P0356
Paper Poster Session
Fungal infection epidemiology

Epidemiology of invasive pulmonary mycosis in children after allogeneic hematopoietic stem cells transplantation

Marina Popova[1], Ludmila Zubarovskaya[2], Boris Afanasyev[1], Tatyana Bogomolova[3], Svetlana Ignatyeva[4], Nikolay Klimko*[5], Boris Smirnov[6]

[1]*First Pavlov State Medical University of St. Petersburg, R. Gorbacheva Memorial Institute of Children's Oncology, Hematology and Transplantation, St. Petersburg, Russian Federation*

[2]*First Pavlov State Medical University of St. Petersburg, R. Gorbacheva Memorial Institute of Children's Oncology, Hematology and Transplantation, St-Petersburg, Russian Federation*

[3]*North-Western State Medical University Named after I.I. Mechnikov, Dept. of Clinical Mycology, Kashkin Research Institute of Medical Mycology, St. Petersburg, Russian Federation*

[4]*North-Western State Medical University Named after I.I. Mechnikov, Kashkin Research Institute of Medical Mycology, St. Petersburg, Russian Federation*

[5]*North-Western State Medical University Named after I.I. Mechnikov, Kashkin Research Institute of Medical Mycology, Dept. of Clinical Mycology, St-Petersburg, Russian Federation*

[6]*Saint-Petersburg Electrotechnical University, St-Petersburg, Russian Federation*

Background: Epidemiology of invasive pulmonary fungal infections in children after allogeneic hematopoietic stem cell transplantation (allo-HSCT) is not well understood.

Material/methods: In prospective single-center study in 2009 to 2014 yy we include 396 pediatric allo-HSCT recipients (38% of them were haploidentical). In 135 (34%) patients after allo-HSCT were lesions on lung CT scan. Median age was 12 y (1-18). All patients with lesions on CT underwent bronchoscopy with lab study of bronchoalveolar lavage (BAL) fluid. 209 bronchoscopy procedures were performed. We used endoscopic video system EVIS EXERA II Olympus with an external diameter of the distal end tubes of the 3.6 mm and 4.9 mm in a specialized endoscopy room or ICU (13%). Different methods of anesthesia were used, depending on the age and the degree of respiratory failure in patients with mandatory monitoring of vital functions of the body and oxygen levels. In 4 (3%) patients there were signs of endobronchial fungal growth, and we performed biopsy during bronchoscopy. Two (1.5%) patients with negative BAL underwent percutaneous automatic biopsy and lung lobectomy for fungal infection diagnostics. The samples obtained were sent immediately to the laboratory for cytology, microscopy, culture, and galactomannan (GM) detection. For the diagnostics of fungal infections we used EORTC / MSG 2008 criteria.

Results: Invasive pulmonary mycosis was found in 56 (14%) of 396 patients, 11% of which were proven by biopsy. The results of GM tests in BAL fluid were positive in 66% samples. Culture and microscopy were positive in 43% cases. Main pathogens were *Aspergillus* spp. (73%) and mucormycetes (14%). Rare pathogens were *Acremonium* spp., *Paecilomyces* spp., *Fusarium* spp., *Alternaria* spp. and *P.jirovecii*. Two or more pathogens were detected in 9%. In 27 patients (48%) invasive pulmonary mycosis was diagnosed after D +100 allo-HSCT. Four (7%) of the allo-HSCT recipients had relapse of fungal infection. No complications during bronchoscopy were observed.

Conclusions: Pulmonary invasive mycoses occurred in 14% of children after allo-HSCT. In 52% patients invasive mycoses occurred in first 100 days after transplantation. Main pathogens were *Aspergillus* spp. (73%) and mucormycetes (14%). Bronchoscopy is an effective and safe method for the diagnosis of invasive mycoses in children after allo-HSCT.