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Perspective

Posaconazole and Voriconazole: A Comparison for Primary Antifungal Prophylaxis in Patients with Acute Leukemia in Children

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DESCRIPTION

Treatment for acute leukemia may result in Invasive Fungal Disease (IFD), which carries a high risk of morbidity and mortality. *Aspergillus* and *Candida* are the most frequent pathogens of IFD in pediatric leukemia cases. Invasive candidiasis in children has an annual incidence of 0.92 per 100,000; however children with acute leukemia are more at risk. Invasive fungal infections have become much more common at the same time that treatment intensity has increased (e.g., organ transplantation, chemotherapy). Primary Antifungal Prophylaxis (PAP) was advised by the guidelines, and systemic antifungal prophylaxis can be a useful strategy for lowering IFD. It is authorized to use posaconazole to prevent infections caused by *Aspergillus* and *Candida*. Posaconazole is also used to treat oropharyngeal candidiasis, usually in patients who are not responding to fluconazole and itraconazole therapy. Esophageal candidiasis, disseminated candidiasis, candidemia in non-neutropenic patients, and invasive aspergillosis are among the conditions for which voriconazole is approved. Voriconazole may be the best option for patients undergoing HSCT, and posaconazole may be the best preventive measure for patients with AML or MDS, according to a systematic review and network meta-analysis. According to a different study, voriconazole was associated with a higher frequency of symptomatic adverse events, but both posaconazole and voriconazole are useful in preventing IFDs in adult patients with hematological malignancy. Posaconazole is more cost-effective than voriconazole for IFD prophylaxis in AML, according to a cost-effectiveness analysis. In general, the most sensible choices for the prevention of IFD are posaconazole and voriconazole. In this study, the PAP for pediatric acute leukemia was compared between voriconazole and posaconazole. In the posaconazole group (7.7% *vs.* 15.8%), the rate of breakthrough IFD during PAP was lower than in the previous study involving adult patients with AML, ALL, and MDS (2.5% *vs.* 4.8%). The way in which the kids were raised and the criteria for what constitutes a breakout IFD could both have an impact. It has been suggested that, among patients receiving initial treatments, the phase with the highest risk of developing IFD is remission induction chemotherapy. According to a number of studies, the majority of IFDs in ALL and AML happened during the induction phase and with more potent chemotherapy. Comparably, 16 cases (16/31, 51.6%) of breakthrough IFDs in this study happened during induction. High doses of steroids and severe neutropenia may be associated with it. According to certain studies, the most common infection among AML patients receiving active triazole PAP following intensive chemotherapy is proven and probable invasive aspergillosis. Computed Tomography (CT) of the lungs and other investigations are advised for patients with suspected IFD. Because CT can identify early predictive signs of fungal infection, it is a valuable tool in the diagnosis and treatment of patients with fungal infections. According to this study, the lungs were the site of breakthrough IFD in 25 cases (25/31, 80.6%). The fact that neither voriconazole nor posaconazole was chosen as the primary prophylactic treatment in this study significantly affected OS or IFD-free survival. This may have been because there were fewer patients experiencing endpoint events and the median survival time had not yet been reached. In contrast, patients in the posaconazole group had a better Overall Survival rate (OS) than those in the voriconazole group in the subgroup analysis of AML patients.

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