

# Acute myeloid leukemia: a case report with palatal and lingual gingival alterations

Mahesh Chavan<sup>1</sup>, Arun Subramaniam<sup>2</sup>, Hiral Jhaveri<sup>3</sup>, Shivaji Khedkar<sup>1</sup>, Sachin Durkar<sup>4</sup>, Ankush Agrwal<sup>5</sup>

<sup>1</sup> MDS, Lecturer, Dept. of Oral Medicine and Radiology Dr. D. Y. Patil Dental College and Hospital, Pune, India

<sup>2</sup> MDS, Professor and Head, Dept. of Oral Medicine and Radiology Dr. D. Y. Patil Dental College and Hospital, Pune, India

<sup>3</sup> MDS, Lecturer, Dept. of Periodontics Terna Dental College and Hospital, Nerul, Navi Mumbai, India

<sup>4</sup> MDS, Lecturer, Dept. of Orthodontics and Dentofacial Orthopedics Dr. D. Y. Patil Dental College and Hospital, Pune, India

<sup>5</sup> MDS, Private Practice in Oral and Maxillofacial Surgery, Pune, India

## Abstract

Acute myeloblastic leukemia (AML) is a malignant bone marrow disease. Due to its high morbidity rate, early diagnosis and appropriate medical therapy are essential. Dentists and physicians should be aware of the importance of recognizing oral manifestations of this systemic disease. Here we report a case of gingival alterations AML. The interesting clinical findings about this case are the severe alterations of palatal and lingual gingiva with almost normal labial gingiva. The need for early diagnosis and referral of this fatal disease are also underlined.

**Keywords:** acute myeloid leukemia, gingival alterations.

## Introduction

Leukemia results from the proliferation of a clone of abnormal hematopoietic (HP) cells with impaired differentiation, regulation, and programmed cell death (apoptosis). Leukemic cell multiplication at the expense of normal HP cell lines causes marrow failure, depressed blood cell count (cytopenia), and death as a result of infection, bleeding, or both<sup>1</sup>.

Oral lesions may be the presenting feature of acute leukemias and are therefore important diagnostic indicators of the disease. Such lesions may occur due to direct leukemic infiltration of tissues, or be secondary to immunodeficiency, anemia and thrombocytopenia. Typical oral manifestations of acute leukemias include gingival swelling, oral ulceration, spontaneous gingival bleeding, petechiae, mucosal pallor, herpetic infections and candidosis<sup>2</sup>. AML is a clonal proliferation of immature myeloid cells. It presents with marrow failure and cytopenia. Symptoms include fever, fatigue, pallor, mucosal bleeding, petechiae, and local infections<sup>1</sup>.

The French-American-British (FAB) classification system divides AML into 8 subtypes, M0 through to M7, based on the cell type from which the leukemia developed and its degree of maturity<sup>3</sup>. Gingival infiltration represents a 5% frequency as the initial presenting complication of AML<sup>4-5</sup>.

This report refers to a patient with AML who presented gingival hyperplasia, palatal ecchymoses and other related findings.

## Case Report

A 35-year-old male patient was referred to the Department of Oral Medicine after visiting two dentists with chief complaint of swollen, painful bleeding gingiva with 5 months of evolution. The patient had a habit of tobacco quid chewing and ganja smoking since the age of 15.

Received for publication: December 07, 2010

Accepted: March 25, 2010

### Correspondence to:

Mahesh Chavan

Dept. of Oral Medicine and Radiology,  
Dr. D. Y. Patil Dental College and Hospital,  
Pune 411018, India.

E-mail: drmahesh\_1000@yahoo.co.in

The patient had fever and pallor. The submandibular lymph nodes of both sides were enlarged, non-tender and freely movable. On the clinical examination, palatal and lingual gingiva (Figures 1 and 2) of both the jaws appeared to be swollen, glazed, devoid of stippling and spongy in consistency. The color of the marginal and papillary gingiva was bluish black to deep purple which was indicative of necrosis. In addition, the patient had fetor oris and ulcerations, friability and bleeding of gingiva. Hard and soft palatal mucosa (Figure 3) showed large area of ecchymoses. Interestingly, the labial gingiva (Figure 4) had almost normal appearance with just a shiny and glazed surface. The local factors were not proportional to the severity.

Differential diagnoses of inflammatory gingival enlargement, acute leukemia, acute necrotizing ulcerative gingivitis (ANUG) and human immunodeficiency virus (HIV) infection were considered for this patient.

The most probable clinical diagnosis of leukemia was considered for this case based on the severity and extent of gingival alterations without significant local factors like microbial dental plaque or calculus accumulation, history and duration of gingival overgrowth, gingival bleeding and the palatal ecchymoses.

The patient was referred to hematological investigations. The peripheral blood smear showed elevated total white blood cells (WBC) count to 20,000/mm<sup>3</sup>. Platelet count was 40,000/mm<sup>3</sup> and red blood cells (RBC) were of microcytic and hypochromic type. The differential WBC count showed more than 30% of blast cells, mainly myeloblasts (Figure 5), giving diagnosis of AML M2 variety, i.e. acute myeloblastic leukaemia with maturation. Tests for HIV infection/AIDS were negative.

The patient was referred to an oncologist and treatment started with chemotherapy to which he did not respond. Within the following week, the patient developed high fever, diffused swelling of the neck and brownish black coating on tongue with possible necrotic ulcerations at the tip of the tongue, and died 4 weeks later.

## Discussion

The leukemias are subdivided into chronic and acute forms. Chronic leukemias involve relatively well



Fig. 1. Mandibular lingual gingiva showing enlargement and necrosis.

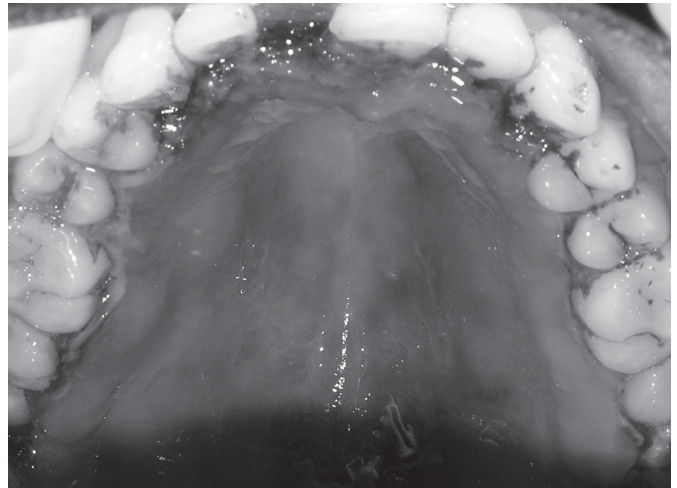


Fig. 2. Maxillary palatal gingiva showing enlargement and necrosis.



Fig. 3. Large area of ecchymoses on palatal mucosa.



Fig. 4. Labial and buccal gingiva showing almost normal appearance.

differentiated leukocytes, are slow in onset and run an indolent course. Acute leukemias are characterized by an uncontrolled proliferation of poorly differentiated blast cells. They are abrupt in onset, and are aggressive and rapidly fatal



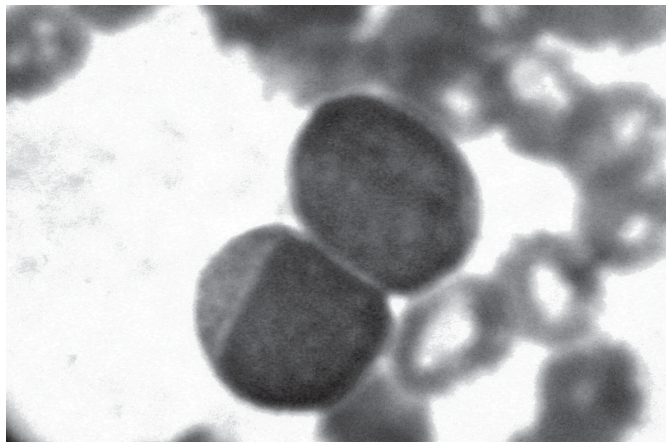


Fig. 5. Peripheral blood smear showing myeloblasts.

if left untreated. Oral manifestations are more common in acute leukaemias<sup>2</sup>.

Acute leukemia usually presents precipitously with bone marrow failure and associated anemia, infection, and bleeding. Symptoms are generally flu-like with bone pain, joint pain, or both, caused by malignant marrow expansion. Thrombocytopenia is manifested by petechial skin and posterior palatal hemorrhages and gingival bleeding. Gingival infiltration by leukemic cells will also predispose the patient with leukemia to bleeding. Gingival ulcerations may occur as a result of infection by normal oral flora in the setting of neutropenia<sup>1</sup>.

More atypical oral findings that have been reported include cracked lips and the presence of hemorrhagic bullae on the anterior dorsum of the tongue, buccal and labial mucosa, toothache, tooth mobility and petechiae<sup>6</sup>.

Oral manifestations in patients with leukemia have been described in all subtypes of AML, chronic myeloid leukemia, acute lymphocytic leukemia, and chronic lymphocytic leukemia<sup>7</sup>. Dreizen et al.<sup>8</sup> reported that the patients with acute monocytic leukemia had the greatest incidence of gingival infiltrates (M5) (66.7%) followed by acute myelomonocytic leukemia (M4) (18.5%) and acute myeloblastic leukemia (M1, M2) (3.7%). The patient of this case was diagnosed as having acute myeloblastic leukemia with maturation (AML M2 variety).

Gingival hyperplasia is characterized by progressive enlargement of the interdental papillae, marginal gingiva and attached gingiva. Its most severe form, the tooth crowns may be covered. Mucosal hemorrhages, ulcerative gingivitis, infectious gingivitis and odontalgia may be observed<sup>9</sup>.

There are several etiologies for gingival overgrowth and each etiology usually has its own overgrowth characteristics. The inflammatory gingival enlargement is the most common form of gingival overgrowth and is associated with local factors, like plaque and calculus. ANUG typically presents with gingival necrosis and 'punched-out' ulceration involving the interdental papillae which are covered by a grayish-green pseudomembrane. It is also accompanied by excessive salivation, metallic taste and malodor<sup>10</sup>, but it is not associated with ecchymoses. HIV/AIDS associated lesions like Kaposi's sarcoma (KS) (early lesions) can be confused with gingival enlargement and palatal ecchymoses in leukemia. KS can involve any oral site, but most commonly the palate, gingiva and tongue. KS lesions begin as blue purple or red purple flat discolorations that can progress to tissue masses that can ulcerate<sup>10</sup>. The clinical

provisional diagnosis of this case was narrowed to acute leukemia considering the above-mentioned factors.

Leukemia cell gingival infiltrate is not observed in edentulous individuals, suggesting that local irritation and trauma associated with the presence of teeth may play a role in the pathogenesis of this abnormality<sup>8</sup>. There may be variation in presentation and severity of gingival overgrowth. This patient had gingival alterations on palatal and lingual gingiva, while the labial gingiva had an almost normal appearance with a shiny surface. The probable reason for this finding is the association of patient's habit of ganja smoking, which is a source of constant irritation to the gingiva.

Petechiae, easy bruising, gingival bleeding and epistaxis are directly related to thrombocytopenia (decrease in the number of platelets). Bleeding can also occur internally, with hemorrhage more likely when the platelet count is less than 20,000/ $\mu$ L. In addition, these patients are prone to infections because of a decrease in circulating neutrophils. Breakdown of mucosal barriers leads to the development of systemic infections from organisms colonizing the skin, throat, or gastrointestinal tract<sup>11</sup>. This patient also had a large area of ecchymoses on the palate suggestive of platelet depletion and also complained of gingival bleeding on slight provocation.

Infections and anemia are the major causes of death in leukemic patients<sup>10</sup>. Untreated, acute leukemia has an aggressive course, with death occurring within 6 months or less<sup>1</sup>. The patient died in spite of our immediate referral because valuable time had been lost until the patient visited our department.

In conclusion the fact that gingival alterations are sometimes the first manifestations of the disease implies that dental professionals must be sufficiently familiarized with the clinical manifestations of systemic diseases to ensure prompt detection and referral. Considering the acuteness of this disease, early diagnosis and referral of leukemic patients should be done for better outcome of this fatal condition.

## References

1. McKenna SJ. Leukemia. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2000; 89: 137-9.
2. AK Dean, JW Ferguson, ES Marvan. Acute leukaemia presenting as oral ulceration to a dental emergency service. *Aust Dent J.* 2003; 48: 195-7.
3. Bennett J, Catovsky D, Daniel M, Flandrin G, Galton D, Gralnick H, Sultan C. Proposals for the classification of the acute leukaemias. French-American-British (FAB) co-operative group. *Br J Haematol.* 1976; 33: 451-8.
4. Williams WJ, Beutler E, Erslev AJ, Lichtman MA. *Hematology.* 4th ed. New York: McGraw Hill; 1990. p.243-4.
5. Wu J, Fantasia JE, Kaplan R. Oral manifestations of acute myelomonocytic leukemia: a case report and review of the classification of leukemias. *J Periodontol.* 2002; 73: 664-8.
6. P Gleeson. Spontaneous gingival haemorrhage: Case report. *Aust Dent J.* 2002; 47: 174-5.
7. Bergmann OJ, Philipsen HP, Ellegaard J. Isolated gingival relapse in acute myeloid leukaemia. *Eur J Hematol.* 1988; 40: 473-6.
8. Dreizen S, McCredie KB, Keating MJ, Luna MA. Malignant gingival and skin infiltrates in adult leukemia. *Oral Surg Oral Med Oral Pathol.* 1983; 55: 572-9.
9. Curtis L, Cooper, Ruth Loewen, Tsiporah Shore. gingival hyperplasia complicating acute myelomonocytic leukemia. *J Can Dent Assoc.* 2000; 66: 78-9.
10. Greenburg M, Glick M. *Burket's oral medicine diagnosis and treatment.* 10th edn. BC Decker Inc.; 2003. p.443-8.
11. Parisi E, Draznin J, Stoopler E, Schuster SJ, Porter D, Sollecito TP. Acute myelogenous leukemia: advances and limitations of treatment. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2002; 93: 257-63.