

# Invasive aspergillosis in patients with Hodgkin's lymphoma in Saint Petersburg, Russia



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## Introduction

Invasive aspergillosis (IA) often occurs in hematological patients with immunodeficiency after cytostatic therapy or HSCT. Publications on IA in patients with Hodgkin's lymphoma (HL) are limited.

## Methods

In prospective multicenter study were included 37 adult patients with HL, the median age – 32 years (range 16-65), males – 49%. The control group included 32 adult patients with IA and acute lymphoblastic leukemia (ALL), median age – 39 years, (range 16-68) males – 75%. For the diagnosis of proven and probable IA were used criteria EORTS/MSG 2008.

## Results

In all patients IA developed after cytostatic therapy: HL group – BEACOPP predominantly; ALL group – ALL-2009, Hyper-CVAD and others, the average numbers of courses were 2 vs 6 (p=0,0002).

Risk factors of IA were prolonged neutropenia – 59% vs 81% (p=0,01), lymphocytopenia – 64% vs 62%, and corticosteroids use – 70% vs 68% (Fig. 1).

Risk factors	HL	ALL	P-value
Neutropenia < 0,5x10 <sup>9</sup> /L	59%	81%	0,01
median, days	8,5	11,5	
Lymphocytopenia < 1,0x10 <sup>9</sup> /L	64%	62%	> 0,05
median, days	10	11	
Steroids use	70%	68%	> 0,05

Fig. 1. The main risk factors of IA.

At the time of IA diagnosis bacterial infections were detected in 19% vs 22% patients, viral infections – 11% vs 9%.

According to EORTS/MSG, 2008 diagnostic criteria, in HL group 100% of patients had probable IA, in ALL group probable – 88%, proven – 12% (p=0,02). The main sites of infection were lungs – 100% and 94% cases.

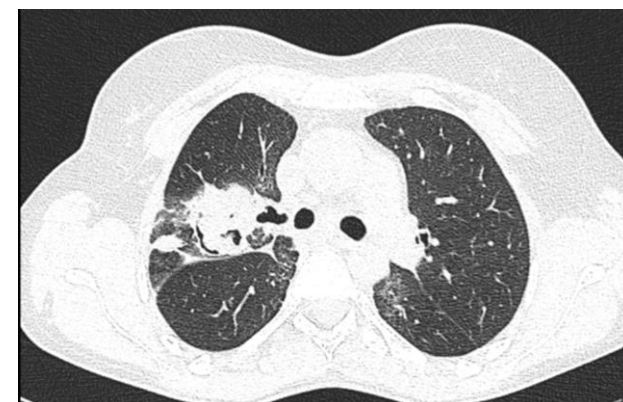


Fig. 2. IA with lung involvement in HL patient.

Disseminated IA was identified in 2% vs 12% patients (p=0,0001), with CNS involvement - 2% vs 6% (p=0,03). Galactomannan test in serum or bronchoalveolar lavage fluid (BAL) was positive in 72% vs 75%. Direct microscopy of BAL was positive - 14% vs 28% cases. *Aspergillus* spp. were isolated in culture in 32% vs 34% cases. The main etiological agents were *A.fumigatus* - 58% vs 55%, *A.niger* – 34% vs 27%, *A.flavus* – 8% vs 18% (Fig.3).

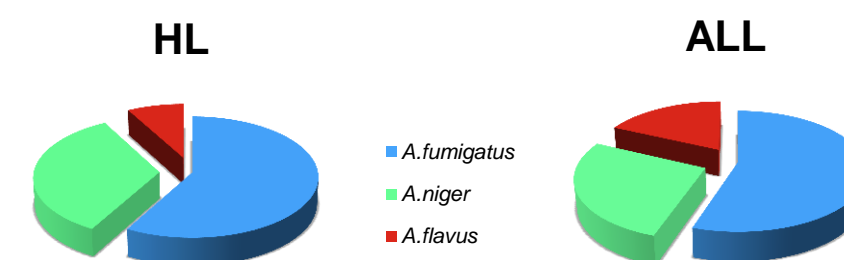


Fig. 3. Etiological agents.

Mixed etiology agents (*Mucor*, and *Pneumocystis*) were found in 8% vs 18% cases.

Patients in both groups received similar antifungal therapy: voriconazole – 55% vs 58%, caspofungin – 21% vs 18%, amphotericin B deoxycholate – 12% vs 9%, posaconazole – 8% vs 6%, and itraconazole – 4% vs 9%. The median duration of antifungal therapy in HL group was 61 days, in ALL – 94 days.

Overall 12-weeks survival rate was 89% vs 81%. Secondary antifungal prophylaxis was used in 24% vs 32% patients. In 1 year follow up period complete remission of IA occurred in 77% vs 44% patients (p=0,01).

Negative prognostic factors of 12th week survival were associated bacterial or viral infections (p=0,04), and mixed mycotic etiology (p=0,04). Positive prognostic factor of 1 year survival was secondary antifungal prophylaxis (p=0,02).

## Conclusions

The main risk factors of IA development in patients with HL were lymphocytopenia (64%) and corticosteroids use (70%). The main etiological agents were *A.fumigatus* (58%) and *A.niger* (34%). All patients had lung involvement (100%), dissemination and CNS involvement were rare (2%). Twelve week overall survival rate was 89%, negative prognostic factors were mixed mycotic etiology and associated bacterial or viral infections. Positive prognostic factor of 1 year survival rate was secondary antifungal prophylaxis.