Dental management of idiopathic aplastic anemia: report of a case

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Abstract

Aplastic anemia is a serious and often fatal hematological disorder characterized by hypoplastic bone marrow and peripheral pancytopenia. Epistaxis, oral lesions and gingival hemorrhage often necessitates multiple platelet transfusions in these patients. The use of aminocaproic acid to control hemorrhagic episodes has been especially beneficial in patients with bone marrow hypoplasia as they often become refractory to repeated transfusions. In this case presentation, a 15-year-old black female with idiopathic aplastic anemia was treated with a combination of modalities including initial platelet transfusion, oral hygiene instruction, dental prophylaxis and systemic aminocaproic acid. The health of the oral tissues greatly improved following this regimen.

Introduction

Aplastic anemia is a serious and often fatal hematologic disorder characterized by hypoplastic bone marrow and peripheral pancytopenia. Recently, the use of systemic aminocaproic acid in these patients has demonstrated positive results in the control of oral hemorrhagic episodes, thus reducing the need for multiple platelet transfusions. In this case presentation, a 15-year-old black female with idiopathic aplastic anemia was treated with a combination of modalities including initial platelet transfusion, oral hygiene instruction, dental prophylaxis and systemic aminocaproic acid. The oral tissues appeared clinically healthy following this regimen.

Literature Review

Aplastic anemia was first described in 1888 by Ehrlich as a rapidly fatal hematologic disease seen in young adults between the ages of 15 and 30. Today, the concept of aplastic anemia has been broadened since the disease has been known to occur at any age. Usually, the onset is gradual, but acute fulminating cases have been reported. The mortality in severe cases is more than 50 percent during the first year and may be greater than 70 percent at five years. Aplastic anemia is normochromic and normocytic, and manifests itself as a pancytopenia. The bone marrow is devoid of megakaryocytes, myeloid and erythroid precursors.

Clinical signs and symptoms include: 1) severe weakness and dyspnea even after mild physical exertion, 2) pallor of the skin, 3) numbness and tingling of the extremities, 4) decreased resistance to infection, and 5) petechiae of the skin and mucous membranes. These clinical manifestations are caused by the inability of the hematopoietic system to deliver enough red cells, white cells and platelets to the peripheral circulation. The specific clinical picture varies according to the cell line predominantly affected. Oral signs include: 1) spontaneous bleeding from the mucous membranes, 2) petechiae, 3) purpuric spots, and 4) frank hematomas of the mucosa, pharynx and gingiva.

Aplastic anemia is generally recognized in two forms: idiopathic and secondary. Idiopathic aplastic anemia affects young adults, progresses rapidly and is usually fatal. This form accounts for approximately 60 percent of the reported cases. Secondary aplastic anemia is of known etiology and can affect individuals at any age. The prognosis, once again, is poor even if the causative agent is identified. Among the agents associated with secondary aplastic anemia are: ionizing radiation, Atabrine, chloramphenicol, benzene, gold compounds, viral hepatitis, and miliary tuberculosis. Secondary aplastic anemia accounts for approximately 40 percent of reported cases.

Report of Case

A 15-year-old black female was referred to the James Whitcomb Riley Hospital for Children in
March, 1979, with complaints of malaise and prolonged epistaxis. The patient denied any episodes of jaundice or hematuria. The family history was negative for sickle cell anemia or Fanconi’s anemia. The patient had been transfused with 5 units of random donor platelets and packed cells prior to arrival at Riley Hospital.

Physical examination revealed a well-developed black female in no acute distress. Heart rate was 80, respiratory rate 18, weight 38.1 Kg. The examination was unremarkable with the exception of mucosal and petechial hemorrhage. Specifically, there was no hepatosplenomegaly or lymphadenopathy. No abnormality of the digits was noted. The patient was admitted to the hospital for evaluation. Admission laboratory data were as follows: Hemoglobin 7.6 gr.%, hematocrit 24%, white cell count 2,400/cu mm, platelets 10,000/cu mm, PT 11.5 seconds, PTT 23.0 seconds, SGOT 20, SGPT 19, and Alkaline Phosphatase 91. Antinuclear antibody was negative.

The patient was transfused with packed red cells, whole blood and five units of random donor platelets shortly after admission. A repeat hemoglobin was 9.1 gr.%. A bone aspiration and biopsy were performed. These demonstrated a marked decrease in precursors of all cell lines. Prominent mast cells and plasma cells were noted. There were no megaloblastic changes noted. Subsequent normal B₁₂ and folate levels were documented. A sucrose hemolysis test proved negative. In the absence of historical evidence for marrow toxins and the fact that the physical findings were not consistent with familial aplastic anemia, the diagnosis of idiopathic aplastic anemia was made. A histocompatible donor was unavailable for marrow transplantation. The patient was discharged from the hospital to her parents five days after admission. Subsequent attempts at treatment with high dose corticosteroids and antithymocyte globulin were unsuccessful.

At the request of the hematology service, the patient was seen in the dental clinic of Riley Hospital on October 18, 1979 for evaluation of gingival hemorrhage and oral lesions. Her oral temperature was 38.9° C, hematocrit 20%, and a platelet count of 1,000 cu mm.

**Oral and Radiographic Examination**

Oral examination demonstrated generalized gingivitis with spontaneous gingival hemorrhage (Figure 1). Periodontal examination demonstrated no pocket formation greater than three millimeters. Multiple round, raised lesions approximately 3 mm in diameter were present on the anterior half of the tongue (Figure 2). Bilateral lesions approximately 1 cm in diameter were distal to the second permanent molars on the buccal mucosa (Figure 3). There was no history of oral trauma. Radiographic examination, including panoramic, bite-wing and two maxillary anterior periapical radiographs were negative for pathology.

The patient reported severe pain during toothbrushing and had not been practicing regular oral hygiene in the past. At this time the patient was readmitted to the hospital for dental evaluation and treatment of the oral condition.

**Initial Dental Treatment**

The patient received two transfusions of 10 units each of platelets. The platelets were matched by major blood groups only. This brought her platelet
count to 190,000/cu mm. At this time, definitive dental treatment was initiated. Oral hygiene instructions were given to the patient and her parents. The need for daily oral care was stressed and the patient were given to the patient and her parents. The need to 190,000/cu mm. At this time, definitive den-

prophylaxis of the teeth were completed. Nitrous floss. A thorough debridement of the gingiva and a surfaces of her teeth using a toothbrush and dental demonstrated that she could remove plaque from all

inflammation and oral lesions decreased within two weeks. The patient did experience a mild candidosis during a three-day period (Figure 4-6). The patient maintained meticulous oral hygiene and was followed regularly in the dental clinic for observation and recall examinations. During the fourth month of amino-
caproic acid therapy, the patient experienced signific-

episiotaxis and gingival bleeding was reduced from approxi-
mately 17 units of platelets per month following aminocaproic therapy. It has been reported that aminocaproic acid therapy to approximately 5 units of platelets per month prior to amino-
caproic acid therapy. The use of aminocaproic acid in the management of amegakaryocytic thrombocytopenia has been especially beneficial by reducing the need for multiple transfusions to control hemorrhagic episodes. This is particularly important since patients with bone marrow hypoplasia often become refractory to repeated transfusions. It has been reported that aminocaproic acid therapy be discontinued when the platelet count consistently exceeds 20,000/cu mm.1 In this patient, whose platelet count consistently remains 2,000/cu mm, the need for platelet transfusion to control epis-
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caproic acid therapy to approximately 5 units of platelets per month following aminocaproic therapy.

Figure 4. Intraoral view of gingival health approximately two weeks after aminocaproic acid therapy was initiated.

**Discussion**

Aminocaproic acid is a monoaminocarboxylic acid which inhibits fibrinolysis. The beneficial effects appear to be principally via inhibition of the plas-

minogen activator substances and through antiplas-

min activity, although the exact mechanism is not

known.1,16,17 The drug is absorbed rapidly following oral administration. In dentistry, aminocaproic acid has been especially useful to control patients with classic hemophilia A.18 Some patients experience orthostatic hypotension while undergoing aminocaproic acid ther-

apy,1 although this patient reports no such experience.

Aminocaproic acid is also contraindicated in patients with hematuria.

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**Systemic Use of Aminocaproic Acid**

Due to the frequency and severity of epistaxis, chronic gingival hemorrhage and the subsequent need of multiple platelet transfusions, the hematology ser-

vice elected to start the patient on oral aminocaproic acid. The initial dosage was 6 gm per day (1.5 gm q.i.d.). The maximal recommended dosage of amino-
caproic acid is 30 gm per day. Epistaxis and gingival hemorrhage ceased within 24 hours. Only 15 units of platelets were given over the next three months due to

Figure 5. Clinical appearance of the tongue approximately two weeks after aminocaproic acid therapy was initiated. Note absence of lesions.

Figure 6. Intraoral view of patient’s left buccal mucosa approximately two weeks after aminocaproic acid therapy was initiated. Note the healing of the lesion.

Summary

In this case presentation, a 15-year-old black female with idiopathic aplastic anemia was treated with a combination of modalities including initial platelet transfusion, oral hygiene instruction, dental prophylaxis and systemic aminocaproic acid. The health of the oral tissue greatly improved. Previous studies have demonstrated the positive results of meticulous oral hygiene in these patients. Although this patient consistently demonstrated meticulous oral hygiene, gingival bleeding and oral lesions were still evident during treatment. This suggests that in patients with severe thrombocytopenia (2,000/cu mm), meticulous oral hygiene can improve the oral environment but direct hematologic measures are essential for treatment. At this time, the patient remains stable and is continuing a relatively normal adolescence. She reports that her improved oral health has enhanced her sense of well-being.

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