Identification of invasive aspergillosis and candidiasis in patients with hematologic malignancy and recipients of transplantation by Real-Time PCR

Mohammad Javad Najafzadeh; Mohsen Dashti; Parisa Badiee; Mohammad Hasan Aelami; Monavvar Afzal Aghaei; Abdollah Banihashem; Zahra Badiee, Hamid Farhangi; Ali Ghasemi

Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

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ABSTRACT

Introduction: Invasive Aspergillosis and Candidiasis are due to tissue invasion of two species of fungi, Aspergillus and Candida that occur in patients with leukemia and transplantation because of a severe reduction in the body's defense system. Diagnosis of infection without use of invasive methods (biopsy, BAL, etc.) with Real-Time PCR, and initiation of treatment in the early stages of the disease reduce mortality due to these fungal infections in hospitalized patients.

Materials and Methods: In order to investigate the presence of fungal contamination, 75 patients (100 samples) with different types of leukemia and transplant recipients were evaluated. This study was performed using TaqMan Real-time PCR technology using fluorescence probes and specific primers to detect fungal DNA on plasma or peripheral blood serum samples.

Results: The most patients were ALL (45.3%) and AML (32%) respectively and the lowest was HLH patients (1.3%). The results of blood culture (BD) in the studied patients showed that Candida Non Albicans (13.3%) and Candida albicans (1.3%) and no culture was positive for Aspergillus. In this study, Real-time PCR (61) was negative (81.3%) and (5) 6.7% were positive for Candida albicans and (9) 12% were positive for Aspergillus.

Conclusion: The Real-Time PCR is an appropriate test with a high sensitivity and specificity for the detection of invasive fungi, due to the limitations mentioned in other diagnostic tests, including pathology and culture and etc. This method is a reliable and rapid technical testing for early detection, treatment and follow up of asymptomatic patients at an early stages of the disease.