Case Report

DOI: 10.7860/JCDR/2026/87735.24203

Dentistry Section

Gingival Enlargement as a Rare Manifestation of Acute Myeloid Leukaemia in a Patient with Cardiovascular Compromise: A Case Report

PRACHITI CHAULKAR[1], BELA DAVE[2], KHUSHBOO DESAI[3], CHANDNI PATEL[4], VRUNDA PATEL[5]

BY-NC-ND

ABSTRACT

Gingival enlargement may be an early oral indicator of haematologic malignancy, particularly Acute Myeloid Leukaemia (AML). In case of AML, the malignant immature white blood cells increase in number at the expense of the bone marrow cells. This results in a decrease in the number of erythrocytes and platelets. This manifests clinically as anaemia, weakness, fatigue, and pallor along with spontaneous bleeding and petechiae. Early recognition by dental clinicians is critical, as oral signs may precede systemic manifestations. Oral signs such as gingival enlargement, spontaneous bleeding, ulcerations, and secondary infections may serve as the first diagnostic feature for unsuspected leukaemia. In present case report, a 50-year-old medically compromised male patient presented with generalised gingival enlargement, spontaneous bleeding, pseudomembranous candidiasis, fever, malaise, and recent weight loss. The severity of enlargement was disproportionate to local irritants and radiographic findings, prompting haematologic evaluation. Investigations revealed leukocytosis with 82% blast cells, anaemia, thrombocytopenia, uncontrolled diabetes, indicating AML. The patient was referred urgently for oncologic management and initiated on chemotherapy after multidisciplinary clearance. Despite timely diagnosis and supportive care, the patient's condition deteriorated rapidly due to pneumonitis and immunosuppression. He succumbed to respiratory failure only 15 days after AML diagnosis due to the nature of the disease. Atypical or generalised gingival enlargement especially when inconsistent with local aetiologic factors should raise suspicion of underlying systemic disease, including leukaemia. Dental practitioners especially periodontist play a pivotal role in early detection, timely referral, and multidisciplinary management which may significantly influence prognosis.

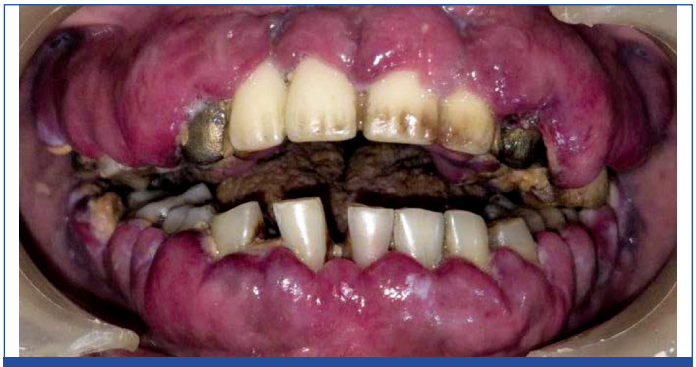
Keywords: Blood cell disorders, Cardiovascular diseases, Gingival hyperplasia, Leukaemic infiltration

CASE REPORT

A 50-year-old male patient reported to the Department of Periodontology on 3 October 2025 with a chief complaint of swollen gums and difficulty in mastication for one month. He experienced swelling in anterior region followed by involvement of posterior regions which gradually increased in size. In addition, the patient disclosed history of persistent low-grade fever, generalised malaise, reduced appetite, and a recent loss of weight since two months.

The patient had a medical history of Myocardial infarction four years ago, followed by percutaneous transluminal coronary angioplasty and stent placement. He also gave history of hypertension and type-2 diabetes mellitus diagnosed four years ago. He was prescribed Nifedipine, a calcium channel blocker for hypertension and Glimepiride for type-2 diabetes mellitus. Patient was also on an antiplatelet drug (Tab. Aspirin) once a day since four years. But patient confessed being irregular with his medication. He gave a history of consuming smokeless form of tobacco occasionally since five years.

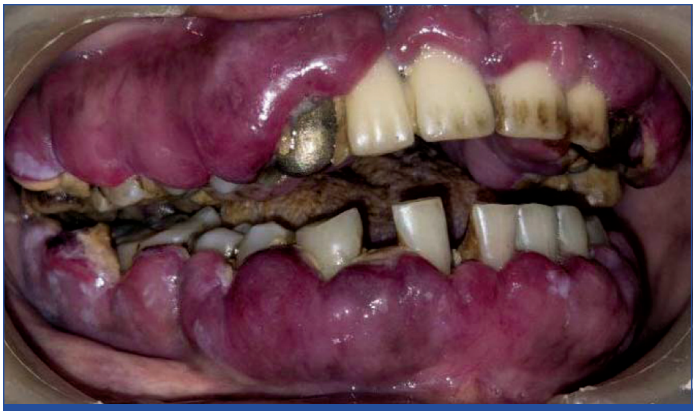
On extraoral examination, patient presented with mild pallor, generalised weakness along with palpable and tender cervical lymph nodes. On oral examination, generalised gingival enlargement involving both maxillary and mandibular arches was present [Table/Fig-1-5]. Gingiva appeared bluish erythematous, oedematous, soft, and shiny, with lobulated margins. On further inspection, frank bleeding on probing was noted. Areas of pseudomembranous candidial plaques [Table/Fig-6] on the dorsum of tongue and posterior gingiva were identified. Due to the gingival enlargement beyond coronal third, patient had difficulty in articulation as well as mastication. Dental status showed generalised staining, supra-erupted upper left posteriors and fixed prosthetic bridge in the upper front tooth region (from right canine to left canine). Radiographically, generalised bone loss is evident which is consistent with chronic



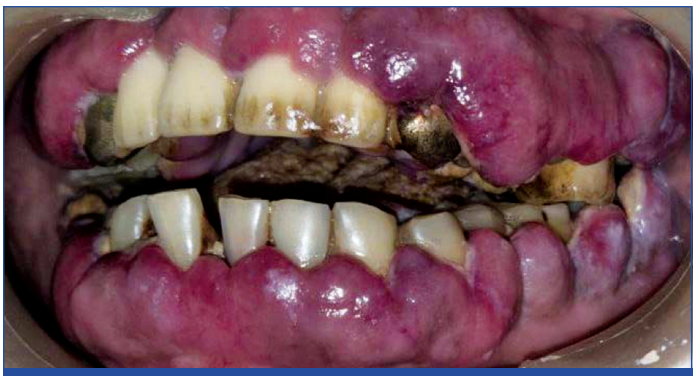
[Table/Fig-1]: Frontal intraoral view showing maxillary and mandibular arches associated with gingival changes.

periodontitis [Table/Fig-7]. However, these did not justify the clinical findings. The severity of enlargement was disproportionate to the local irritants present, prompting suspicion of an underlying systemic condition rather than isolated inflammatory enlargement. Hence, patient was advised to undergo baseline haematological investigations [Table/Fig-8].

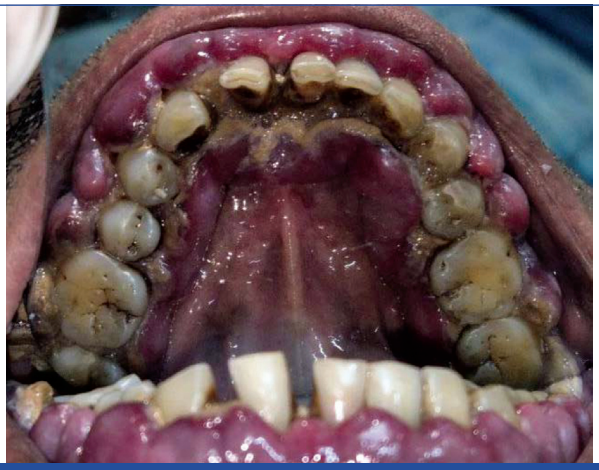
The reports of the patient showed uncontrolled diabetes. Raised creatinine levels suggested acute kidney injury. Correlating with the patient's systemic symptoms and oral findings and the presence of anaemia, thrombocytopenia and leukocytosis with abnormal differential count along with 82% blast cells at the time of preliminary haematological examination, AML was strongly suspected [Table/Fig-8]. Therefore, the patient was immediately referred to oncological research care centre for further bone marrow biopsy and treatment. Because of the patient's systemic condition, the dental treatment focused on local oral care to control biofilm, as well as on the prevention of the infection. The oral care included meticulous oral hygiene by using a soft bristle toothbrush and 0.12% chlorhexidine rinse twice a day [1,2].



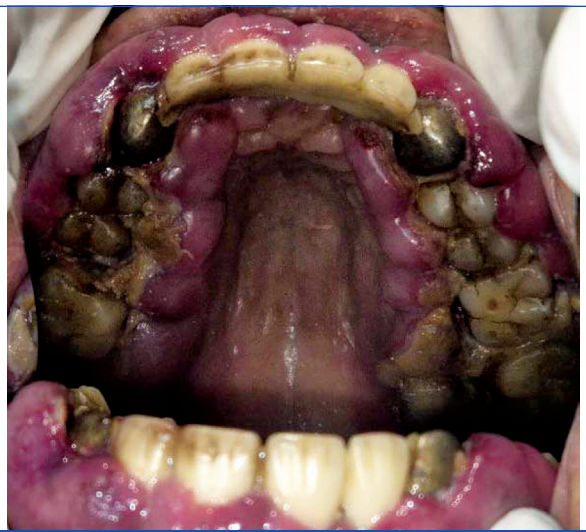
[Table/Fig-2]: Right lateral intraoral view showing maxillary and mandibular arches associated with gingival changes.



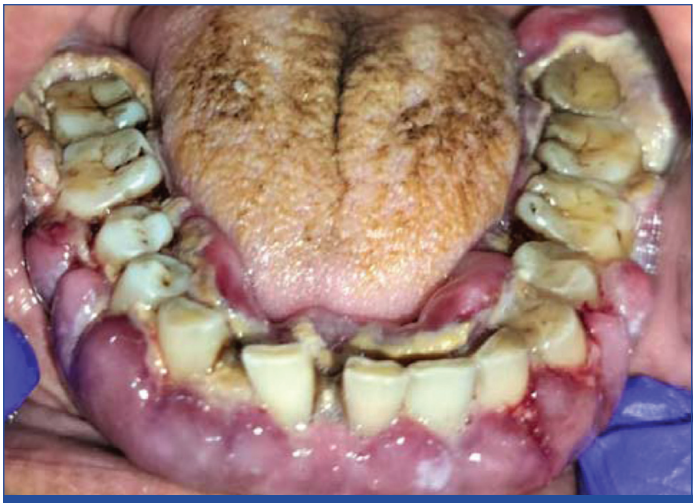
[Table/Fig-3]: Left lateral intraoral view showing maxillary and mandibular arches associated with gingival changes.



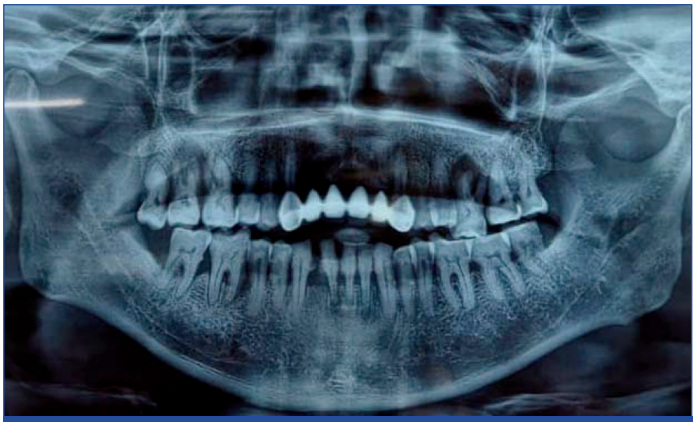
[Table/Fig-4]: Occlusal intraoral view showing mandibular arch associated with gingival changes.



[Table/Fig-5]: Occlusal intraoral view showing maxillary arch associated with gingival changes.



[Table/Fig-6]: White lesion on the dorsum of the tongue suggesting of candidiasis.



[Table/Fig-7]: Orthopantomogram that shows periapical abscess in upper left 1st molar that has supra-erupted. Generalised horizontal bone loss with angular defect in lower right 1st and 2nd molars suggesting generalised chronic periodontitis.

Parameters	Patient's results	Normal Range
WBC Count (cells/mm^3)	38300 (H)	4000-10000
Blasts (%)	82 (H)	0% (Absent)
Neutrophils (%)	01 (L)	40-80
Lymphocytes (%)	06 (L)	20-40
Eosinophils (%)	00 (L)	1-6
Monocytes (%)	11 (H)	2-10
Basophils (%)	00	0-2
Platelet(count/mm3)	58000 (L)	150000-410000
Prothrombin time (seconds)	14.2 (H)	9.4-13.4
RBC Count (million cells/mm^3)	2.82 (L)	4.5-5.5
Haemoglobin (g/dL)	10.80 (L)	13-17
Haematocrit (%)	30.30 (L)	40-50
MCV (fL)	107.70 (H)	83-101
MCH (Pg)	38.50 (H)	27-32
MCHC (%)	35.70 (H)	31.5-34.5
RDW-CV (%)	14.30 (H)	11.6-14.0
Random Blood Sugar (mg/dL)	384.00 (H)	>200: Diagnosis of diabetes with classic symptoms of hyperglycaemia or hyperglycaemic crisis
Creatinine (mg/dL)	2.00 (H)	0.72-1.18
ALT (SGPT) (U/L)	53.30 (H)	<50 U/L
HIV	Non reactive	

[Table/Fig-8]: Result of haematological examination.
WBC: White blood cell; RBC: Red blood cell; MCV: Mean corpuscular volume; MCH: Mean corpuscular haemoglobin; MCHC: Mean corpuscular haemoglobin concentration; RDW-CV: Red cell distribution width–Coefficient of variation; ALT (SGPT) (U/L): Alanine aminotransferase (Serum glutamic-pyruvic transaminase) (Units per litre); HIV: Human immunodeficiency virus; H: High (above the reference range); L – Low (below the reference range)

At the oncological centre, kidney and liver function tests were conducted. A 2-D Echocardiogram with colour doppler was performed that showed left ventricular ejection fraction of 40-45%, trivial mitral regurgitation, Grade 1 diastolic dysfunction. Chemotherapy was started by the Oncology centre after cardiology and nephrology consultation. As the platelet count was very low (58,000 mm^3) at admission; Tab Aspirin was stopped by the cardiologist for a few days until platelet count increased. During the course of treatment, subsequent blood reports were performed at regular intervals [Table/Fig-9]. Unfortunately, the patient's health deteriorated suddenly and was shifted to the Intensive Care Unit (ICU). He had developed pneumonitis. On 18 October 2025, the patient collapsed due to Type-2 Respiratory failure and was declared dead after Cardiopulmonary Resuscitation (CPR) and intubation attempts. Despite early detection and prompt initiation of chemotherapy, the patient's systemic condition deteriorated rapidly. Unfortunately, he succumbed to the illness within 15 days of diagnosis, (from Baseline Laboratory reports on 3 October 2025) consistent with the aggressive nature of acute leukaemia and complications arising from profound immunosuppression. Patient consent was obtained prior to investigations and photographic documentation.

Date	Haemoglobin (g/dL)	RBC (10^6 cells/ mm^3)	WBC (10^3 cells/ mm^3)	Platelet (10^3 cells/ mm^3)	Blasts cells
7th October'25	8.90	2.41	36.63	28.00	NA
8th October'25	9.10	2.45	51.28	25.00	68%
9th October'25	9.60	2.54	73.42	29.00	NA
10th October'25	9.60	2.57	112.36	27.00	NA
12th October'25	9.50	2.32	152.70	18.00	NA
14th October'25	7.40	2.13	242.66	30.00	94%

[Table/Fig-9]: Subsequent haematological data.
(NA : Not Available)

DISCUSSION

Leukaemia is a neoplastic disease characterised by excessive proliferation of immature white blood cells and their precursors. Although, systemic signs may be present but oral lesions may be the first and only manifestation of potentially fatal conditions like leukaemia. Oral manifestations have been observed in 15-80% of leukaemic cases and more commonly seen in acute (65%) than in chronic leukaemia (30%) [3]. Acute leukaemia is the most common form of neoplasm in paediatric patients younger than 15 years [4,5]. According to Holland-Frei Cancer Medicine, 6th edition, AML commonly affects adults of all ages but is especially common in older adults [6]. The incidence estimate is 2-3 cases/100,000 per year, gradually increasing with age to a peak of 12.6 cases/100,000 in patients aged over 65-year-old [7].

The 2020 population-based analysis showed that the age-standardised incidence rate of AML rose from 1.35 to 1.54 cases per 100 000 persons, reflecting an average annual percent change of 0.56 % (95 % CI : 0.49 - 0.62). Because the metric is age-standardised, the increase represents a true temporal trend in AML incidence across the entire population, independent of any specific age group [8]. AML has a dismal prognosis in the continuously growing population of patients of greater age [9].

In case of AML, the malignant immature white blood cells increase in number at the expense of the bone marrow cells resulting in decrease in the number of erythrocytes and platelets. This manifests clinically as anaemia, weakness, fatigue, and pallor along with spontaneous bleeding and petechiae [3]. The failure of maturation of precursor/blast cells results in the accumulation of blast cells in the marrow leading to deficiency of mature leukocytes, platelets, and erythrocytes in the peripheral circulation. Leukaemic cells also tend to infiltrate various body tissues, such as the gingiva, spleen, skin, lymph nodes, and central nervous system [10].

Approximately, 5% of patients with AML exhibit gingival infiltration as the initial presenting complaint [11]. Gingival enlargement, spontaneous bleeding, ulcerations, and secondary infections can often precede systemic symptoms and may serve as the first diagnostic feature for unsuspected leukaemia. Early recognition by dental professionals significantly influences prognosis, as acute leukaemias may progress rapidly and can be fatal without timely intervention.

This report presents an AML patient with rapid gingival enlargement. The dentist was the first medical examiner who diagnosed the disease and referred him to the haematology clinics for further diagnosis and then to the cancer centre for therapeutic procedures. This case highlights the crucial role of dental clinicians in identifying atypical gingival presentations which ultimately contributed to the diagnosis of AML in an adult male patient.

Oral manifestations often serve as sentinel signs of acute leukaemia, and gingival enlargement is particularly common in myelomonocytic and monocytic subtypes (AML M4/M5) due to leukaemic infiltration of gingival tissues. Acute monocytic leukaemia (M5) (66.7%), acute myelomonocytic leukaemia (M4) (18.5%), and AML (M1, M2) (3.7%) are the AML subtypes associated with gingival enlargement more frequently [12]. In a study by Dreizen et al., Leukaemic gingival hyperplasia was present in 3.6 percent and leukaemia cutis in 3.1 percent of the patients. Only 7.6 percent of those with leukaemic "infiltrates" had simultaneous gingival and skin involvement of the 1076 leukaemic M5 patients [13]. In such patients, dental therapy driven without haematological consultation could be fatal.

Gingival hypertrophy occurs due to excessive overgrowth of the gingival tissue due to poor oral hygiene and drugs. It can occur as part of the clinical spectrum of many genetic disorders and systemic illnesses, including haematological diseases [14]. A subset of cases may even be idiopathic [15]. Within haematological malignancies, oral manifestations have been variably documented in AML, chronic myeloid leukaemia, acute lymphocytic leukaemia, and chronic lymphocytic leukaemia. Intraoral features include gingival enlargement, mucosal pallor, spontaneous bleeding, ulcerations and opportunistic fungal infections may precede systemic symptoms. In this case, the presence of frank bleeding, secondary candidiasis, unexplained enlargement, and constitutional systemic symptoms aligned with classic early indicators of acute leukaemia [16]. In AML, the peripheral-blood smear typically shows a constellation of findings that reflect marrow infiltration by malignant myeloblasts. The presence of anaemia, thrombocytopenia and leukocytosis with abnormal differential count along with 82% blast cells with variation in size, shape, granulation of myeloid precursors and occasionally of erythroid or megakaryocytic lineages further add on to the diagnosis. However, the final diagnosis comes after a bone marrow aspiration.

According to Hou G et al., 1997; Lymph node enlargement (45%), gingival bleeding (43.2%) and laryngeal pain (37.3%) was noted while the most prevalent systemic symptom in all leukaemic patients was fever (92.2%) [17].

Once the patient starts with chemotherapy, oral manifestations might regress on their own. However, palliative oral therapy should be instituted to patient for oral discomfort [16]. Periodontal and dental treatment should be inferred only after physician's clearance and under prophylactic measures. Palliative therapy of 0.2% Chlorhexidine rinses should be advised.

The National Institute for Health and Care Excellence (NICE) guidelines 2017 for the referral of suspected cancer states that a referral process must be arranged for the patient to attain the appropriate medical appointment and seen within a two-week time frame. Early recognition, comprehensive oral examination, and inter-disciplinary coordination remain essential pillars in managing patients presenting with unusual oral signs [18].

The patient's medical background of cardiovascular disease, diabetes, and antiplatelet therapy could have masked the severity of the oral findings, delaying suspicion. However, the disproportionate gingival presentation relative to local factors and radiographic findings allowed the clinician to initiate timely haematological investigations, leading to timely diagnosis. Future research should further explore the role of intraoral manifestations as early diagnostic indicators of haematologic malignancies, reinforcing the importance of comprehensive clinical assessment and timely referral for haematological evaluation. A multidisciplinary approach involving haematologists, dentists, and other specialists enabled timely diagnosis, safe management of oral conditions, and improved overall treatment outcomes, ultimately contributing to the patient's systemic stability.

CONCLUSION(S)

This case accentuates the pivotal role of dental professionals in early detection of life-threatening systemic diseases. Gingival enlargement especially when atypical, generalised, or unresponsive to routine periodontal therapy must always raise suspicion of underlying haematologic pathology. Prompt referral and collaborative management can significantly influence outcomes, although the aggressive nature of acute leukaemia may still carry a grave prognosis, as seen in this unfortunate case.

REFERENCES

[1] Francisconi CF, Caldas RJ, Martins LJO, Rubira CMF, Da Silva Santos PS. Leukaemic Oral Manifestations and their Management. Asian Pac J Cancer Prev. 2016;17(3):911-15. Doi: 10.7314/APJCP.2016.17.3.911

[2] Zimmermann C, Meurer MI, Grando LJ, Gonzaga Del Moral JÂ, Da Silva Rath IB, Schaefer Tavares S. Dental treatment in patients with leukemia. J Oncol. 2015;2015:571739. Doi: 10.1155/2015/571739.

[3] Hiraki A, Nakamura S, Abe K, Takenoshita Y, Horinouchi Y, Shinohara M, et al. Numb chin syndrome as an initial symptom of acute lymphocytic leukemia: Report of three cases Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1997;83:555-61.

[4] Lupi SM, Rodriguez Y Baena A, Cervino G, Todaro C, Rizzo S. Long-term effects of acute myeloid leukemia treatment on the oral system in a paediatric patient. Open Dent J. 2018;12(1):230-37. Doi: 10.2174/1874210601812010230.

[5] Sepúlveda E, Brethauer U, Fernández E, Cortés G, Mardones C. Oral manifestations as first clinical sign of acute myeloid leukemia: Report of a case. Paediatr Dent. 2012;34(5):418-21. PubMed PMID: 23211920.

[6] Schiffer CA, Stone RM. Acute myeloid leukemia in adults. In: Kufe DW, Pollock RE, Weichselbaum RR, et al., editors. Holland-Frei Cancer Medicine. 6th edition. Hamilton (ON): BC Decker; 2003. Chapter 127. https://www.ncbi.nlm.nih.gov/books/NBK12754/.

[7] Lowenberg B, Downing JR, Burnett A. Acute myeloid leukemia. N Engl J Med. 1999;341(14):1051-62. Doi: 10.1056/NEJM199909303411407.

[8] Yi M, Li A, Zhou L, Chu Q, Song Y, Wu K. The global burden and attributable risk factor analysis of acute myeloid leukemia in 195 countries and territories from 1990 to 2017: Estimates based on the global burden of disease study 2017. J Hematol Oncol. 2020;13(1):72. Doi: 10.1186/s13045-020-00908-z.

[9] Niederwieser D, Hasenclever D, Berdel W, Biemond BJ, Al-Ali H, Chalandon Y, et al. Hematopoietic cell transplantation for older acute myeloid leukemia patients in first complete remission: Results of a randomized phase III study. Haematologica. 2025;110(1):68-77. Doi: 10.3324/haematol.2024.285879.

[10] Sharan J, Mohapatra S, Chhabra G, Padhi S, Biswal S, Barhate UH, et al. Gingival hyperplasia: An initial oral manifestation of acute myeloid leukemia. J Indian Soc Periodontol. 2023;27(2):201-06. Doi: 10.4103/jisp.jisp_54_22.

[11] 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(6):664-68. Doi: 10.1902/jop.2002.73.6.664.

[12] Cooper CL, Loewen R, Shore T. Gingival hyperplasia complicating acute myelomonocytic leukemia. J Can Dent Assoc. 2000;66(2):78-79. PubMed PMID: 10730004.

[13] Dreizen S, McCredie KB, Keating MJ, Luna MA. Malignant gingival and skin "infiltrates" in adult leukemia. Oral Surg Oral Med Oral Pathol. 1983;55(6):572-79. Doi: 10.1016/0030-4220(83)90373-0.

[14] Anil S, Samaranayake LP, Nair RG, Beena VT. Gingival enlargement as a diagnostic indicator in leukaemia. Case report. Aust Dent J. 1996;41(4):235-37. Doi: 10.1111/j.1834-7819.1996.tb04865.x.

[15] Long RG, Hlousek L, Doyle JL. Oral manifestations of systemic diseases. Mt Sinai J Med N Y. 1998;65(5–6):309-15. PubMed PMID: 9844357.

[16] Bhambal A, Shrivastava H, Naik S, Nair P, Saawarn N. Oral manifestations of systemic leukemia-first sign of presentation. J Indian Soc Periodontol. 2021;25(4):347-349. Doi: 10.4103/jisp.jisp_551_20.

[17] Hou G, Huang J, Tsai C. Analysis of oral manifestations of leukemia: A retrospective study. Oral Dis. 1997;3(1):31-38. Doi: 10.1111/j.1601-0825.1997.tb00006.x.

[18] Suspected cancer: Recognition and referral [Internet]. London: National Institute for Health and Care Excellence (NICE); Published: 23 June 2015, Last updated: 15 April 2026. (National Institute for Health and Care Excellence: Clinical Guidelines). Available from: http://www.ncbi.nlm.nih.gov/books/NBK555330/ PubMed PMID: 32212590.

PARTICULARS OF CONTRIBUTORS:

1. Postgraduate Student, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.
2. Head, Professor and Guide, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.
3. Lecturer, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.
4. Lecturer, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.
5. Postgraduate Student, Department of Periodontology, AMC Dental College, Ahmedabad, Gujarat, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Prachiti Chaulkar,
B2, Sweta Park Society Manjalpur, Vadodara-390011, Gujarat, India.
E-mail: pchaulkar66@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Feb 10, 2026
- Manual Googling: May 02, 2026
- iThenticate Software: May 05, 2026 (5%)

ETYMOLOGY: Author Origin

EMENDATIONS: 8

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Jan 27, 2026**
Date of Peer Review: **Feb 28, 2026**
Date of Acceptance: **May 07, 2026**
Date of Publishing: **Aug 01, 2026**