

## REVIEW ARTICLE

# THE ORAL PERCEPTION OF LEUKEMIA: AN INSIGHT INTO THE MALADY

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### ABSTRACT:

The presence of symptoms in the oral cavity reveals unnoticed grave systemic pathological disorders. Reliant on the oral exhibitions, the dental practitioners must consider the potential presence of general pathologies. Hence the acquaintance and comprehensive understanding of systemic pathologies and their oral manifestations are of paramount prominence to dental practitioners as they may prove to be a substantial aid in the initial and rapid conclusion of the diagnosis. Leukemia is a general malignant neoplasm which is habitually instigated with existence and occurrence of lesions in the oral cavity followed by the appearance of the systemic manifestations. The oral findings of the disease include the pastiness of the mucosa with unembellished bleeding in the gingiva, severe hyperplastic gingiva along with ulcerative lesion and petechiae. Owing to the severity of the disease, dental team must deliver an undivided attention to the patient. The core purpose of the article is to assess each facet associated with the oral picture of leukemia.

Key Words: Oral manifestations; leukemia; ulcerations; systemic diseases

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### INTRODUCTION:

Leukemia has been designated as a hematological malady that is instigated by thriving white blood cell-creating tissues subsequently leading to a noticeable upsurge in circulating undeveloped or irregular white blood cells.<sup>1</sup>The pathology ascends from a stem cell depicted by a chaotic proliferation of neoplastic cells. It is characterized by the occurrence of a process referred to as apoptosis which results in a significant decline of usual hematopoietic cells thereby leading to cytopenia.<sup>2</sup>The cytopenia leads to severe bleeding and if left untreated may lead to death.<sup>3</sup> The core root leading to leukemia is still indefinite, however, amplified risk is linked with hefty dosages of radiation, particular perilous chemicals, and infectious diseases caused by EBV or human lymphotropic virus. Higher risk is also associated with the abuse of cigarettes.<sup>4</sup>

Leukemia has been categorized centered on the initial progression of the pathology into either acute or chronic and the prime hematopoietic cell involved which is either myeloid or lymphoid. They are as classified as mentioned in table 1.

**TABLE 1:** Classification of leukemia

ACUTE MYELOGENOUS LEUKEMIA (AML)
CHRONIC LYMPHOCYTIC LEUKEMIA (CLL)
CHRONIC MYELOGENOUS LEUKEMIA (CML)
ACUTE LYMPHOCYTIC LEUKEMIA (ALL)

### CLINICAL FEATURES – SYSTEMIC AND ORAL:

Acute leukemia has been instituted to be enormously common in teenagers and young generation while chronic leukemia has been instituted to be enormously common in the mature age groups. While the acute form of the pathology is more severe, chronic leukemia has a relatively less distinct marrow catastrophe thereby leading to sluggish passage that customarily lasts a few years. Systemic symptoms include flu-induced fever, mass loss, faintness, agony in muscles, a comprehensive bump in the lymph nodes, petechial patches and lesions in the skin and mucous membranes.<sup>5</sup> Acute myelogenous leukemia symptoms and acute lymphocytic leukemia symptoms are analogous, but a high occurrence of involvement of central nervous system is observed with acute lymphocytic leukemia.<sup>6</sup> Oral manifestations of leukemia can be witnessed in all the forms; however, they are relatively more common in subjects suffering from the acute form. Burket, in his book, reported oral lesions in 65% of the patients suffering from leukemia. The commonly observed oral manifestations are as follows:

**A) Petechiae, ecchymosis, and Gingival bleeding:** The presence of petechiae, ecchymosis, and gingival bleeding is ascribed to the thrombocytopenia which in turn is caused by the clamping down of the bone marrow.<sup>7</sup> The occurrence and the severity of gingival bleeding is more commonly observed in acute leukemia due to the ulcerated epithelium and tissue necrosis.<sup>8</sup> The presence of ecchymosis cannot be predominantly linked to leukemia since it can be

observed in a variety of disorders like liver pathology, trauma, renal disorders etc.<sup>9</sup>

- B) Gingival Enlargement and Hypertrophy:** The augmentation of the gingival tissue is distinguished due to leukemic cell intrusion and aggravated by local provocative circumstances such as bad hygiene and heavy masticatory forces<sup>10</sup> and general situations such as hormonal variations or pharmaceutical rehabilitation.<sup>11</sup> The enlargement is ordinarily generalized and the gingival tissue is apparently profound red, swampy and oedematous.<sup>12</sup> The hypertrophy is unceasing and encompasses the entire gingival tissue along with the interdental papilla.
- C) Oral Ulceration:** Ulcerations in the oral cavity are very ordinarily comprehended in subjects suffering from leukemia since the immunity of the subject loses the capability to battle microbial flora. Ulcers seem tremendously deep and perforated out with a darkish bleached necrotic base.<sup>13</sup> The common locations for the ulcerations comprise of the gingival soft tissue and the palate.
- D) P.D.L. and Alveolar bone:** A staunch destruction of the alveolar bone is observed in all forms of leukemia. However, studies have shown that the

acute type has more serious bone loss as compared to the chronic form. There is a marked slackening off of teeth as an outcome of necrosis of the P.D.L.

- E) Oral Infections:** There is an augmented peril in subjects suffering from leukemia to suffer from bacterial, viral and fungal infections. The generally detected infections are oral candidiasis, mucosal infection, and H.S.V. infection. Up to 85% of the middle age group subjects suffering from leukemia are HSV seropositive and in most cases, HSV infection befalls from recrudescence of latent virus. Subjects suffering from leukemia should be verified for HSV serology before undergoing any sort of chemotherapy.
- F) Neurologic Signs:** The neurologic signs in the oral cavity indicative of leukemia include dysphagia, trismus, bulbar palsy, trigeminal and facial paralysis and facial paresthesia. Few incidences of the numb chin syndrome have also been detected.

**MANAGEMENT:**

The appropriate considerations in the dental treatment of patients with leukemia have been described by FA Mancheno and his team in the following table 2.

**TABLE 2:** Appropriate considerations in dental treatment of patients with leukemia

Before dental treatment	During dental treatment
<ol style="list-style-type: none"> <li>1. Dental treatment must be accomplished after a sound session with the professional.</li> <li>2. It is imperative that a comprehensive history is collected, a widespread dental assessment and a thorough radiographical examination.</li> <li>3. Oral management must be performed prior to executing chemotherapy and radiotherapy.</li> <li>4. Subjects experiencing long standing remission are permitted to endure dental treatment, while on the other hand subjects with progressive or lapsed disease must accept comforting treatment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Consider the probable bleeding predisposition</li> <li>2. Consider the augmented threat of infection.</li> <li>3. Consider the augmented threat of evolving osteonecrosis of the mandible.</li> <li>4. Keep track of the anemic condition</li> <li>5. Consider the use of corticosteroids treatment.</li> </ol>

**TABLE 3:** Treatment of oral manifestations of Leukemia

Oral manifestations	Management
Gingival bleeding	<ol style="list-style-type: none"> <li>1) Judicious utilization of mouth rinses</li> <li>2) Maintaining oral hygiene through soft strokes of a gentle brush.</li> </ol>
Gingival enlargement	<ol style="list-style-type: none"> <li>1) Judicious utilization of topical antiseptic mouth washes like chlorhexidine.</li> <li>2) Maintaining oral hygiene through soft strokes of gentle bristles of the brush.</li> </ol>
Oral Ulceration	<ol style="list-style-type: none"> <li>1) Application of Topical steroid (fluocinonide) in the gelatinous form applied every 6 hours.</li> <li>2) Application of Antibiotic therapy</li> </ol>
Oral Infections	<ol style="list-style-type: none"> <li>1) Judicious utilization of topical antiseptic mouth washes like chlorhexidine.</li> <li>2) Application of Antibiotic therapy</li> <li>3) Application of antivirals and antifungals</li> </ol>
Trismus	<ol style="list-style-type: none"> <li>1) Physiological and psychiatric treatment.</li> </ol>

### CONCLUSION:

Typically the principal signs of leukemia are noticeable in the mouth, and thereby subjects' habitually explore for dental treatment with the understanding that the pathology is just restricted to the oral cavity. Hence the dentist is usually the primary health care professional approached with a case of leukemia. Thus it is crucial for the professional to be utterly skilled to undoubtedly distinguish oral characteristics of leukemia.

### REFERENCES:

1. Dean AK, Ferguson JW, Marvan ES. Acute leukaemia presenting as oral ulceration to a dental emergency service. *Australian Dental Journal* 2003; 48 (3):195-197.
2. Franch AM, Esteve CG, Perez, GS. Oral manifestations and dental management of patient with leukocyte alterations. *J Clin Exp Dent*. 2011; 3(1):e53-59.
3. Demirer S, Ozdemir H, Sencan M, Marakoglu I. Gingival Hyperplasia as an Early Diagnostic Oral Manifestation in Acute Monocytic Leukemia: A Case Report. *Eur J Dent*. 2007 Apr; (2):111-114.
4. Greenberg MS, Glick M, Ship JA. (Editors.) *Burket's Oral Medicine*. 11th edition. Hamilton. BC Decker Inc. 2008; 400-403.
5. Deliverska EG, Krasteva A. Oral signs of leukemia and dental management: literature data and case report. *J of IMAB* 2013; 19(4):388-391.
6. Wu J, Fantasia JE, Kaplan R. Oral manifestations of acute myelomonocytic leukemia: a case report and review of the classification of leukemias. *J Periodontal*. 2002 Jun; 73(6):664-668.
7. Brenneise CV, Mattson JS, Commers JR. Acute myelomonocytic leukemia with oral manifestations: Report of a case. *J Am Dent Assoc* 1988; 117:835-7.
8. Presant CA, Safdar SH, Cherrick H. Gingival leukemic infiltration in chronic lymphocytic leukemia. *Oral Surg* 1973; 36:672-4.
9. Silva BA, Siqueira C, Castro P, Araújo SS, Volpato LE. Oral manifestations leading to the diagnosis of acute lymphoblastic leukemia in a young girl. *J Indian Soc Pedod Prev Dent*. 2012 Apr-Jun; 30(2):166-168.
10. Greenberg M.S, Glick M. *Burket's Oral Medicine: Diagnosis & Treatment*. 10th edition. McGraw Hill Education; 2003.
11. Cooper CL, Loewen R, Shore T. Gingival hyperplasia complicating acute myelomonocytic leukemia. *J Can Dent Assoc*. 2000 Feb; 66(2):78-9.
12. Regezi JA, Scubba JJ, Jordan Richard CK. *Oral Pathology: Clinical Pathologic Correlations*. 4th edition. Elsevier Publication; 2003.
13. Neville BW, Damm DD, Allen CM, Bouquot JE. *Oral and Maxillofacial Pathology*. 3rd edition. Elsevier Publication; 2009.

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