ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)

IJDSIR : Dental Publication Service

Available Online at:www.ijdsir.com

Volume – 7, Issue – 6, December – 2024, Page No. : 15 - 20

Oral Juvenile Xanthogranuloma in A Child: Comprehensive Clinical, Radiological, Histological, and Immunohistochemical Profile of A Rare Entity

[1]Dr. Priyanka Mane, Third Year Post Graduate Student, Department of Pediatric & Preventive Dentistry, P.M.N.M Dental College & Hospital, Bagalkot, Karnataka

[2]Dr. Shivaprakash. P. K, Professor & HOD, Department of Pediatric & Preventive Dentistry, P.M.N.M Dental College & Hospital. Bagalkot, Karnataka

[3]Dr. Anjana Subash, Third Year Post Graduate Student, Department of Pediatric & Preventive Dentistry, P.M.N.M Dental College & Hospital. Bagalkot, Karnataka

Corresponding Author: Dr. Priyanka Mane, Third Year Post Graduate Student, Department of Pediatric & Preventive Dentistry, P.M.N.M Dental College & Hospital, Bagalkot, Karnataka

Citation of this Article: Dr. Priyanka Mane, Dr. Shivaprakash. P. K, Dr. Anjana Subash, "Oral Juvenile Xanthogranuloma in A Child: Comprehensive Clinical, Radiological, Histological, and Immunohistochemical Profile of A Rare Entity", IJDSIR- December – 2024, Volume –7, Issue - 6, P. No. 15 – 20.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Treatment of childhood caries and consequences of tooth injuries often overshadow other oral cavity pathologies in children, such as oral mucosal lesions (OMLs). Despite this, the prevalence of OMLs in children is not as uncommon as many clinicians might believe and the research shows incidence rates ranging from 4.1% to 69.5% [6]. Unfortunately, OMLs are often underestimated and underdiagnosed by dentists, pediatricians, dermatologists, and other medical specialists. This is concerning because some OMLs can signal or precede systemic diseases or disorders that could impact a child's development or even be life-threatening. Thus, it is crucial for practitioners to be well-informed about the types and prevalence of OMLs in the pediatric population for accurate diagnosis. Pediatric dentists, in particular, have a vital role in identifying, managing, and referring cases of oral mucosal lesions in children.

In this article, we present a case report of a 9-year-old boy who visited our department with a chief complaint of soft tissue over growth in the lower right back tooth region, which had persisted for 4-5 days.

Keywords: Oral Mucosal Lesions, Pigmentations, Hyperplasia, Neoplasia.

Introduction

Oral mucosal lesions in the mouth typically present as ulcerations, red and white lesions, pigmentations, or exophytic lesions and the accurate clinical classification of these lesions is crucial for diagnosis. Exophytic

lesions are characterized by pathologic growths that extend above the normal contours of the oral mucosa. These lesions can arise from various mechanisms, including hypertrophy, hyperplasia, neoplasia and fluid accumulation, making them challenging to assess clinically.

A national epidemiologic study by Zain et al. found that exophytic lesions account for 26% of all oral lesions [3]. Therefore, timely diagnosis should rely on systematic methods like decision trees rather than trial-and-error approaches [3, 4].

Exophytic lesions can be classified based on their surface texture (smooth or rough), type of base (pedunculated, sessile, nodular, or dome-shaped), and consistency (soft, cheesy, rubbery, firm, or bony hard) [1, 4]. Some tumors exhibit an endophytic growth pattern, characterized by a depressed, ulcerated surface with a raised, rolled border [3, 4]. Pain is not a reliable indicator of malignancy, and many oral cancers may be asymptomatic or cause only minor discomfort.

The tongue is the most common site for intraoral carcinoma, accounting for about 40% of all cases in the oral cavity [5]. These tumors most frequently occur on the posterior lateral border and ventral surfaces of the tongue, with the floor of the mouth being the second most common location and less common sites include the gingiva, buccal mucosa, & hard palate [3].

The lateral border of tongue and floor of the mouth, forming a horseshoe-shaped region of oral mucosa, are at higher risk for cancer development. This is partly because carcinogens can mix with saliva, pool in the floor of the mouth, and constantly bathe these areas. Additionally, the thin, non-keratinized mucosa in these regions offers less protection against carcinogens. Also the exophytic growths originating from the mandible and extending into the oropharynx are particularly concerning, as they suggest significant local extension or invasive potential. Early and accurate diagnosis is essential for effective management and to prevent complications related to growth extension into the oropharynx. Batsakis' literature review revealed that 52.3% of minor salivary gland tumours were malignant [2]. Although the incidence of minor salivary gland neoplasms in children and adolescents is low, their potential for malignancy should not be underestimated.

Case Report

A healthy 9-year-old boy presented to the Department of Pediatric and Preventive Dentistry at P.M.N.M. Dental College and Hospital, Bagalkot, with a chief complaint of soft tissue over growth in the lower right back tooth region, which had persisted for 4-5 days. There was no significant medlical or habitual history reported. The parents revealed that the patient was apparently alright 6 months ago, later a small overgrowth on the right lingual side of the mouth was first observed in relation to 85 & 46 area. The family had sought treatment at a private clinic, where the overgrowth was reduced in size. Later, the patient experienced a soft tissue growth that has increased gradually in size, accompanied by reduced mouth opening over the past 4-5 days. Additionally, the patient reported pain during mouth movements, including opening and closing, and also while having food.

Upon extra-oral examination, mild facial asymmetry was observed in the right lower third of the face. This asymmetry extended vertically from the lower border of the mandible to approximately 5 cm towards the midline, and horizontally from the angle of the mandible to the para symphysis region. The ears, eyes, nose and temporomandibular joint (TMJ) showed no abnormal findings. On palpation, the swelling confirmed the observed asymmetry and it was firm in consistency,

tender on palpation, non-fluctuant and did not present with any indentation or lymphadenopathy.

On intra-oral examination, the mouth opening was restricted to 6 mm (trismus), while bilateral occlusion was maintained. A proliferative growth was observed on the right lingual side of the mouth in relation to 85 & 46 and extending to floor of the mouth, measuring approximately 4x4 cm in size, covered with pseudomembranous slough. No bleeding or pus discharge was present. The uvula, buccal mucosa, tongue and gingiva appeared normal. On palpation, the findings were consistent with those observed during inspection: the growth was firm in consistency, tender to the touch, and showed no signs of pus or bleeding.

The patient was advised to undergo an MRI of the neck, focusing on the area from the floor of the mouth to the clavicle. The MRI with contrast revealed a large, multi-lobulated enhancing mass lesion, approximately 42x40x48 mm, located in the right posterior floor of the mouth. The lesion displaced the tongue medially to the left without infiltrating it. There was no definitive erosion of the mandibular body. Posteriorly and laterally, the lesion extended into the masticatory space, and inferiorly, it is adjacent to the submandibular gland and the genioglossus muscle. The findings were suggestive of a neoplastic tumour, likely originating from a minor salivary gland. Suggested biopsy/histopathological report correlation.

Since MRI results were not conclusive it was planned for incisional biopsy under general anaesthesia and biopsy was sent for histopathological examination. The histopathological examination confirmed that biopsy features were suggestive of oral juvenile xanthogranuloma. The sections studied through tissue showed ulcerated epithelium, sub epithelium showed lesion displaying predominantly histiocytes arranged in lobules, sheets and nest. Interspersed foamy cells with vacuolated cytoplasm and vesicular nucleus and extensive fibroblast proliferation were observed. Amidst these area chronic inflammatory cell infiltrates were seen and the periphery showed exudate material deposit and intervening stroma showed congested blood vessels. No evidence of subnormal mitosis or bizzar cells were there in the section studied. Immunohistochemistry was performed (Table 1). Negative reactions were obtained with CD1a, CD35 and CD31, showed positivity in histiocytes cells for CD68, and S100 showed occasional cells positivity. This immuno-histochemical profile confirmed the diagnosis of JXG.

Discussion

Juvenile xanthogranuloma (JXG) is a benign histiocytic disorder marked by yellow-red skin nodules and occasional extra cutaneous lesions. It typically appears in early childhood, with over 15-20% of cases present at birth and 75% occurring within the first year. About 10% of cases can emerge in adulthood, known as adult xanthogranuloma.[7] JXG is more common in males during childhood, but there is no sex prevalence in adults.

Juvenile xanthogranuloma (JXG) was first described by Adamson in 1905 as "multiple congenital xanthomis," referring to single or multiple cutaneous nodules in infants.[8] The condition has undergone several name changes, including nevoxanthoendothelioma, juvenile exanthoma, and congenital tuberous xanthoma, before settling on "juvenile xanthogranuloma."[9]Adamson and Crocker noted mucosal lesions in the oral cavity in 1905 and 1951, respectively, but without histological evidence. The first histologically confirmed case was reported by Kjaerheim and Stokke[10] in 1974, involving a gingival lesion in a 12-year-old girl. The cause of JXG is unknown, but it is believed to be a granulomatous

reaction to an unknown stimulus. Despite the lack of exact pathogenesis, JXG is considered a benign, self-limiting reactive process rather than a neoplastic one.

The current case is classified as extracutaneous JXG with an unusual mucosal presentation. Unlike cutaneous JXG, extracutaneous JXG does not typically regress spontaneously. Managing these lesions is more complex and may involve surgery, chemotherapy, radiotherapy, and immunosuppression. Chemotherapy and radiotherapy are often used for symptomatic, un-resectable, or incompletely resected extracutaneous lesions. Oral lesions have a recurrence rate of 14%, likely due to incomplete excision [12]

Clinical and histopathological misdiagnosis of oral JXG can occur due to its rarity and variability in presentation. Clinically, JXG can resemble other neoplastic or cystic lesions, although Langerhans cell histiocytosis (LCH) was excluded due to the lack of bone involvement. JXG is typically asymptomatic and shows no inflammation unless traumatized. Histologically, JXG is characterized by foamy cells and, often, Touton giant cells. However, less common variants, such as non lipidized and mononuclear JXG, may mimic malignant mesenchymal neoplasms. Mononuclear JXG, which lacks giant cells, can be mistaken for LCH, melanoma, or balloon cell nevus. Accurate diagnosis requires thorough clinical evaluation, histopathological analysis, and immunohistochemistry.

Our case exhibited features clinically suggestive of oral JXG. While routine H-E slides provided a microscopic diagnosis, additional immunohistochemical tests were conducted to better document and confirm the diagnosis. The staining revealed positive CD68 and occasional S100 positivity, with negative results for CD1a, CD35, and CD31. This aligns with a literature review by Carolina P M et al, [22] where 68.9% of 29 studies used immuno-histochemical analysis, finding CD68 and S100 to be the most common antibodies used. All tested cases showed CD68 positivity and CD1a negativity, with S100 showing variable positivity in only three studies.

Oral JXG presents diagnostic challenges as it can mimic various oral diseases, both benign and malignant, such as pyogenic granuloma, papilloma, or mucoepidermoid carcinoma. Misdiagnoses are common, especially for lesions near dental elements. A biopsy is crucial for accurate diagnosis, revealing typical JXG features like foamy cells and Touton giant cells. When histology does not show these features, as with the mononuclear variant, immunohistochemistry is essential. In our case, the immuno-histochemical profile was positive for CD68 and negative for CD1a, while other markers like S-100 and CD45 were not helpful for diagnosis.

The histologic differential diagnosis of juvenile xanthogranuloma (JXG) includes both benign and malignant conditions. Key distinctions include Langerhans cell histiocytosis (LCH), which has vesicular nuclei, Birbeck granules, and is positive for CD1a and S-100, unlike JXG, which is negative for CD1a. Eosinophilic granuloma can be ruled out by Birbeck granules and CD1a positivity. Giant multinucleate cells and granulation tissue might suggest an infectious disease, requiring additional stains (PAS, acid-fast bacillus, Gomori's silver, Gram, and Fite's) to exclude infection. Spindle-shaped neoplasms like spindle cell carcinoma or fibrosarcoma can be differentiated by immunohistochemistry, where lack of CD68 expression helps exclude these. Mononuclear JXG, lacking multinucleated cells, should be differentiated from melanocytic lesions using an S100-negative profile. For suspected epithelial or muscle malignancies, pan-cytokeratin and muscle actin stains

are used. Lastly, the eosinophilic stroma of JXG can mimic amyloid deposits, assessed by Congo red staining. In conclusion, oral JXG is a rare, benign histiocytic disorder that can be mistaken for other conditions, making clinicopathologic correlation essential for accurate diagnosis. A pedodontist is vital in managing oral JXG, aiding in early detection, collaborating with pathologists for diagnosis, and coordinating with specialists for treatment. They also monitor the patient's oral health and manage any complications through follow-up care.

Table 1: Immunohistochemical profile of oral JXG involving the lingual posterior gingiva irt 85, 46 and floor of the mouth

Antibody	Mononuclear component
CD1a	Negative
CD35	Negative
CD31	Negative (internal control positive)
CD68	Show positivity in histiocytes cells
S100	Show occasional cells positivity

Figure 1: Pre – op extra oral

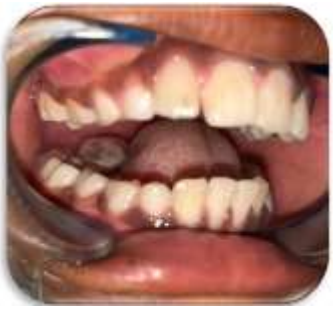

Figure 2: Pre – op intra oral

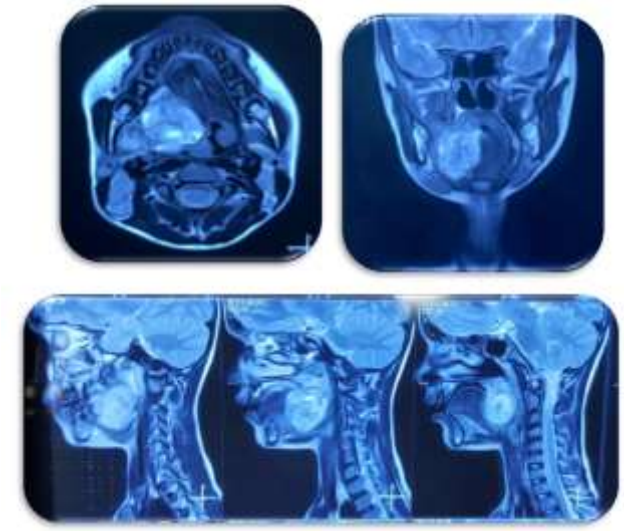

Figure 3: MRI contrast showing coronal section and lateral section of neck

References

1. N. K. Wood and P. W. Goaz, Differential Diagnosis Of Oral And Maxillofacial Lesions, Mosby, St. Louis, Mo, Usa, 5th Edition Edition, 1997
2. Batsakis J G: Tumors Of The Head And Neck: Clinical And Pathological Considerations. 2nd Edition. Baltimore: Williams & Wilkins; 1979:77
3. R. B. Zain, N. Ikeda, I. A. Razak Et Al., "A National Epidemiological Survey Of Oral Mucosal Lesions In Malaysia," Community Dentistry And Oral Epidemiology, Vol. 25, No. 5, Pp. 377–383, 1997.
4. M. Glick, Burket's Oral Medicine, People's Medical Publishing House, 12th Edition, 2015, 147-172, 175-188, 236-237.
5. A. Bermejo-Fenoll And P. Lopez-Jornet, "Differential Diagnosis Of Exophytic Lesions Of Soft Oral Tissue," Medicina Oral, Patologia Oral Y Cirugia Bucal, Vol. 10, No. 5, Pp. 470-471, 2005
6. Owczarek-Drabińska Je, Nowak P, Zimoląg-Dydak M, Radwan-Oczko M. The Prevalence Of Oral Mucosa Lesions In Pediatric Patients. International Journal Of Environmental Research And Public Health. 2022 Sep 8;19(18):11277.

7. Pantalon A, Ștefănache T, Danciu M, Zurac S, Chiseliță D. Iris Juvenile Xanthogranuloma In An Infant - Spontaneous Hyphema and Secondary Glaucoma. Rom J Ophthalmol. 2017 Jul-Sep;61(3):229-236. [Pmc Free Article: Pmc5710043] [Pubmed: 29450403]
8. Adamson H. A Case Of Congenital Xanthogranuloma Multiplex. Br J Dermatol. 1905;17:222
9. Senear Fe, Caro Mr. Nevoxanthoendothelioma Or Juvenile Xanthoma. Arch Dermatol. 1936;34:195-206.
10. Kjaerkeim A, Stokke T. Juvenile Xanthogranuloma Of The Oral Cavity. An Electron Microscopic Study. Oral Surg Oral Med Oral Pathol. Sep 1974;38:414-425.
11. Consolaro A, Sant'ana E, Lawall Ma, Consolaro Mf, Bacchi Ce. Gingival Juvenile Xanthogranuloma In An Adult Patient: Case Report With Immunohistochemical Analysis And Literature Review. Oral Surg, Oral Med, Oral Pathol, Oral Radiol, Endod. 2009;107:246-252.
12. Szczerkowska-Dobosz A, Kozicka D, Purzycka-Bohdan D, Biernat W, Stawczyk M, Nowicki R. Juvenile Xanthogranuloma: A Rare Benign Histiocytic Disorder. Postepy Dermatol Alergol. 2014 Jun;31(3):197-200. [Pmc Free Article: Pmc4112258] [Pubmed: 25097495]
13. Murphy Jt, Soeken T, Megison S, Perez E. Juvenile Xanthogranuloma: Diverse Presentations Of Noncutaneous Disease. J Pediatr Hematol Oncol. 2014 Nov;36(8):641-5. [Pubmed: 24065046]
14. . S_Anchez-Romero C, Cuenca Arriaga Ai, Paes De Almeida O. Guti_Errez Cort_Es E. Oral Juvenile Xanthogranuloma In A Child: Clinical, Histological And Immunohistochemical Profile Of A Rare Entity. J Cutan Pathol. 2018;45:515-521.
15. Cohen Dm, Brannon Rb, Davis Ld, Miller As. Juvenile Xanthogranuloma Of The Oral Mucosa. Oral Surg Oral Med Oral Pathol. 1981;52:513-523.
16. Palacios J, Rodriguez-Peralto Jl, Contreras F. Congenital Oral Juvenile Xanthogranuloma: Report of A Case. J Oral Maxillofac Surg. 1987;45:707-709.
17. Ossoff Rh, Levin Dl, Esterly Nb, Tucker Gf. Intraoral And Cutaneous Juvenile Xanthogranuloma. Ann Otol Rhinol Laryngol. 1980;89:268-270.
18. Flaitz C, Allen C, Neville B, Hicks J. Juvenile Xanthogranuloma Of the Oral Cavity In Children: A Clinicopathologic Study. Oral Surg Oralmed Oral Patholoral Radiol Endod. 2002;94:345-352.
19. Batista Ac, Mendon¸Ca Ef, Arantes Elias Ls, Andrade Ba, Almeida Op, Le_On Je. Nonlipidized Juvenile Xanthogranuloma:An Unusual Variant With A Potential Diagnostic Pitfall. Int J Pediatr Otorhinolaryngol. 2012;76:295-299.
20. Fabrizi G, Massi G. Mononuclear Variant of Juvenile Xanthogranuloma in the oral Cavity Of An Adult Patient. Br J Dermatol. 2001;144:909-911
21. Satow S, Zee S, Dawson Kh, Gown Am, Oda D, Worthington P. Juvenile Xanthogranuloma of the Tongue. J Am Acad Dermatol. 1995;33:376-379.
22. Mota Cp, Silva Cunha Jl, Magalhães Mc, Israel Ms, Freire Nd, Dos Santos Er, Canedo Nh, Agostini M, Abrahão Ac, De Andrade Ba, Romañach Mj. Oral Juvenile Xanthogranuloma: A Clinicopathological, Immunohistochemical and Braf V600e Study of Five New Cases, With Literature Review. Head and Neck Pathology. 2022 Jun;16(2):407-15.