

Use of Customized Acrylic Plate to Achieve Hemostasis In A Case of Acute Myeloid Leukemia: A Novel Clinical Modification

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ABSTRACT

Background: Oral lesions can be one of the early events of any systemic disease. Acute myeloid leukemia is often associated with early oral manifestations. The purpose of this study is to report a case of 35-year-old female with spontaneous gingival bleeding for over two days with undiagnosed leukemia. Accurate diagnosis and timely referral are important for preventing a fatal situation.

Keywords: Bleeding gums, acute myeloid leukemia, mucosal petechiae.

INTRODUCTION

Oral manifestation would be the most preliminary sign of a systemic pathology. Numerous systemic pathologies may point to common oral manifestations or any specific oral manifestation may be associated with a particular disease.^[1] Systemic diseases may present with abnormalities in the head and neck region, particularly the oral cavity. Developing good differential diagnoses based on the presenting signs and symptoms is of prime importance. An early definitive diagnosis underscores initiation of correct treatment.^[2] Oral health practitioners should be familiar with the oral manifestations of systemic diseases as some are disease-specific. Leukaemia is a malignancy of haematopoietic cells characterized by the proliferation of malignant leucocytes and destruction of the bone marrow. General manifestation of leukaemia may include fatigue, anaemia, lymphadenopathy, recurrent infection, bone and abdominal pain, bleeding and purpura.^[3] Oral manifestations may occur in any of the leukemias, but they are more prevalent in acute (vs chronic) and myeloid (vs lymphoid) leukemias. Oral

examination of patients may reveal mucosal pallor due to anemia, or bleeding and petechiae. Painful and deep oral ulcerations are common and may result from either neutropenia or direct infiltration by malignant cells. Patients may also develop severe viral, fungal, and bacterial oral infections as a consequence of immunosuppression.^[4]

CASE REPORT

A 35-year-old female reported to the department for evaluation and treatment of persistent bleeding gingivae to her maxillary central incisors extending upto premolars on the right side since two days. She also gave history of exertional breathlessness, which had worsened over several days. On clinical examination, spontaneous bleeding from gingiva was seen extending from right maxillary central incisor to premolars. The gingiva was non tender and no edema was noted. There was no history of trauma. There was no significant medical or family history. There was no history of tobacco or alcohol consumption. She was a housewife with two young children.

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On extraoral examination, no regional lymphadenopathy or salivary gland swelling was observed. However, the patient appeared very fatigued, weak and pale. Red patches on the extremities were noticed (Fig. 1).



Fig 1: Red patches on the right leg.

Intraoral examination revealed buccal mucosal pallor and severe gingival hemorrhage around tooth 11 to 14 buccal gingival margin (Fig. 2).



Fig 2: Severe Gingival Hemorrhage.

On detailed clinical examination:

All the teeth were vital on sensibility testing. Periodontal pocket depths were less than 3 mm. Panoramic and periapical radiographs showed no abnormal dental or osseous finding. The amount of bleeding was inconsistent with the amount of local factors present. Hematological tests, including complete blood count (CBC), liver function test, kidney function test, clotting profile, C-reactive protein, rheumatoid factors and anti-nuclear antibodies were ordered. She was given Tranexamic

acid 5% mouthwash to arrest the bleeding. The patient's CBC revealed a marked decrease in haemoglobin (5.8 g/L), haematocrit (0.59), platelet count (0.20 lac/cu mm) and total leucocytes (104,000/cu mm). The CBC also showed pancytopenia with rare circulating blast cells (93%). She was advised bone marrow biopsy which later confirmed hypoplastic acute myeloid leukaemia (AML) without maturation.

Since the complete treatment of AML was not possible at our center, the primary objective was to achieve hemostasis and shift the patient to tertiary health care center.

To achieve hemostasis a custom made acrylic tray was designed in which hemostat dressing was placed and was incorporated in patient's mouth as a pressure plate. (Fig3-7)

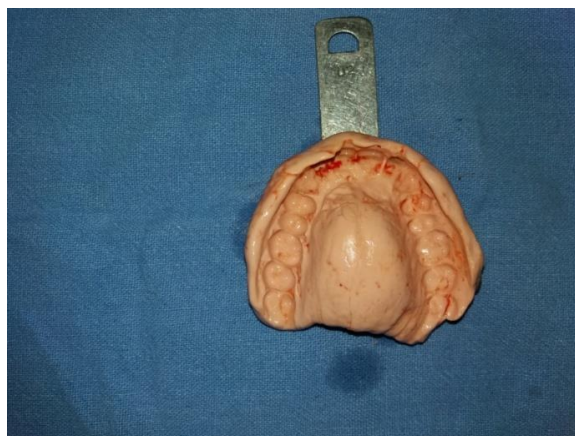


Fig 3: Primary impression taken with Alginate Impression Material



Fig 4: Primary Cast with Wax spacer placed to facilitate the placement of hemostat pack.



Fig 5: Cast with primary try in acrylic plate.



Fig 6: Final acrylic plate with retention clasps.



Fig 7: Insertion of acrylic plate with hemostat dressing in patient's mouth followed by achieving hemostasis.

DISCUSSION

There are many situations in which a patient presents with gingival bleeding, including poor oral hygiene, malpositional teeth, trauma to the gingivae, Vitamin K, Vitamin C deficiency, hormonal changes in female, bleeding disorders, medications, liver disease and cancers. The most common gingival bleeding is caused by a chronic inflammatory process produced by dental plaque in gingivitis and is not spontaneous.^[5]

In this case, gingivitis by dental plaque was ruled out because of the severity of spontaneous gingival bleeding related to a relatively good oral hygiene. Oral signs of thrombocytopenia are the most common patient complaint and are often found at the initial clinical examination such as signs of oral bleeding, usually palatal petechiae or gingival oozing. ^[5] Leukemia is a hematological disorder, arises from a hematopoietic stem cell caused by disordered differentiation and proliferation of neoplastic cells, and leads to marked increase in circulating immature or abnormal white blood cells.^[6]

According to the lineage of white blood cells (WBC) involved, leukemia is classified as lymphocytic or myelocytic; a subgroup of the myelocytic leukemia is monocytic leukemia. According to their evolution, leukemia can be acute, which is rapidly fatal, subacute, or chronic. AML has many types (FAB: French, American, British classification) including M0 (undifferentiated leukemia), M1 (acute myeloblastic leukemia), M2 (acute myeloblastic leukemia with maturation), M3 (acute promyelocytic leukemia), M4 (acute myelomonocytic leukemia), M5 (acute monocytic leukemia), M6 (acute erythroblastic leukemia), and M7 (acute megakaryoblastic leukemia). Neoplastic proliferation in bone marrow results in decreased production of normal erythrocytes, causing anemia, weakness, fatigue, pallor; granulocytes causing granulocytopenia, fever, and infection; and platelets causing thrombocytopenia, bleeding, and petechiae. Leukemic cells may also infiltrate spleen, lymph nodes, skin, gingiva, and central system. Oral manifestation have been observed in 15-80% of leukemic cases and more commonly seen in (65%) acute rather than in chronic leukemia (30%). A study of 1076 adult patients with leukemia showed

3.6% of the patients with teeth had leukemic gingival proliferative lesions, with the highest incidence in patients with M5 (66.7%), followed by M4 (18.7%) and M1, M2 (3.7%).^[7]

Infections and anemia are the major causes of death in leukemic patients. Untreated, acute leukemia has an aggressive course, with death occurring within 6 months or less.

CONCLUSION

Early diagnosis and intervention is required in cases with Leukemia. This case emphasizes that oral health practitioners should be familiar with the systemic manifestations and oral complications of blood diseases and leukemia in particular, since they are frequently consulted by the leukaemia patient because of accompanying oral complications, thereby providing an opportunity for timely diagnosis and early referral to physicians.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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