S70.4a New mechanism and detection methods for azole-resistant Aspergillus fumigatus
Aiaka Watanabe, Toppi Arai, Hidetaka Majima
Medical Mycology Research Center, Chiba University, Chiba, Japan

S70.4 Emerging antifungal resistant fungi, September 24, 2022, 10:10 AM - 12:00 PM
The most studied azole-resistant mechanism of Aspergillus fumigatus is discoloration of the drug for CPAF, the target enzyme in the azole metabolism. Typically, in CPAF, mutant causes by the designated azole acid substitution of CPAF has a specific pattern depending on the substrate. While uncovering non-CPA resistance mechanisms responsible for CPAF resistance, we developed for finding novel methods for prompt diagnosis and effective drug treatment. In our previous study, we reported results that mutation of D130, which inhibits HMG-CoA reductase, the rate-limiting enzyme in ergosterol biosynthesis, would be the mechanism conferring azole-drug resistance (SBD 2018). On the other hand, different azole susceptibility patterns have been reported even among the strains possessing the same mutation in CPAF. In this way, the overall picture of molecular mechanisms inducingazole resistance remain unclear.

We have already reported simple and rapid detection methods for A. fumigatus possessing CPAF mutation using an enzyme assay (SBD 2020). Furthermore, using MALDI-TOF-MS, we are developing a discrimination model to detect azole-resistant A. fumigatus.

S70.4b Pathology, diagnosis, and management of chronic pulmonery Aspergillosis
Keishi Ishikawa
Department of Infectious Diseases, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan

S70.4 Emerging antifungal resistant fungi, September 24, 2022, 10:10 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 unfortunate outcomes in clinical settings. Although CPA has long 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 made in addition. Moreover, in the case of underlying disease and complications by infections caused by other pathogens, making a correct diagnosis is difficult. This study was conducted to improve the diagnostic possibilities of CPA, hence improving outcomes.

We have already reported simple and rapid detection methods for A. fumigatus possessing CPAF mutation using an enzyme assay (SBD 2020). Furthermore, using MALDI-TOF-MS, we are developing a discrimination model to detect azole-resistant A. fumigatus.

S70.4c Successful treatment of mucormycosis in hematologic diseases
Hiroshi Ikehara
Infection Control Science, Graduate School of Medicine, Osaka Municipal Metropolitan, Japan

The diagnosis of mucormycosis relies upon the identification of organisms in tissue by histopathology with culture confirmation. However, culture yields often grow, and histopathologic identification of an organism with a structure typical of Mucorales permits the only evidence of infection. PCR-based methods can contribute to the early diagnosis of mucormycosis.

We developed a new antigen test. We searched for novel or non-novel proteins of Rhizopus ribulose (Rhizopus-specific antigen, 25 kDa) that were detected at significantly higher concentrations in serum and in the homogenates of A. fumigatus-infected mice as compared to those of uninfected mice. And we will show the case of hematologic disease with diagnosis using RIA test and successful treatment with Liposomal amphotericin B. Our study indicates that protein RIA may be a promising biomarker of R. oryzae infection.

S70.4d A unique clinical appearance of Candida auris infection in Japan
Takuma Uemasa, Mahaimi Ate, Takayuki Shirahige, Taro Miyazaki4, Yoshitomo Miyazaki5, National Institute of Infectious Diseases, Tokyo, Japan, 1University of Miyazaki, Miyazaki, Japan

S70.4 Emerging antifungal resistant fungi, September 24, 2022, 10:10 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 1996. 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 groups of current antifungal drugs (azoles, echinocandins, and amphotericin B). Outbreaks in healthcare facilities are also a concern. The main reasons for this are as follows: unlike other Candida spp., that primarily inhabit the digestive and respiratory systems, C. auris readily colonizes patient skin and can survive for several weeks on dry, nonliving surfaces, contributing to infections and outbreaks in healthcare facilities.

In Japan, C. auris was first identified in 2009 in a discharge from the ear canal of a patient admitted to a Japanese hospital, and since then, all isolates have come from the ear canal, with only a few reported strains. For reasons unknown, as of 2022, C. auris was not reported as a cause of invasive disease in Japan, and no nosocomial infections have occurred. While several genes suggest that all Japanese isolates belong to CAI-1, infecting drug resistance and clinical characteristics.

In this study, we will present the current status of C. auris infection in Japan, the first country where C. auris infection originated, together with its unique clinical features and molecular epidemiological analysis.

S70.5a Fungal respiratory infections in cystic fibrosis patients in the Middle East
Mohammad Hedayati1, Muna Ghaferi2,3, Mahdi Ashrafi-Khozani4,5, Sabah Asadi Shafi serai6,7, Somayeh Gharanjig1,2,3, Ghazanfari1,2, Ashraf Keshavarzi2,3
1Invasive Fungi Research Center, Communicable Diseases Institute, Mazandaran University of Medical Sciences, Sari, Iran
2Department of Medical Mycology, Mazandaran University of Medical Sciences, Sari, Iran
3Urmia University of Medical Sciences, Urmia, Iran

S70.5 Fungal respiratory infections in cystic fibrosis, September 24, 2022, 10:10 AM - 12:00 PM
Cystic Fibrosis (CF) is among the most common genetic disorders, which involve multiple organs including the respiratory tract. CF is thought to be an inflammatory disease in the Middle East (Iran). However, the prevalence is estimated at 1 in 10,000 - 50,000, while the incidence is estimated at 1 in 2000-5000 live births. Several studies from ME revealed that many children with CF have high levels of pathogen colonization, which is seen in a different CF subtypes and proper diagnostic facilities. According to the expert’s idea, CF may be more common in Iran than expected before.

Chronic colonization of the Airways of CF patients and infections due to a wide variety of opportunistic fungal pathogens including Candida, Aspergillus, and Cryptococcus are common in different CF subtypes. Antifungal treatment for systemic fungal colonizations/mammals may allow for risk modifications before or at the time of HCT. Here, we report a case of disseminated pseudomycotic infection due to a non-suppressed non-septate mold, Mortierella sp. in a 31 years chronic cystic fibrosis patient. Right lung upper lobe pneumonia was successfully treated with a combination of tobramycin and posaconazole. Antifungal treatment cannot be performed in accordance with the Clinical and Laboratory Standards Institute CSL M3A-S2 guidelines.

Further: A pure lung health monitoring model may grow well within 2 days on Sabouraud’s Dextrose Agar. Microscopic examination should be performed to identify the fungus, fungallike structures were also present. The species-specific identification of the isolate was confirmed as M. yelloi by PCR-sequencing of the internal transcribed spacer (ITS) region of ribosomal DNA.