immunocompromised patients, chromoblastomycosis, and fungal infections of the cutaneous disease in other hosts. Based on the abovementioned findings, it is clear that we need a better understanding of this disease, its pathogenesis, and how it affects patients.

S2.5e Exploring multidrug resistance, fitness compensation, and cellular sensitivity in Candida auris: Fight with fire?

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S2.5 R years, January 21, 2022, 10:00 AM - 11:00 AM

Candida auris (C. auris) is a recently emerged fungal pathogen of growing concern due to its ability to acquire extrinsic multidrug resistance (MDR) to all four antifungal drug classes. The uncontrolled spread of MDR in C. auris, suggests the emergence of novel resistance mechanisms, and potential fitness compensation. Due to its sighted first fangs to be officially classified as an urgent antimicrobial resistance threat by the CDC (US), it shows in the resistance landscape and evolutionary dynamics of C. auris. More specifically, in the setting of high-throughput in vitro experimental evolution with various antifungal drugs, we have obtained a library of resistant strains from four different clades. Through both genome and targeted sequencing, we have discovered novel mutations, especially those linked to the development of resistance fitness compensation. For the validation of these, we have achieved a reciprocal CRISPRCas9 tool for C. auris based on the C. albicans HIS3-FLP system.

The results from this study will help in the development of a clinical computer program for monitoring the disease burden and its socioeconomic impacts on patients, families, communities, and the health system in the endemic region, the Mycology Research Center, University of KwaZulu, South Africa.

Objective: The objective of this study was to determine whether the presence of antifungal resistance in C. auris is associated with fitness compensation.

Materials and Methods: We obtained isolates of C. auris from clinical and environmental sources. The isolates were subjected to high-throughput genome sequencing to identify mutations associated with fitness compensation.

Conclusion: The presence of antifungal resistance in C. auris is associated with fitness compensation, suggesting that these isolates have adapted to their environment and may have a competitive advantage over sensitive strains. Further research is needed to understand the mechanisms underlying these adaptations and their implications for public health.