

Pediatric Invasive Aspergillosis: A Multicenter Retrospective Analysis of 139 Contemporary Cases

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OBJECTIVE. Invasive aspergillosis is a major cause of morbidity and mortality in immunocompromised children. Invasive aspergillosis has been well characterized in adults; however, the incidence and analysis of risk factors, diagnostic tools, treatments, and outcomes have not been well described for a large cohort of pediatric patients.

METHODS. We conducted the largest retrospective review of contemporary cases of proven and probable pediatric invasive aspergillosis diagnosed at 6 major medical centers (January 1, 2000, to July 1, 2005).

RESULTS. *Aspergillus fumigatus* was the species most frequently recovered (52.8%) for the 139 patients analyzed. The majority of the children had an malignancy with or without hematopoietic stem cell transplant. Significant risk factors that impacted survival were immunosuppressive therapies and allogeneic stem cell transplant. The most common clinical site of invasive aspergillosis was the lungs (59%), and the most frequent diagnostic radiologic finding was nodules (34.6%). Only 2.2% of children showed the air crescent sign, 11% demonstrated the halo sign, and cavitation was seen in 24.5% of patients. Before the diagnosis of invasive aspergillosis, 43.1% of patients received fluconazole, and 39.2% received liposomal amphotericin B. After the diagnosis of invasive aspergillosis, 57% were treated with a lipid formulation of amphotericin B; however, 45.8% received 3 concomitant antifungal agents. Analysis did not show superiority of any 1 antifungal related to overall mortality. A total of 52.5% (73 of 139) died during treatment for invasive aspergillosis. Of all the interventions implemented, surgery was the only independent predictor of survival.

CONCLUSIONS. Our analyses revealed common findings between adult and pediatric invasive aspergillosis. However, one key difference is diagnostic radiologic findings. Unlike adults, children frequently do not manifest cavitation or the air crescent or halo signs, and this can significantly impact diagnosis. Immune reconstitution, rather than specific antifungal therapy, was found to be the best predictor of survival.