Joint Symposium 9
EANM / European Society for Molecular Imaging (ESMI) / European Society of Clinical Microbiology and Infectious Diseases (ESCMID)
Friday, October 23, 13:50-15:20

Session Title
Imaging Pulmonary Fungal Infections

Chairperson
Giorgio Treglia (Bellinzona, Switzerland)

Programme

13:50 - 14:14	Maurizio Sanguinetti (Rome, Italy / ESCMID): Current Dilemmas in Fungal Treatment
14:14 - 14:34	Greetje Vande Velde (Leuven, Belgium / ESMI): Preclinical Tools to Study Fungal Infections
14:34 - 14:54	Leo Carlin (Glasgow, United Kingdom): In vivo Imaging of Host Responses
14:54 - 15:18	Mathias Gunzer (Essen, Germany): Imaging Pulmonary Infections in the Clinic

Educational Objectives
1. Understand the clinical needs in diagnosis and follow-up of pulmonary fungal infections
2. Better understand the potential roles and contributions of preclinical imaging tools in fungal infection research
3. Get an overview of current developments that may impact clinical patient management in the near future

Summary
Pulmonary fungal infection is a common complication in immune compromised patients and associated with impaired clinical outcome [Hayes et al. Curr Opin Pulm Med 2013]. For example, small studies suggest that ^{18}F-FDG-PET/CT is more sensitive than CT alone to detect Aspergillus lesions. In 10 patients with definitive or probable invasive Aspergillus with FDG-positive lesions, CT showed corresponding lesions in 7/10 patients [Hot et al. Clin Microbiol Infect 2011]. Importantly, the immune compromised condition of the host does not compromise the ability of ^{18}F-FDG-PET/CT to detect pulmonary Aspergillus lesions. In a prospective observational study, the presence of ^{18}F-FDG-positive pulmonary lesions was highly associated with possible or probable invasive Aspergillus infection in severe neutropenic patients; 5/7 patients. To the contrary, only in 2/21 patients without invasive fungal disease, ^{18}F-FDG-positive pulmonary lesions were observed [Vos et al. Eur J Nucl Med Mol Imaging 2012]. ^{18}F-FDG-PET/CT might well be able to differentiate between invasive and non-invasive Aspergillus based on ^{18}F-FDG-uptake patterns. A retrospective study in 24 patients, Invasive Pulmonary Aspergillosis (IPA) was associated with multiple lesions, hypermetabolic nodules (as compared to the mediastinal blood pool) and high SUV_{max} (median 4.5, range 1.3-8.9). Non-IPA on the other hand is more often a single lesion with a isometabolic halo pattern and lower SUV_{max} (median 1.6, range 0.5-3.1) [Kim et al. J Comput Assist Tomogr 2013]. ^{18}F-FDG-PET/CT can potentially be used to monitor disease activity after initiation of anti-fungal therapy. Decreased or absent FDG-uptake in a previously ^{18}F-FDG-positive pulmonary Aspergillus lesion is frequently observed upon treatment [Ozsahin et al. Blood 1998].

Key Words
PET, Aspergillus, fungal, infection, lung