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Acute hypoxemic respiratory failure in children following bone marrow transplantation: an outcome and pathologic study.

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Source

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Abstract

OBJECTIVES:

To describe the pulmonary pathology and clinical outcome in children with acute hypoxemic respiratory failure after bone marrow transplantation.

DESIGN:

Review of medical records and pathologic material of patients diagnosed with acute hypoxemic respiratory failure after bone marrow transplantation.

SETTING:

Pediatric intensive care unit (ICU) of a teaching hospital.

PATIENTS AND METHODS:

Retrospective review of a consecutive cohort of children, with a history of bone marrow transplantation admitted to the pediatric ICU during a 7-yr study period, and who met a published definition of acute hypoxemic respiratory failure. For each admission, the pediatric ICU course and outcome were reviewed. Pathologic material that was obtained from the patients was reexamined and assigned to one of the following categories: acute or organizing diffuse alveolar damage, pulmonary hemorrhage, nonspecific interstitial pneumonitis, or infectious pneumonia.

INTERVENTIONS:

None.

MEASUREMENTS AND MAIN RESULTS:

Forty-three patients satisfied criteria for inclusion in the study group. Indications for bone marrow transplantation were: solid tumor (30%), leukemia (44%), congenital immunodeficiency (19%), and aplastic anemia (7%). Patients were admitted to the pediatric ICU a median of 1 month (range 0 to 126) after bone marrow transplantation. Thirty-eight (88%) patients died in the pediatric ICU. Tissue histologic material was available from 21 (49%) patients. Six (29%) of 21 patients had acute diffuse alveolar damage; one (5%) had organizing diffuse alveolar damage; three (14%) had nonspecific interstitial pneumonitis; and two (10%) had pulmonary hemorrhage. Infectious pneumonia occurred in nine (43%) cases (five fungal; four viral).

CONCLUSIONS:

The acute mortality rate (88%) for children with acute hypoxemic respiratory failure after bone marrow transplantation is similar to that reported for adults with this combination of conditions. Diffuse alveolar damage, the histologic hallmark of adult respiratory distress syndrome, was present in a minority (33%) of patients. Infectious pneumonia was the most frequent cause of acute hypoxemic respiratory failure in patients who had pathologic tissue available, emphasizing the need for aggressive diagnostic studies and early institution of antifungal and antiviral therapy.

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