Clinical and laboratory features of invasive aspergillosis in patients with multiple myeloma

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Objectives

Identification of features of invasive aspergillosis (IA) in patients with multiple myeloma (MM).

Materials and methods

Retrospective analysis of 337 adult hematological patients with IA. In the main group were included 39 patients with MM, median age – 56 years (41 - 79), females - 59%. The control group included 298 hematological patients, median age – 53 years (40 - 78), females – 56%. Background hematologic diseases were acute leukemia – 45%, lymphoma – 36%; chronic leukemia – 13%, myelodysplastic syndrome – 5%; other – 1%, (Fig.1).

Fig.1 Background hematologic diseases in the control group

The EORTS/MSG 2008 criteria were used for IA diagnosis and assessment of response of therapy.

Results

The main risk factors of IA development were steroid use (87.5% vs 59.5%, p = 0.03), severe neutropenia (51% vs 76%, p = 0.03; median 14 vs 18 d), lymphocytopenia (33% vs 53%, median 10 vs 12.5 d), auto-HSCT (28% vs 4%, p = 0.01), and allo-HSCT (8% vs 13%), (Fig.2).

Fig.2 Risk factors of IA development.

The main sites of infection were lungs (97.4% vs 97.3%), usually bilateral (69% vs 77%), (Fig.3).

Fig.3 CT of the chest in a patient with IA and MM. «Air crescent» sign.

The main clinical symptoms were fever (80% vs 78%), cough (69% vs 61%), chest pain (16% vs 5%, p = 0.03), and hemoptysis (0% vs 6.4%, p = 0.001).

Aspergillus spp. positive culture was received in 69% vs 46% patients. The etiological agents of IA in patients with MM were: A. niger – 45%, A. fumigatus – 35%, A.flavus – 10%, A. candidus – 5%, A. ochraceus – 5%, (Fig. 4, 5).

Fig.4. The etiology of IA in patients with MM

Fig.5. Aspergillus candidus from BAL in patient with IA.

Antifungal therapy (voriconazole – 68.2% vs 64%) was used in 100% MM and 98% control group patients. The overall 12-weeks survival rate was 96% vs 80%, p = 0.01.

Conclusions

The typical risk factors for invasive aspergillosis in multiple myeloma patients were steroids use (87.5%), and auto-HSCT (28%). The main sites of infection were lungs (97.4%). The main etiological agents were A. niger (45%) and A. fumigatus (35%). In multiple myeloma patients the overall 12-weeks survival rate was significantly higher compared to the control group (96% vs 80%, p=0.01).