Growth

Diego,

87.1–99.9

fluorescence

used

Recombinase

Medical

Division

) (Haghani

2022,

Ghazanfari

Lateral

Pulmonary

206

GAPDH

at 45°C,

Growth of various fungal species was assessed by the macrocolony assay.

The study was performed on a total of 100 patients with various medications,

Vegeta, Fathi 1, 2, Afshin Moradi, Saba, Khan, and 20 patients were colonized in both pulmonary and cutaneous samples. Among 22 C. dubliniensis strains, 14 were identified as C. albicans and 8 C. dubliniensis strains.

The in-house 186 C. albicans strains were isolated from cancer patients. A total of 500 patients with various medications were screened, patients on antifungal drugs and second-line drugs were excluded. All strains were sensitive to both fluconazole and voriconazole.

Reference strains included in the study:

C. albicans 90026 (National culture collection of pathogenic fungi (NCCFP), Department of Medical Mycology of the Khazim) C. albicans (CDB06) and (CBS 7987), provided by Dr. Zahid Khan

Methods: PCR-RFLP using HVR clonal strain 206, 126 C. glabrata isolates were collected from cancer patients. A total of 500 patients with various medications were screened, patients on antifungal drugs and second-line drugs were excluded. All strains were sensitive to both fluconazole and voriconazole.

The study form of the data is shown in Figure 2. Most of the data used in this study were from the screening of published data and the identification of all isolates (Fig. 2). Seven phenotypic traits that were evaluated include: Growth on Hygromycin Sulphate Dextrose Agar (SDS), Color colony on Crome Glaucous Differential Agar, Growth at 45°C, Assimilation of xylose (XLY), Colony color and Clonality formation on Tobruss Agar, Fungi tube formation at 39°C and Fluorescence on methyl blue SDS. In order to be included in our study one of the most detailed studies for the identification of C. dubliniensis till date.

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Interleukin—a non-invasive biomarker for invasive fungal infections

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Poster session 3 September 23, 2022, 12:30 PM – 1:30 PM

Objective: Invasive fungal infection is estimated to cause around 1.1 million deaths each year. The true burden is estimated to be even more due to the lack of reliable diagnostic methods. Invasive fungal infections (IFIs) are the emerging infections leading to high morbidity and mortality (80%). Both clinical suspicion and reliable diagnostic tools available to diagnose IFIs are low. As a result, most patients are diagnosed only in the later stages. Nasal swabs for IFIs are less useful and the most appropriate sample for the diagnosis will be the deep tissues involved, which are obtained after an invasive procedure. The gold-standard test for diagnosis of IFIs is the isolation of fungus in culture media but its sensitivity is <70%. Hence a non-invasive procedure to help in the diagnosis of invasive fungal infections is needed. The role of interleukins (ILs) in fungal infections, especially IL-10 and IL-17 has been documented in various research in the past. Hence this research was carried out to study the role of IL-10 and IL-17 in invasive and non-invasive fungal infections (NIFS).

Methods: The study was carried out in the Department of Microbiology, SRHHER, Chennai. A total of 60 samples collected from patients suspected to have fungal infections and sent to the laboratory for fungal culture were considered for the study. All the samples which grew fungi were categorized as IFIs and NIFS. ELISA was performed with the serum samples of patients for IL-10 and IL-17 based on manufacturer’s instruction (Human IL-10 ELISA Kit, ThermoFisher and Human IL-17 ELISA Kit, ThermoFisher), and reading was taken in a spectrophotometer (Thermo Fisher Scientific).

Results: Among the 60 serum samples tested, 30 were categorized as IFI and the rest as NIFS. A total of 90% (n = 2730) of IFI patients expressed interleukins in serum samples whereas none of the NIFS expressed both the interleukins present. Among IFI, IL-10 was seen in 63.3% (n = 19/30) patients, IL-17 in 64.7% (n = 14/21) patients and 20% (n = 6/30) patients expressing both IL-10 and IL-17. In NIFS the mean value of IL-10 and IL-17 were 6.457 and 4.259 respectively. Among the 30 IFI, 11 were positive for COVID-19, IL-17 was expressed in 94.6% (n = 11/13) of COVID-19 positive IFI patients. But only 23.1% (n = 5/30) of COVID-19 positive IFI patients expressed IL-10. A total of 15.4% (n = 4/22) of the COVID-19 positive patients did not express any interleukin. Surprisingly the expression of IL-10 among COVID-19 negative IFI was 94.1% (n = 16/17).

The specificity of both IL-10 and IL-17 was 100% in the case of IFI.

Conclusions: Thus, interleukins look to be a promising biomarker for IFI. Further studies will help in establishing interleukins as a potential non-invasive biomarker for IFI. IL-17 can be used as a biomarker for COVID-19 patients suspected to have IFI. Also looking for more than one cytokine preferably a combination of IL-10 and IL-17 should be done in patients with NIFS which will help in the early prediction of patients progressing into IFI and can be managed accordingly.

The value of nasal and oral clinical examination in febrile neutropenic patients for initiating anti-fungal therapy as a preemptive method

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Background: Invasive fungal infections (IFIs) are complications that lead to mortality and morbidity in hematologic malignancies. The time of starting anti-fungal therapy is vital. Preemptive anti-fungal therapy has appeared recently as a new policy for the management of IFIs based on nasooral ways in neutropenic patients.

Methods: We enrolled leukemia patients with neutropenia after chemotherapy in Imam Khomeini Hospital Complex, Tehran, Iran. Patients who entered the neutropenic phase were divided into two categories (empirical and preemptive) for receiving anti-fungal agents. The patients were clinically examined in the preemptive group every day to find IFIs. As soon as clinical evidence of IFIs was observed, antifungal was prescribed. The empirical group patients received antifungals based on the ward protocol. Based on the data in each group, the diagnostic and therapeutic results of cases are followed up for 3 months. To compare percentages between the two groups, the Chi-square test was used. And to compare two means between the two groups, the independent-t test was used. All the statistical analyses were done in the Statistical Package for the Social Sciences (SPSS) version 24 software (IBM Corporation, Armonk, New York, USA).

Results: We assessed 132 leukemic patients with inclusion and exclusion criteria. Eventually, 80 patients were enrolled. The mean age was 45.52 years. Demographic data and distribution of leukemia type show no significant difference between the two groups. Despite a higher percentage of IFIs discovered in the preemptive group than the empirical group (25 vs. 18.75%, respectively), but data show no significant differences. The average days of IFIs diagnosis since the beginning of neutropenia in the empirical group were 9.5 days while in the preemptive group, the average days were 5.4 days (P < 0.05). Totally, there were 15 patients with a proven IFI in each group (40% in the empirical group and 60% in the preemptive group). Results significantly show an increase in surgical site debridement in the empirical group (83.3%) vs. the preemptive groups (55.5%), (P < 0.05). The mortality rate differed significantly among the two groups, it was 7.5% in the preemptive group and 23% in the empirical group (P < 0.05).

Conclusions: Daily oral and nasal cultures examination to find the symptoms of IFIs and then start preemptive antifungal agents may be able to lead to accurate diagnosis, earlier treatment, and decreasing site surgery debridement in leukemia patients with neutropenia.