Aplastic Anemia: Review Questions

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INTRODUCTION

Pancytopenia is a potentially life-threatening problem that places patients at risk for bleeding, cardiopulmonary stress, and infectious complications. Prompt management, including appropriate blood product support with irradiated and filtered products and antimicrobial support, is vital in the early stages. Furthermore, it is important to recognize that these treatments will not impact diagnostic testing results or future management.

The main diagnostic evaluation for the cause of pancytopenia involves a bone marrow biopsy and aspiration, with aspirate and adequate biopsy core obtained for histological testing. Additional key tests on the bone marrow sample include flow cytometry to rule out leukemia and lymphoma and karyotyping and fluorescent in situ hybridization (FISH) studies to evaluate for common abnormalities found in myelodysplasia and acute leukemia. Because many patients with pancytopenia will have a low bone marrow cellularity or low cell numbers on aspiration, collecting an additional core biopsy to make sure adequate sample is present is very important. In patients with pancytopenia who have a marrow cellularity less than 25% of the expected cellularity for their age, and no dysplastic features on marrow examination or karyotypic abnormalities, the diagnosis is aplastic anemia.

The diagnosis of aplastic anemia does not define the cause of the disease, as there is a broad differential of infectious agents, toxins, and inherited disorders that can lead to the development of marrow aplasia. When faced with a patient with aplastic anemia, there are several key considerations in diagnosis and management. First, in young patients with aplastic anemia, congenital disorders leading to aplastic anemia must be ruled out. The 2 most common include Fanconi anemia and dyskeratosis congenita, with a number of other more rare inherited causes of aplastic anemia to be considered. Second, urgent referral to a facility that performs bone marrow transplantation is very important, as transplantation is a treatment consideration for most patients with aplastic anemia. Finally, a thorough history to assess for drug/toxin exposure, viral infections (hepatitis in particular), and pregnancy in women of child bearing potential is necessary (Table 1). A number of diagnostic tests are important to identify a potential cause for the aplastic anemia, define its severity, and evaluate for associated disorders (Table 2).

It is important to remember that aplastic anemia is considered a curable disease. However, the supportive care required for patients with severe and very severe aplastic anemia is intensive. Febrile, neutropenic patients require hospital admission for intravenous antibiotics and investigation for the source of fevers. In a nonfebrile but neutropenic patient, prophylactic antimicrobials are optimal to reduce infectious complications. Blood product support may be required 2 to 3 times a week, with close monitoring for evidence of platelet alloimmunization. In patients who fail to respond to random donor platelets, a platelet refractory workup is necessary to define their alloantibodies and identify specific products for transfusion. Blood product support from family members should be avoided in aplastic anemia patients, as this may increase the risk of rejection in the setting of bone marrow transplantation. Finally, one must continually record the number of units of blood transfused and consider the risk of secondary iron overload. With the current standards of treatment, the 3- to 5-year survival for all patients with aplastic anemia is approximately 80%. Therefore, management of this disease is best done either at a major center experienced in treatment of aplastic anemia or with very good consultative support.

QUESTIONS

Choose the single best answer for each question.

Questions 1 to 3 are based on the following case:

1. A 20-year-old man presents for evaluation of recurrent epistaxis. He reports nose bleeding that