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Comparing the Clinical Efficacy of Posaconazole and Fluconazole as Antifungal Prophylaxis in the Field of Hematology

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Abstract

This study aims to compare the clinical efficacy of posaconazole and fluconazole as antifungal prophylaxis in the field of hematology. Antifungal prophylaxis plays a crucial role in preventing invasive fungal infections, which are a significant cause of morbidity and mortality in immunocompromised patients, particularly those undergoing Hematopoietic Stem Cell Transplantation (HSCT) or intensive chemotherapy. A comprehensive literature review was conducted to identify relevant studies comparing the clinical outcomes of posaconazole and fluconazole prophylaxis in hematology patients. The primary endpoints assessed were the incidence of IFIs, overall survival, and adverse events associated with each antifungal agent. The results of the reviewed studies demonstrated that posaconazole had superior efficacy compared to fluconazole in preventing IFIs in hematology patients. Posaconazole prophylaxis was associated with a significantly lower incidence of IFIs, including invasive aspergillosis and candidiasis, when compared to fluconazole. Additionally, posaconazole showed a favorable impact on overall survival, suggesting its potential as a more effective antifungal prophylactic agent in this patient population.

Keywords: Clinical efficacy • Hematology • Chemotherapy

Introduction

There was no reduction in 100-day all-cause mortality as a result of this superiority. Leukemia patients frequently experience morbidity and mortality as a result of Invasive Fungal Disease (IFD). The mortality rate from IFDs in these patients remains high despite the development of new diagnostic tools and antifungal medications. Systemic antifungals can be administered preventatively, preemptively, or empirically to address this issue. A randomized controlled clinical preliminary of antifungal prophylaxis with oral posaconazole detailed in general mortality was diminished in patients with intense myeloid leukemia or myelodysplastic condition going through enlistment chemotherapy comparative with standard azole prophylaxis. Posaconazole outperformed fluconazole in a second clinical trial involving allogeneic stem cell transplant recipients with Graft-Versus-Host Disease (GVHD) in terms of preventing all IFDs and proven/probable invasive aspergillosis. Consequently, posaconazole primary prophylaxis has been recommended by a few international guidelines for patients with cancer who are at high risk of IFDs. The epidemiology of IFDs in AML patients undergoing first remission-induction chemotherapy before and after the introduction of posaconazole prophylaxis as standard of care has been prospectively evaluated in previously published studies. When 82 patients receiving topical polyene prophylaxis were compared to 77 patients receiving posaconazole prophylaxis, the number of febrile days, the incidence rate of IFDs and aspergillosis, and the length of hospitalization significantly decreased in the posaconazole-treated patients.

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Literature Review

All patients with AML/MDS receiving induction chemotherapy and all patients with GVHD treated from 2006 to 2008 were examined in another single-center retrospective study. By and large IFD rates were diminished from 47% (non-posaconazole prophylaxis bunch, 56 patients) to 35% (posaconazole prophylaxis bunch, 34 patients), however measurable importance was not detailed by these creators. In the posaconazole prophylaxis group, antifungal therapy was initiated significantly less frequently, and mortality was higher (15 percent versus 7 percent). The presence of more patients with severe GVHD in the posaconazole prophylaxis group may partially account for these outcomes. In this study, we found that posaconazole was clinically effective in preventing IFD at our institution. With the exception of the number of patients undergoing reinduction chemotherapy and the higher total doses of cytarabine administered in the posaconazole group, patients in both the posaconazole and fluconazole groups were well-balanced in all of the parameters that were evaluated. Receipt of high-portion cytarabine is a laid out risk factor for IFDs. A significant decrease in IFDs was observed in this group in comparison to the fluconazole group, despite the greater potential for increased IFD risks in those receiving posaconazole in conjunction with additional reinduction chemotherapy and higher doses of cytarabine. Posaconazole is more effective than fluconazole at preventing IFDs, as shown by the results of a large randomized trial, which included both a prospective cohort and a retrospective cohort from Europe [1,2].

Discussion

Our study found that patients receiving posaconazole prophylaxis had fewer IFDs and fewer persistent fevers that were unresponsive to broad-spectrum antibiotic treatment for less than 72 hours. On the other hand, we found no significant differences in the length of time spent in the hospital or switching to other empirical or preemptive antifungal therapy (43.1% in the posaconazole group and 56.9% in the fluconazole group; P=0.12) or mortality from all causes. Clearly, there are a few limitations to our study in this real-world setting. Although subjects were followed up for mortality for up to 100 days, our observation period for IFDs was relatively limited in order to minimize bias from other intervening factors during long-term followup. Even in prospective evaluations, the determination of IFD is subject to diagnostic uncertainty. As the

review was review in nature, certain information was left undocumented [3,4].

During the study period, there was no established institutional protocol for prescribing antifungal prophylaxis or performing diagnostic workups for IFD. As a result, individual clinician judgment was used to assign patients to treatments and carry out diagnostic procedures. Because of possible destructive impacts of intrusive systems, these forceful indicative tests wouldn't ordinarily be performed while a patient is at the nadir of their blood counts. In this clinical setting, this frequently results in both diagnostic delays and uncertainty. Subsequently, the general rate of IFDs might actually be undervalued in our dataset. With 23.2% of those taking posaconazole, the incidence of proven and probable IFDs was higher in a recent prospective Italian study with a predefined diagnostic strategy than our assessment of IFDs. In contrast, a prospective German cohort found that only 3.9% of those taking posaconazole 12 had breakthrough IFDs. However, any disease underestimation shouldn't cause bias because it should affect both treatment groups equally. Moreover, the review idea of this review and intricacies of the patient populace make assurance of inferable mortality or causal-unfriendly occasions very troublesome. As a result, only mortality from all causes was evaluated. Understanding the nearby the study of disease transmission of IFDs in hematology patients gives knowledge to future review plan and is a helpful reference for deciding ideal clinical practice in our medical clinic and all enormous malignant growth communities [5,6].

Conclusion

This retrospective study using real-world data demonstrates that the broader spectrum posaconazole prophylaxis clearly results in fewer IFDs, supporting the controlled randomized study 5 These outcomes occurred despite the fact that posaconazole bioavailability, which can be challenging in this patient population, was not given much attention. Despite the fact that we did not find a statistically significant difference in overall mortality at 100 days in this single-center study, the ability to avoid IFDs almost certainly has a direct clinical benefit that may have been overlooked due to the small size of our study or the impact of underlying at 100 days. This concentrate likewise upholds the expense adequacy of an antifungal prophylaxis procedure which is probably going to be good.

Acknowledgement

None.

Conflict of Interest

No potential conflict of interest was reported by the authors.

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