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Case Study

Langerhans Cell Histiocytosis: The First reported case from Palestine

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ABSTRACT

Langerhans cell histiocytosis (LCH) is a rare clonal neoplasm of the antigen presenting Langerhans cells. This case report presents a 29-years old Palestinian white male who visited the university clinic dentist with complaints of pain and gum recession of his posterior teeth. Panoramic radiography revealed radiolucent areas involving both the mandible and maxilla. Histologic examination of mandibular bone specimens confirmed the diagnosis of LCH. Mutation testing revealed that the presence of BRAF V600E somatic mutation in the specimen. The patient was referred to the oncology department to receive the appropriate treatment.

Keywords: Langerhans cell histiocytosis; Mandible; Maxilla; BRAF V600E.

1. INTRODUCTION

Langerhans cell histiocytosis (LCH) is a clonal neoplasm of the antigen presenting Langerhans cells in the skin, bone, lymph nodes and other organs [1]. LCH is a rare entity, particularly among adults where the reported incidence is 1-2 cases per million [2].

LCH can be either single- or multisystem depending on the disease ability to disseminate [2]. Accordingly, the severity of LCH can extend from a self-limiting to an aggressive fatal form [3]. In its single-system form LCH may occur as solitary bone lesions in the jaws. Oral cavity symptoms such as bleeding gum, loose teeth, and intraoral pain are usually the early manifestations of LCH [4].

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The pathogenesis of LCH may be related to the RAS-ERK signal transduction pathway as recurrent BRAF and MAP2K mutations have been observed in an ample number of cases [1].

Here we report a LCH case in a 29 years old adult male. This case is the first to be reported from our region and it underscores the dentist role in establishing for the diagnosis of the disease in its early stages.

2. CASE REPORT

A 29 years-old white male presented to the university clinic dentist with the complainits of pain and gum recession of his posterior teeth for the past 2 years. The patient has been previously treated by many local dentists as a periodontal disease. Thorough examination and routine panorama of the intraoral cavity revealed multiple radiolucent areas involving both the mandible and maxilla (Figure 1) and LCH was the provisional diagnosis. Excisional biopsy was performed for one of the mandibular lesions along with extraction of three affected teeth. Histologic examination of the specimens confirmed the diagnosis of LCH. Genomic DNA extracted from the specimens was tested for *BRAF* V600E mutation using allele-specific PCR as previously described [5] and the specimens were positive for the mutation. Meanwhile, the mutation was not encountered in the genomic DNA extracted from the patient's peripheral blood. Indicating the somatic origin of the mutation. The patient's blood indices demonstrated elevated eosinophil count (12%). The patient was referred to the oncology department to for further investigations and treatment.

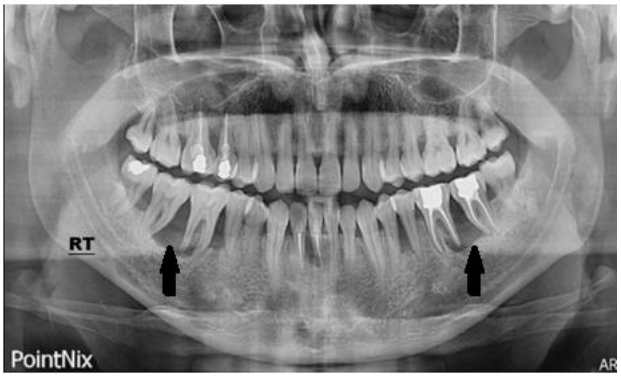

Fig 1: Intraoral panoramic radiograph. Arrows point to radiolucent lesions

3. DISCUSSION

LCH is the result of clonal proliferation of the antigen presenting Langerhans cells. The disease may be confined to a specific body area (i.e., single system form) or can disseminate and lead to the multisystem form. The presented case, however, needs further full body investigations for proper classification of the disease. In fact, oral symptoms are the earliest and sometimes the only manifestations observed in many reported LCH patients [4, 6, 7] . Therefore, the dentist is usually the first to encounter those patients and should be aware of, and consider LCH in the differential diagnosis.

Identification of the recurrent *BRAF* V600E mutation in the presented case and in a subpopulation of adult LCH patients by other investigators indicates that the proliferative potential of Langerhans cells could be attributed, at least in part, to abnormalities in the RAS-ERK signaling pathway [1, 8, 9]. Presence of the mutation has also been correlated with the immature state of the neoplastic Langerhans cells [1, 8]. Intuitively, *BRAF* mutation-positive LCH patients may benefit from available BRAF-targeting therapy. We, therefore, recommend testing LCH specimens for this mutation.

4. CONCLUSION

The present report describes a case of an adult-onset LCH. In many occasions the dentist plays an important role in first detecting the disease who should consider LCH in the differential diagnosis. Testing LCH specimens for *BRAF* V600E mutation to elucidate the pathogenic mechanism and guide therapy is also recommended.

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