

# The Crucial Role Of Dentist In Diagnosing Acute Lymphocytic Leukemia In Children: A Casereport And Comprehensive Review

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## **Abstract:**

*This paper underscores the significant role of dentists in diagnosing acute leukemia in children through the recognition of oral manifestations associated with the disease. Dentists, as frontline healthcare providers, have a unique vantage point during routine dental examinations to identify various oral signs indicative of systemic conditions like leukemia. This review aims to elucidate the diverse oral manifestations of acute leukemia, highlight the diagnostic process involving dentists, emphasize the importance of early detection, and underscore the need for multidisciplinary collaboration in managing pediatric leukemia cases.*

**Keywords:** Dentists, Acute Leukemia, Children, Oral Manifestations, Diagnosis, Early Detection

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## **I. Introduction:**

Leukemia was first described by Virchow and Bennet in 1847. It is a malignant disease of blood forming tissues such as bone marrow and causes a large number of immature blood cells to be produced and enter in blood stream. Leukemia constitutes one-third of all childhood cancers, 75-percent of those pediatric patients suffer from Acute Lymphocytic Leukemia (ALL).

ALL is cancer of lymphoid line of blood cells leading to development of large numbers of immature lymphocytes. Symptoms may include fever, feeling tired, pale skin color, easy bleeding or bruising, enlarged lymph nodes and pain in bones<sup>1</sup>. ALL progresses rapidly and leads to death within weeks or months if is not diagnosed and treated early. Oral manifestations are early presenting feature and this paper highlights the importance of dentist in diagnosis of leukemia.

Oral manifestations are the first signs of many systemic diseases. Acute Lymphocytic leukemia(ALL) in children is one such disease which may present as gingival enlargement as first indicator. So, familiarization of dental professionals with it will lead to early diagnosis resulting in early treatment and prevention of morbidity and mortality. This paper summarizes a interesting case of ALL diagnosed on basis of peculiar gingival enlargement and important role of dentist in diagnosis and referral to hemato-oncologist.

## **II. Case Report:**

An eleven year old girl from low socioeconomic group reported to the outpatient department of Oral Medicine and Radiology with swollen gums and difficulty in chewing since past one month. Patient also gave history of spontaneous bleeding from gums.

Medical history of patient also reported loss of appetite and weight loss in past few months. However, there was no history of intake of any medications for the complaint or any other chronic illness.

On physical examination patient appeared poorly nourished with thin built. There was marked pallor of palpebral conjunctiva. Deep cervical lymph nodes were enlarged and indurated.

On oral examination pallor of oral mucosa and gingiva was observed. There was generalized gingival enlargement involving buccal, labial, palatal and lingual aspect of marginal and attached gingiva of both maxillary and mandibular arches. The gingiva was swollen, shiny and pale pink in color. The gingival enlargement extended to the one-third of the crown portion of teeth. The patient had fair oral hygiene and there were no deposits on teeth.

On palpation gingiva was firm in consistency and there was slight bleeding on provocation. Pseudopockets were present. Orthopantomogram did not show any signs of bone involvement. Inflammatory gingival enlargement, drug induced enlargement, conditioned gingival enlargement, and systemic gingival enlargement were considered in the differential diagnosis. Inflammatory enlargement was ruled out as there was minimal inflammatory component (plaque and calculus). Drug-induced enlargement was ruled out as there was

no history of intake of any medications. features . However ,weight loss and loss of appetite along with the progressive gingival overgrowth and young age of patient arose suspicion of Acute Lymphocytic leukemia. So, patient was sent for complete hematologic examination and diagnosis of Acute Lymphocytic leukemia was confirmed . Patient was referred to Hemato -oncologist for further management.



**Intraoral Photograph showing Leukemic Gingival Enlargement**

### **III. Discussion:**

Acute leukemia represents a significant health concern among children, necessitating early diagnosis and timely intervention for improved outcomes. While the primary responsibility for diagnosing leukemia lies with hematologists and oncologists, dentists play a crucial role in the early identification of the disease through the observation of oral manifestations during routine dental examinations. This article explores the pivotal role of dentists in recognizing and referring cases of acute leukemia in pediatric patients, thereby contributing to timely diagnosis and multidisciplinary management.

**Oral Manifestations of Acute Leukemia:** Acute leukemia can manifest in various oral presentations, reflecting the systemic nature of the disease and its impact on hematopoietic and immune functions. These manifestations may include gingival hyperplasia, mucosal bleeding, petechiae, ulcerations, and infections. The infiltration of leukemic cells into oral tissues, along with hematologic disturbances, contributes to these clinical findings. Dentists, with their expertise in oral pathology, are well-positioned to recognize these signs during routine dental examinations and prompt further evaluation<sup>1,2</sup>. 500 cases in 1980, Stafford and associates also concluded that most oral manifestations were more common in patients with acute leukemia than in those with chronic leukemia<sup>3</sup>. Oral changes in patients with chronic leukemia are nonspecific in contrast to those in patients with acute leukemia<sup>4</sup>.

**Diagnostic Process:** Dentists contribute significantly to the diagnostic process through comprehensive oral examinations, meticulous patient history-taking, and collaboration with other healthcare professionals. Upon encountering suspicious oral findings or symptoms suggestive of leukemia, dentists can play a proactive role in referring patients to pediatricians or hematologists for further evaluation. This may involve laboratory investigations such as complete blood count (CBC), peripheral blood smear analysis, bone marrow aspiration, and imaging studies. The integration of dental professionals into the diagnostic pathway enhances the likelihood of early detection and intervention<sup>4,5</sup>.

**Role of Dentists in Early Detection:** Routine dental check-ups serve as crucial opportunities for dentists to detect oral manifestations of leukemia in children. By maintaining a heightened awareness of the oral signs of systemic diseases and staying abreast of emerging evidence, dentists can contribute to the early detection of leukemia. Additionally, patient education initiatives aimed at raising awareness of the link between oral health and overall well-being empower parents to seek timely medical attention if they observe any concerning symptoms in their children. Dentists' vigilance and proactive approach are paramount in facilitating early diagnosis and improving patient outcomes<sup>2,7</sup>.

**Multidisciplinary Collaboration:** Effective management of pediatric leukemia necessitates a multidisciplinary approach involving dentists, pediatricians, hematologists, oncologists, and other allied healthcare professionals. Dentists, as integral members of the healthcare team, collaborate closely with their counterparts to ensure comprehensive evaluation, treatment planning, and supportive care. This collaborative framework enables the seamless integration of dental considerations into the overall management strategy, thereby optimizing patient outcomes and quality of life. Regular communication and interdisciplinary coordination are essential components of this collaborative model<sup>8,9</sup>. Literature suggests that gingival hyperplasia resolves completely or at least partly with effective leukemia chemotherapy<sup>10</sup>. Periodontal treatment of leukemia patients necessitates the physician's consent. The scaling and root planning should be covered by prophylactic antibiotics<sup>12</sup>.

#### **IV. Conclusion:**

In conclusion, dentists play a pivotal role in diagnosing acute leukemia in children by recognizing and interpreting oral manifestations associated with the disease. Through their expertise in oral pathology and active involvement in routine dental care, dentists contribute to the early detection, referral, and multidisciplinary management of pediatric leukemia cases. The collaborative efforts of dental professionals, alongside other healthcare providers, are instrumental in achieving timely diagnosis, initiating appropriate interventions, and improving overall patient outcomes. Embracing a multidisciplinary approach underscores the significance of dentists' contributions to the comprehensive care of pediatric leukemia patients.

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