



## CASE REPORT

# An adult juvenile xanthogranuloma in the buccal mucosa



Ching-Yi Chen <sup>a</sup>, Cheong-Lin Sung <sup>b</sup>, Mu-Yen Hsieh <sup>a</sup>,  
Wen-Chen Wang <sup>a,c</sup>, Li-Min Lin <sup>a,c</sup>, Yuk-Kwan Chen <sup>a,c\*</sup>

<sup>a</sup> Division of Oral Pathology and Diagnosis, Department of Dentistry, Kaohsiung Medical University, Chung-Ho Memorial Hospital, Kaohsiung, Taiwan

<sup>b</sup> Division of Oral and Maxillofacial Surgery, Department of Dentistry, Kaohsiung Medical University, Chung-Ho Memorial Hospital, Kaohsiung, Taiwan

<sup>c</sup> School of Dentistry, College of Dental Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

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### KEYWORDS

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**Abstract** Juvenile xanthogranulomas (JXGs) are a type of non-Langerhans cell histiocytosis that commonly affects infants and children. Adult oral JXGs are very rare. A 32-year-old Taiwanese male presented with the chief complaint of a solitary, firm, painless, non-tender swelling over the right buccal mucosa for about 2 weeks. An excisional biopsy of the lesion revealed a mixture of histiocytes, inflammatory cells, and Touton giant cells, and immunohistochemical positivity for CD68 and negativity for S-100 and CD1a confirmed the diagnosis of a JXG. Therefore, the current case report documents, to our knowledge, the first occurrence of an adult oral JXG in the buccal mucosa. It is also the first case of an adult oral JXG to be reported from Taiwan. The clinical characteristics of adult oral JXGs are also briefly reviewed. Copyright © 2013, Association for Dental Sciences of the Republic of China. Published by Elsevier Taiwan LLC. All rights reserved.

## Introduction

According to the Histiocyte Society, histiocytic conditions are categorized into Class 1, Langerhans cell histiocytoses (LCHs); Class 2, non-LCHs; and Class 3, malignant histiocytoses.<sup>1</sup> Among these three categories, Class 2 consists of non-LCH disorders of childhood, of which juvenile xanthogranulomas (JXGs) are the most frequent disorder<sup>2</sup>; it

\* Corresponding author. Department of Oral Pathology, School of Dentistry, College of Dental Medicine, Kaohsiung Medical University, 100 Shih-Chuan 1st Road, Kaohsiung 807, Taiwan.

E-mail address: [k0285@ms22.hinet.net](mailto:k0285@ms22.hinet.net) (Y.-K. Chen).

also encompasses indeterminate cell histiocytoses and sinus histiocytosis with massive lymphadenopathy (Rosai-Dorfman disease), papular xanthomas, progressive nodular histiocytomas, generalized eruptive histiocytomas, and benign cephalic histiocytosis.<sup>1</sup>

The most common locations of JXGs are the skin, predominantly the scalp and face, followed by the trunk, upper extremities, and lower extremities.<sup>3</sup> Visceral lesions, despite being rare, have also been reported, with the predominant regions affected being the eyes and testes.<sup>3</sup> Oral mucosal lesions are uncommon, and only about 30 histologically proven cases have previously been reported in the English-language literature.<sup>4</sup> JXGs usually occur in infants and children, frequently in those younger than 1 year of age.<sup>4</sup> Furthermore, a bimodal climax was reported in those either younger than 1 year or in the fourth decade of life.<sup>4</sup> In a review of the English literature, reports of oral adult JXGs are very rare, there having been only seven previously reported cases.<sup>4–10</sup> The objective of the present article is to describe, to our knowledge, the first case of adult oral JXG occurring in the buccal mucosa. In addition, this article describes the first case of an adult oral JXG reported from Taiwan. The clinical features of adult oral JXGs are briefly reviewed.

## Case report

A 32-year-old Taiwanese male visited our institution complaining of a painless, non-tender, smooth-surfaced, firm, pinkish swelling, measuring about 2 × 2 cm in diameter, in the right buccal mucosa for 2 weeks. The overlying mucosa was intact and fixed to the underlying connective tissue. The patient had no history of trauma or infection, and his medical history was non-contributory. All routine laboratory results were within normal limits, and no other skin or visceral lesions were present. Regional lymph nodes were non-palpable. Differential clinical diagnoses included fibrous hyperplasia and a minor salivary gland tumor. An excisional biopsy was performed under local anesthesia, and the tissue was subsequently histologically examined. The biopsy site healed uneventfully, and the patient has been followed-up for 1 year, with neither recurrence nor additional lesions at cutaneous sites.

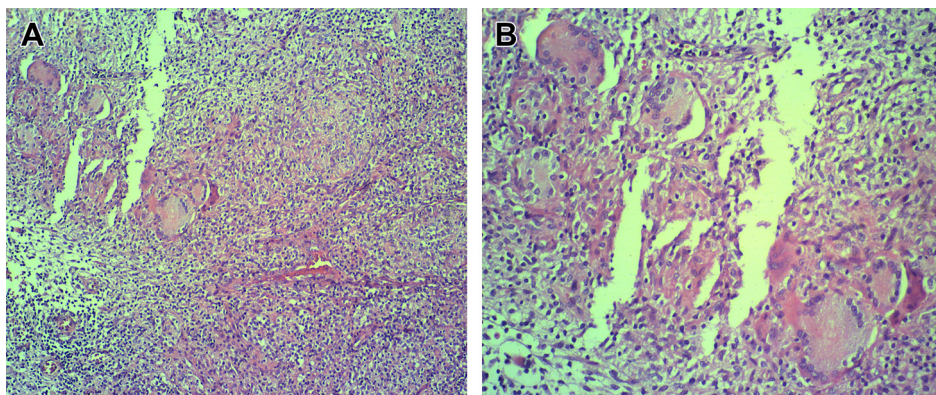
A gross examination showed a roundish, non-encapsulated soft-tissue specimen of about 1.5 cm in diameter. The cut surface of the lesion revealed a homogeneous whitish appearance. Histologically, a mixture of histiocytes, inflammatory cells, and Touton giant cells with a wreath-like nuclear arrangement of histiocytes was noted (Fig. 1A and B). Specific stains for acid-fast bacilli, fungi, and mucin were negative, while immunohistochemical (IHC) staining was positive for CD68 (Fig. 2A) in tumor cells but negative for CD1a and S-100 (Fig. 2B). No mitotic activity, necrosis, epidermal involvement, fibrous proliferation, significant cellular pleomorphism, or nuclear atypia were observed. These microscopic findings were consistent with a JXG in the buccal mucosa in an adult.

## Discussion

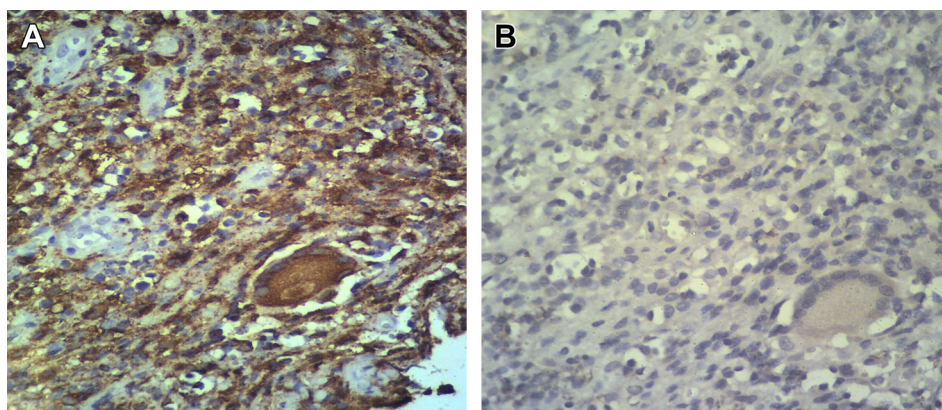
JXG was first reported in 1905 by Adamson, who defined single or multiple cutaneous nodules of infancy as a congenital xanthoma multiplex.<sup>11</sup> The term JXG was proposed in 1954 by Helwig and Hackney,<sup>12</sup> and despite the occurrence of adult cases of JXG, this nomenclature is still used today.

The first case of a cutaneous adult JXG was described in 1963 by Gartmann and Tritsch,<sup>13</sup> and about 10–30% of cases of JXG occur in adults,<sup>14</sup> with the peak incidence being in the late 20s to early 30s, with an even sex distribution.<sup>9</sup> The first adult oral case was found in the palatal gingiva by Takeda et al in 1986<sup>5</sup>; since then, only eight oral cases (including the present case) of adult JXG have been reported.<sup>4–10</sup>

The clinical characteristics of the eight reported adult oral JXGs are summarized in Table 1.<sup>4–10</sup> The mean age of occurrence in these oral adult cases was 47.9 (range, 32–64 years); three patients were over 60 years of age.<sup>7–9</sup> Two of the adult oral cases occurred in Asia (one patient was Japanese,<sup>5</sup> the other, the case described in this report, was Taiwanese); another two occurred in whites<sup>4,10</sup>; while four patients were of unknown race.<sup>6–9</sup> In the reported cases, two JXGs were located in the gingiva<sup>4,5</sup> and two in the tongue<sup>6,7</sup>; one occurred in the upper lip<sup>9</sup>; and the remaining three cases occurred in the intra-masseteric muscle,<sup>10</sup> mandibular alveolar mucosa,<sup>8</sup> and buccal mucosa (present case). Therefore, the current case, to our knowledge, is the



**Figure 1** Hematoxylin and eosin staining revealed characteristic microscopic features of a juvenile xanthogranuloma and the presence of histiocytes and Touton giant cells: (A) 100×; (B) 200×magnification.



**Figure 2** Histiocytes and Touton giant cells exhibited strong immunoreactions for (A) CD68 (100×magnification) and (B) negative expression for CD1a (200×magnification); a similar negative expression for S100 was also noted.

first reported case of adult oral JXG in the buccal mucosa. It is also the first reported case of an adult oral JXG in Taiwan.

JXGs can be classified into three types with respect to the dimensions of the lesion: lesions of <0.2–0.5 cm are regarded as papular; those of 1–2 cm are referred to as nodular; and those of >2 cm in diameter are macronodular (giant).<sup>10</sup> In three of the eight reported cases of adult oral JXGs, the dimensions of the lesion were not stated<sup>5,8,9</sup>; the dimensions in the other five cases ranged from a small (papular-type) 0.6-cm lesion<sup>4</sup> to a large (macronodular/giant-type) 4.5-cm lesion.<sup>10</sup> The recurrence rate of oral JXGs is relatively low (16%) and may be associated with incomplete excision of the lesion<sup>15</sup>; however, no recurrence was observed in any of the oral adult cases reported, including the present case.<sup>4–10</sup> No concurrent cutaneous nor visceral involvement was observed in any of the adult cases.<sup>4–10</sup>

All seven previously reported adult oral JXGs and the current case were solitary lesions. As aforementioned, an equal sex distribution was noted for adult cutaneous JXGs<sup>9</sup>; however, including the present case, all cases of adult oral JXG have occurred in male patients.<sup>4–10</sup> Hence, many of the clinical characteristics in adult patients with oral JXGs are consistent with those of adult patients with skin lesions. Only slight differences in the clinical features distinguish

adult oral JXG from lesions affecting infants and adolescents.<sup>4</sup>

Microscopically, JXGs affecting adult patients are the same as lesions found in infants and adolescents, and the IHC findings are also similar: CD68 (+), CD1a (–), and S-100 (±).<sup>4,10,15</sup> It is, however, essential to exclude the possibility of an LCH histopathologically. One study demonstrated that the IHC application of S-100 protein is as consistent a technique as the ultrastructural expression of Birbeck granules to differentiate non-LCHs from LCHs.<sup>16</sup> However, the S-100-positive dendritic cells in JXGs is regarded as significant for the pathogenesis, indicating that CD1a, which is consistently negative in JXGs and positive in LCHs, distinguishes these two disease entities.<sup>17</sup> Thus, a typical histological picture consisting of foamy histiocytes and Touton giant cells was observed in the current case, and the IHC results demonstrated an intensely positive reaction to CD68 and negative staining for both S-100 and CD1, which further reinforced the diagnosis.

A clinical diagnosis of oral JXG is difficult due to its rare occurrence. Furthermore, oral lesions may present a wide range of clinical features, leading to various misdiagnoses such as a salivary gland tumor, as in the current case. Therefore, a definitive diagnosis of oral JXG relies on a biopsy of the lesion and subsequent histological and IHC

**Table 1** Clinical characteristics of oral adult juvenile xanthogranulomas.

Year	Authors	Age (y)	Race	Sex	Location	Size (cm)	Recurrence	Skin lesion	Visceral lesion
1986	Takeda et al. <sup>5</sup>	38	A	M	Palatal gingiva	—	No	No	No
1995	Satow et al. <sup>6</sup>	35	—	M	Tongue	1.5 × 1.0	No	No	No
2000	Tanyeri et al. <sup>7</sup>	64	—	M	Tongue	1.0 × 1.5	No	No	No
2001	Fabrizi and Massi <sup>8</sup>	60	—	M	Mandibular alveolar mucosa	—	No	No	No
2006	Usmani et al. <sup>9</sup>	64	—	M	Upper lip	—	No	No	No
2008	Costa et al. <sup>10</sup>	34	W	M	Intra-masseteric muscle	4.5 × 2.5 × 2.0	No	No	No
2009	Consolaro et al. <sup>4</sup>	56	W	M	Lingual gingiva	0.6	No	No	No
Present case	Chen et al	32	A	M	Buccal mucosa	2 × 2	No	No	No

A = Asian; W = white; M = male.

examinations. Thus, a biopsy is the treatment of choice for oral JXGs. Spontaneous regression is commonly noted for JXGs of the skin; however, spontaneous regression has not yet been reported for oral JXGs, which may further indicate that surgical excision is the correct treatment modality.

JXGs of the skin are associated with various systemic disorders including neurofibromatosis type 1, juvenile chronic myeloid leukemia, acute lymphocytic leukemia, LCH, urticaria pigmentosa, diabetes mellitus, solitary mastocytosis, hepatomegaly with anemia and thrombocytopenia, and Neumann-Pick disease.<sup>4</sup> To our knowledge, oral JXGs have not been found to be associated with any systemic disorders, as was the case in our patient.

In conclusion, the first case of an adult oral JXG in the buccal mucosa was documented in this report. Oral and maxillofacial surgeons and pathologists should be cognizant of this disease, and JXGs should be included in the differential diagnosis of benign tumors of the buccal mucosa, especially when a histiocytic entity is being considered. Adult oral JXGs are an unusual but well-recognized condition in which various clinical and histological features may manifest, resulting in a clinical misdiagnosis. A correct diagnosis of this lesion is therefore dependent upon thorough clinical, histological, and IHC examinations.

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