

Diagnosis of Acute Leukemia from Oral Manifestation

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Leukemia is a hematological malignant disease with various clinical symptoms. Due to the fatal nature of the disease, early detection is important. Oral manifestations include ulcers and gingival enlargement with bleeding. Moreover, myeloid sarcoma or opportunistic infections may also occur. This report introduces a 31-year-old male presenting with generalized gingival enlargement with bleeding and another 81-year-old female with neoplasm on the left retromolar area. Both were diagnosed as acute monocytic leukemia. These cases implicate that gingival enlargement or mucosal lesion in the oral cavity may represent underlying systemic diseases. Related to this, it has to be reminded that making timely diagnosis and referral according to the clinical findings is crucial.

Key Words: Diagnosis; Leukemia; Oral manifestations

Introduction

Leukemia is a hematological malignancy caused by the circulation of immature leukocytes or abnormal white blood cells. Systemic clinical manifestations of leukemia include fatigue, anemia, lymphadenopathy, recurrent infection, bone and abdominal pain, bleeding, and purpura¹⁾. Signs and local symptoms in the oral cavity include neutropenic ulcers, spontaneous gingival bleeding, and petechial hemorrhage of palate. Abnormal

white blood cells penetrate into the gingiva and cause gingival hypertrophy and proliferation²⁾. They occur frequently as acute leukemic forms, particularly acute monocytic leukemia and acute promyelocytic leukemia¹⁾. In early phase, the interdental papilla grows extensively in reddish blue colour, usually with a gravel pattern, and occasionally is firm upon palpation. Myeloid sarcoma or opportunistic infections such as *Candida Albicans* may also occur³⁾.

This report describes two patients who presented

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with generalized enlargement or ulcerative neoplasm of gingiva as a sign of acute leukemia. We also reviewed the oral manifestations and differential diagnosis of leukemic disease.

Case Report

1. Case 1

A 31-year-old male visited the clinic with a chief complaint of gingival enlargement and bleeding. Although he had no specific past medical history, sudden onset of fatigue and weight loss occurred from 2 months ago. Generalized gingival enlargement with bleeding tendency was observed on clinical examination (Fig. 1). In the initial interview, he did not take any medicine which is causative to gingival enlargement. Suspecting a systemic disease, a complete blood count for differential diagnosis was performed. The test results revealed a markedly elevated white blood cell (WBC) count ($123.70 \times 10^3 / \mu\text{l}$). According to the clinical and laboratory findings, the patient was presumed to have acute leukemia and referred to the Department of Hematology. Following the admission, further examination and treatment for leukemia were conducted and supragingival scaling was performed to control gingival bleeding. Gingival enlargement and bleeding tendency decreased at 2 weeks after the initiation of chemo-

therapy. However, he expired after 3 months from initial diagnosis.

2. Case 2

An 81-year-old female was referred to the outpatient clinic with a chief complaint of pain and swelling on left retromolar area, limitation of mouth opening, and odynophagia. She had history of dementia, diabetes and hypertension. Ulcerated proliferative mass like lesion about 1.5 cm in diameter with bleeding tendency was observed at clinical examination (Fig. 2). The provisional diagnosis was made as epithelial malignancy and incisional biopsy was performed without any blood test. Two weeks later, before the review of the lab test and biopsy, she visited the emergency room with general weakness and dyspnea. Complete blood count was performed immediately. Results revealed highly elevated WBC count ($410.79 \times 10^3 / \mu\text{l}$). She was suspected to have acute leukemia,



Fig. 2. Clinical photographs of second patient showing ulcerated proliferative lesion on left retromolar area.

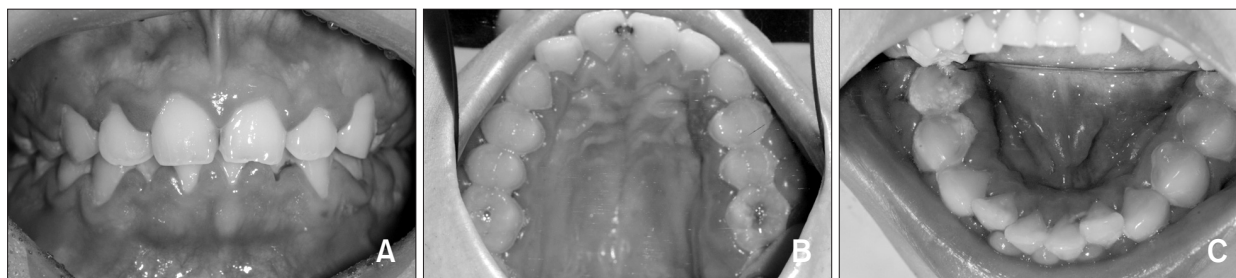


Fig. 1. Clinical photographs (A, frontal; B, upper occlusal; C, lower occlusal) of first patient showing generalized gingival enlargement.

subsequently she expired due to sudden cardiac arrest. Final histological result included malignant tumor with histiocytic neoplasm, fungal hypha which was morphologically *Candida*. Tumor cells expressed CD68, lysozyme positive, indicating the possibility of histiocytic tumor.

Discussion

Gingival overgrowth may be an inflammatory response associated with poor oral hygiene, but it may be a significant indicator of general conditions⁴. In case of poor oral hygiene which causes secondary inflammation, it is important to make differential diagnosis because gingival enlargement is accompanied by gingival redness, swelling, and bleeding tendency⁵. The causes of generalized gingival enlargement associated with systemic conditions are various, but most of them are caused by excessive connective tissue formation, which is similar to normal gingival tissue. Diseases related to generalized gingival hyperplasia include gingival fibromatosis, drug-induced gingival enlargement, hyperplastic gingivitis, Wegener's granulomatosis, hypothyroidism, and gingival hypertrophy due to leukemia⁶. In the first case, gingival hyperplasia was noted in both jaws, especially in the anterior area. The interdental papilla was bulbous, lacked stippling, erythematic area with bleeding. Because he had no past medical history, hyperplastic gingivitis, Wegener's granulomatosis or acute leukemia were considered as a provisional diagnosis. According to the blood test, the patient was diagnosed by acute monocytic leukemia.

Gingival infiltration of leukemic cells is most commonly seen in acute monocytic and myelomonocytic leukemia^{1,7}. Dreizen et al.⁸ evaluated 1,076 leukemic patients and found gingival involvement in 66.7% of M5 patients, 18.5% of M4 patients and 3.7% of M1 and M2 patients. Barrett

explained the selective infiltration of gingival tissues as being due in part to the inherent extravascular infiltrative properties of the leukemic cell, and in part due to the unique gingival microanatomy⁹. Furthermore, Dreizen et al.⁸ reported that both the apparent acceleration in the mitotic rate and the absolute number of leukemic cells are key factors in initiating this infiltration.

In the second case, proliferative lesion was localized on left retromolar area and blood test was missed. We waited only for the results of biopsy without any other procedure, and after 2 weeks histological examination revealed hematologic malignancy related to germ cell tumor, malignant lymphoma, myelodysplasia, or leukemia. The possibility of histiocytic sarcoma could be considered as a priority. It may be associated with histiocytic sarcoma, germ cell tumor, malignant lymphoma, myelodysplasia or leukemia. This sarcoma seemed an extramedullary manifestation of acute myeloid leukemia; in other words, it is a solid collection of leukemic cells occurring outside of the bone marrow.

Gingival enlargement in leukemic patients is known to disappear without any specific periodontal treatment¹⁰. Also a prominent remission was observed in gingival hyperplasia after chemotherapy. This shows that, in cases like AML, elimination of the factor initiating the gingival hyperplasia or maintaining the ideal systemic condition might give a full success in periodontal healing¹¹. Therefore, with chemotherapy, oral hygiene education should be provided to prevent gingival inflammation by microbial dental plaque. In the first case, supragingival scaling was performed with chemotherapy and gingival enlargement was reduced at 2 weeks later.

This report describes two patients presenting with gingival enlargement or gingival neoplasm as a sign of acute leukemia. It reminds that dentists should be aware of the importance of evaluating oral

manifestations of an underlying systemic diseases. Since dentists could be the first who detects the leukemia, they may find the patient right timing for treatment. Therefore dentists must be aware of unusual oral conditions and perform sufficient examination (clinical, radiological, and if needed histological or hematological) to make a proper diagnosis.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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