S70.4a New mechanism and detection methods for azole-resistant Aspergillus fumigatus
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S70.4 Emerging antifungal resistant fungi, September 24, 2022, 10:30 AM - 12:00 PM

The most studied azole-resistant mechanisms of Aspergillus fumigatus is discorrelation of the drug for CYP191A1, the target enzyme in azole chemotherapy. Typical resistance caused by the designated azole acid substitution of CYP191A1 has a specific pattern depending on the substrate bin. While uncorroborated co-azole mechanisms responsible for different antifungal susceptibility patterns, we are developing novel methods for prompt diagnosis and effective drug treatment. In our previous study, we reported results that mutation of lnGol, which adds H61M-CyC residue, the rate-limiting enzyme in ergosterol biosynthesis, will be the mechanism conferring azole-drug resistance (SID 2018). On the other hand, different azole susceptibility patterns have been reported even among the strains possessing the same mutation in CYP191A1. This way, the overall picture of molecular mechanisms inducing azole resistance remain unclear.

We have already reported single and rapid detection methods for a fungus possessing CYP191A1 mutation using an enzyme-linked assay (EP, 2022). Furthermore, using MALDI-TOF-MS, we are developing a discriminating model to detect azole-resistant A. fumigatus.

S70.4b Pathophysiology, diagnosis, and management of chronic pulmonary Aspergillosis
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S70.4 Emerging antifungal resistant fungi, September 24, 2022, 10:30 AM - 12:00 PM

Chronic pulmonary aspergillosis (CPA) is a complex disease that is difficult to diagnose and resistant to treatment. Many cases are missed and have unfavorable outcomes in clinical settings. Although CPA has been classified into several types based on pathological findings, it is not always possible to make a pathological diagnosis in all cases, so a clinical diagnosis is often required in addition, making CPA a challenging disease to treat. Infections caused by infections can also become organ-specific, making treatment further more difficult. The diagnosis of CPA requires clinical symptoms and findings, radiological, serological, and pathological tests. However, CPA is considered as a manifestation of several diseases, and the mainstay of treatment is organ-specific therapy with antifungal agents, and identification and therapeutic evidence for sarcoidosis, and pneumonia are limited. The development of novel antifungals with different mechanisms of action from conventional agents is also a challenge. Azole resistance of Aspergillus is closely related to the susceptibility of the strain because of the higher CYP51A expression in the strain. CPA patients with S. aureus or other M. isolates have been reported in CPA patients treated with long-term azole therapy, mutations in the CPA and others have been identified. A comprehensive genomic analysis conducted with high-risk MCR clones of S. aureus. This presentation will focus on epidemiology, pathogenesis, diagnosis, and management including drug resistance in CPA patients.

S70.4c Successful treatment of mucormycosis in hematological disorders
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The diagnosis of mucormycosis relies upon the identification of organisms in tissue by histological and culture confirmation. However, culture often yields no growth, and histopathological identification of an organism with a structure typical of Mucormycete may provide the only evidence of infection. PCR-based technology may contribute to the early diagnosis of mucormycosis. We developed a new antigen test. We performed for routine or histological samples obtained from Rhizopus oryzae, Rhizopus(arrangatus-specific, 25 kDa) was detected at significantly higher concentrations in serum and in lung homogenates of the R. arrangatus-infected mice as compared to that of the unstressed mice. We also evaluated the pharmacokinetic and pharmacodynamic properties of a four-stage antifungal therapy with clotrimazole and posaconazole.

In Japan, the antifungal strain was isolated from a patient who had undergone a hematopoietic stem cell transplantation. The patient was treated with R. arrangatus-infected mice and the strain was isolated from the lung homogenates of the R. arrangatus-infected mice as compared to that of the unstressed mice. We also evaluated the pharmacokinetic and pharmacodynamic properties of a four-stage antifungal therapy with clotrimazole and posaconazole. The patient was treated with a combination of adefovir and posaconazole for 4 weeks. The patient was treated with a combination of adefovir and posaconazole for 4 weeks.

S70.4d A unique clinical appearance of Candida auris infection in Japan
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S70.4 Emerging antifungal resistant fungi, September 24, 2022, 10:30 AM - 12:00 PM

It has only been 15 years since Candida auris was reported isolated from the ear canal of a 70-year-old Japanese woman in Tokyo, and no record of an isolate corresponding to this species has been found prior to 1999. It is a high public health priority concern in several regions of the world. This is because the fungus is multidrug-resistant and can acquire resistance to all three major types of current antifungal drugs available, echinocandins, and amphotericin B. Furthermore, in recent years, an increased incidence of this fungus has been reported in clinical specimens. Whole-genome analyses suggest that all Japanese isolates belong to Candida auris infection in Japan, the first country where C. auris infection originated, together with its unique clinical features and molecular epidemiological analysis.

In this presentation, we will present the current status of C. auris infection in Japan, particularly the unique clinical features and molecular epidemiological analysis.

S70.5a Fungal respiratory infections in cystic fibrosis patients in the Middle East
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S70.5 Emerging antifungal resistant fungi, September 24, 2022, 10:30 AM - 12:00 PM

Cystic Fibrosis (CF) is among the most common genetic disorders, which involve multiple organs including the respiratory tract, may be caused by an abnormality of the Mucus CFTR protein. The disease is caused by the substitution of a single nucleotide in the CFTR gene, resulting in loss of function of the gene product. Antifungal colonization of CFTR can be an important factor in the development of CFTR. According to the expert’s idea, CF may be more common in Iran than expected before.

Clinical colonization of the airways of CF patients and infections due to a wide variety of opportunistic fungal pathogens including Aspergillus fumigatus, Candida, and others, are of great importance in the different clinical subtypes of patients. Antifungal colonization and infection may be severe and immediate diagnosis and proper treatment.

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S70.5b Disseminated pulmonary infection due to Mortierella alpina in a 6-year-old patient with X-linked CGD receiving MUD-HSCT
Jung Ho Yoon, Kyung J. Kim, Chung, Mark Park, Amin Seyed Mozaffari
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S70.5 Emerging antifungal resistant fungi, September 24, 2022, 10:30 AM - 12:00 PM

Objectives: Invasive fungal infections oppose one of the major limiting factors for the successful outcome of patients receiving bone marrow transplantation (BMT) who are at high risk for infection due to the immunosuppressive effects of BMT and subsequent fungal colonization/infections. Antifungal medications may allow for risk modification before or at the time of HCT. Hence, we report a case of disseminated pulmonary infection due to a basement membrane-sole epithelium, Mortierella alpina in an X-linked chronic granulomatous disease (X-LKCGD) patient who was successfully treated with a combination of carbamazepine and pan-antimycotic therapy.

Methods: A 6-year-old male with X-linked CGD from Sri Lanka was admitted to NIH Clinical Center, Bethesda, USA to receive a matched unrelated donor (MUD) matched mononucleated stem cell transplantation (HSCT). To prevent post-transplant immunosuppressive conditioning, the patient was treated with an immunosuppressive regimen in accordance with the current and Laboratory Standards Institute CLSI M3A5 guidelines.

Results: A rare and potentially lethal disease may not arise within 2 days of Salmiak, Diepseer Brood. Microscopic examination showed the presence of fungal hyphae, consistent with a fungal infection. The patient was treated with a combination of carbamazepine and pan-antimycotic therapy. The patient was treated with a combination of carbamazepine and pan-antimycotic therapy. In addition to carbamazepine and pan-antimycotic therapy, the patient was treated with a combination of carbamazepine and pan-antimycotic therapy.

Conclusions: The treatment was effective and the patient has been discharged from the hospital in a stable condition.