

Juvenile Xanthogranuloma of the Nasal Cavity

- A Case Report and Review of the Literature -

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Received : April 10, 2006
Accepted : May 15, 2006

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Juvenile xanthogranuloma (JXG) is a benign and self-limiting non-Langerhans-cell histiocytosis that generally occurs during infancy and childhood. It develops frequently in the head and neck but is very rare in the nasal cavity. To date, only five cases of JXG in the nasal cavity have been reported. Here, we report the second case of JXG in the nasal cavity in Korea. A 19-year-old male patient presented with a protruding 1.1 cm mass in the left nasal vestibule. Histologically, a dense dermal infiltrate of histiocytes with Touton giant cells was observed. Immunohistochemically, the histiocytes tested positive for CD68 and the S-100 protein but negative for CD1a. This shows that a S-100-positive histiocytic lesion does not exclude a diagnosis of JXG.

Key Words : Juvenile xanthogranuloma; Nasal cavity; Langerhans-cell histiocytosis

Juvenile xanthogranuloma (JXG) is an uncommon, histiocytic disorder that usually occurs in infancy and childhood.^{1,3} It was first described by Adamson² in 1905, who defined multiple yellow cutaneous papules as congenital xanthoma multiplex. JXG more often develops on the head and neck as solitary or multiple cutaneous lesions but rarely in the nasal cavity.^{3,5,6} To our knowledge, there are only five cases of JXG in the nasal cavity reported in the literature.^{5,7-10} Conventionally, the histiocytic infiltrates of non-Langerhans-cell histiocytosis (LCH) such as JXG are believed to test negative for the S-100 protein. However, recent studies reported some cases showing immunoreactivity for the S-100 protein. We report a rare case of S-100 protein positive JXG that developed in the nasal cavity with a review of the relevant literature.

CASE REPORT

A 19-year-old male patient presented with a protruding mass in the left nasal vestibule (Fig. 1A). The mass had gradually increased in size over a 5-month period before hospitalization. A physical examination revealed a round, protruding 1.1 cm-sized

mass, which was soft and non-tender. The mass was excised for a diagnosis without complications. Grossly, the mass was a relatively well-demarcated, round mass with a solid, flesh-colored cut surface. Microscopically, the lesion was well demarcated with a dense infiltration of histiocytes under an attenuated squamous epithelium (Fig. 1B). Some histiocytes had a foamy cytoplasm or a spindled appearance (Fig. 2A). There were also scattered multinucleated Touton-type giant cells, eosinophils, and lymphocytes throughout the infiltrate. However, necrosis, mitosis, epidermal involvement, and nuclear atypism were not observed. Immunohistochemical staining revealed the histiocytes to be positive for CD 68, vimentin, myeloperoxidase, and the S-100 protein, but negative for CD1a (Fig. 2B-D).

DISCUSSION

JXG is a benign histiocytic proliferation that usually resolves spontaneously.^{1,4} It usually develops in the head and neck including the scalp and face, followed by the trunk and upper and lower extremities.^{3,5,6} There are also examples of extracutaneous locations including the orbit, skull, liver, lung, spleen, kidney, brain,

gastrointestinal tract, pancreas, and submandibular gland.^{5,6} However, JXG in the nasal cavity is quite rare. Saravanappa *et al.*⁷ first

described JXG in the nasal cavity. To date, only five cases of JXG in the nasal cavity have been reported (Table 1).^{5,7-10} Six report-

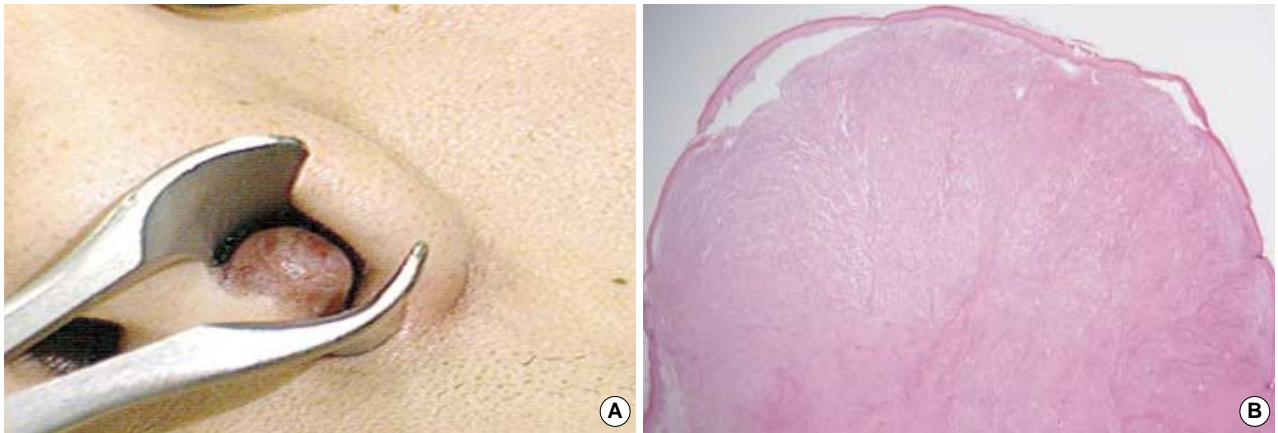


Fig. 1. Juvenile xanthogranuloma in the nasal cavity. A round, protruding, 1.1 cm-sized mass is found in left nasal vestibule (A). On the low magnification, the lesion shows a well demarcated, dermal histiocytic infiltrate with overlying attenuated epithelium.

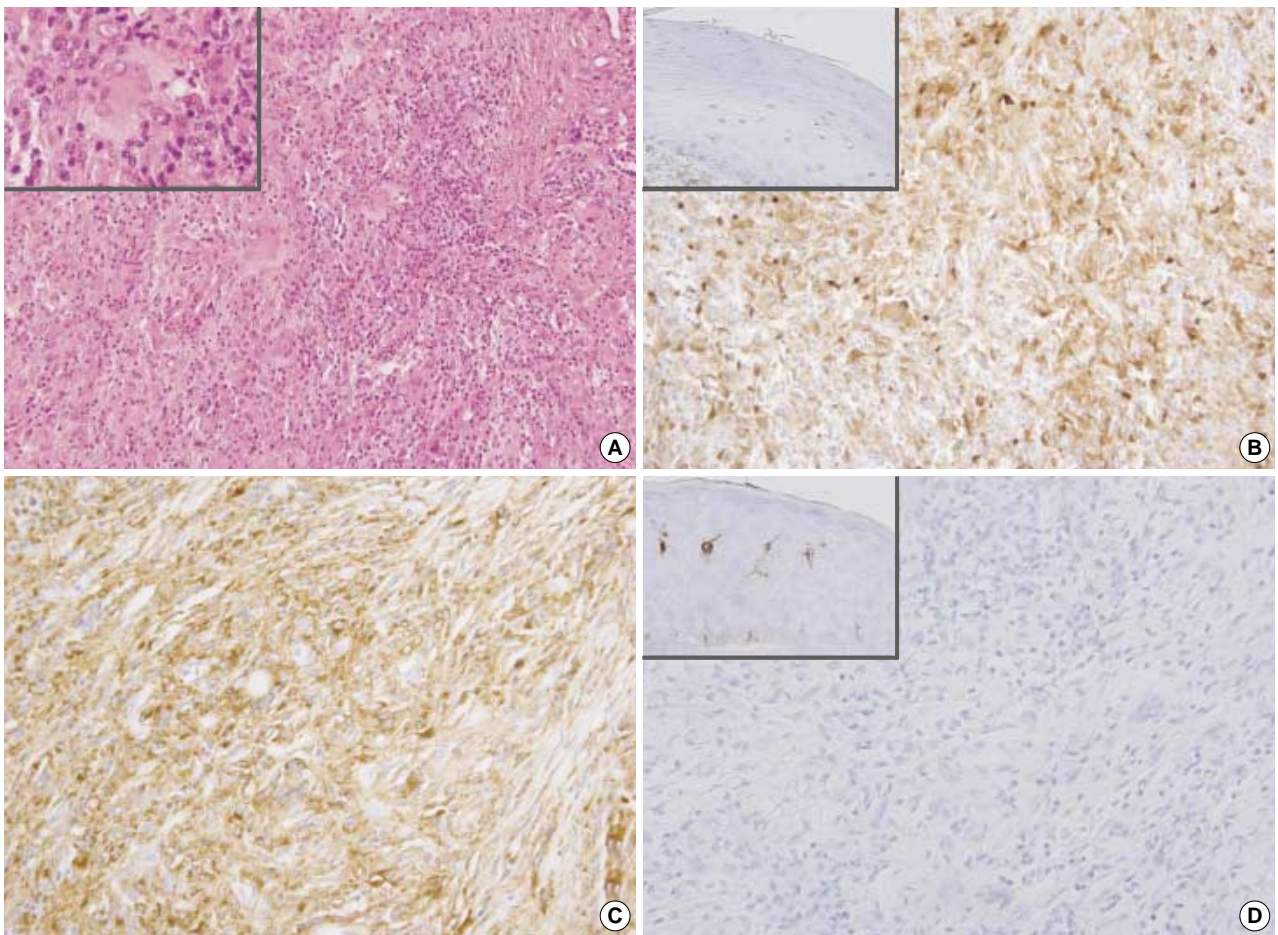


Fig. 2. Microscopic and immunohistochemical findings. Some histiocytes show a foamy cytoplasm or a spindle cell appearance and multinucleated Touton-type giant cells (inset) are scattered throughout the infiltrate (A). The histiocytes are positive for S-100 protein (B), CD68 (C), but negative for CD1a (D). Insets in (B) and (D) indicate a negative control (epidermal keratinocytes) for S-100 protein and a positive control (Langerhans cells of the epidermis) for CD1a, respectively.

Table 1. Reported cases of juvenile xanthogranuloma in the nasal cavity

Case no.	Source (yr)	Age	Sex	Site	Size (cm)	Follow-up
1	Saravanappa <i>et al.</i> 2000	14 yr	male	Inferior turbinate	0.5	Resection, no recurrence, 6 mo
2	Suh <i>et al.</i> 2001	6 yr	male	Inferior turbinate	0.5	Resection, no recurrence, 10 mo
3	Fang <i>et al.</i> 2002	1 yr 8 m	male	roof of vestibule	0.8 × 0.5	Resection, no recurrence, 2 yr
4	Dehner <i>et al.</i> 2003	10 m	male	NA	NA	NA
5	Chung <i>et al.</i> 2005	3 yr	male	vestibule	0.5	Resection
6	Our case	19 yr	male	vestibule	1.1	Resection

NA, not available.

ed cases including our case were males ranging in age from 10 months to 19 years. The lesions ranged in size from 0.5 to 1.1 cm. The five patients with JXG of the nasal cavity underwent a resection (Table 1). Histologically, JXG is composed of histiocytes, giant cells, and inflammatory cells. The histiocytes are usually round to ovoid in shapes and occasionally show a spindle cell appearance. Since some histiocytes contain lipids, they might appear as foamy cells or vacuolated cells. The mature lesions contain many giant cells, some of which show a wreath of multiple nuclei surrounded by a glassy eosinophilic, lipidized or non-lipidized cytoplasm. These cells are referred to as Touton giant cells, which are characteristic of JXG.^{3,6}

Janssen *et al.*⁶ classified JXG into four morphologic patterns: early, classic, late (transitional), or combined lesions with more than one basic pattern. The fully developed classic forms of JXG are easily diagnosed by identifying the characteristics of JXG, such as the lipidization or clear vacuolation of histiocytes and Touton giant cells. In contrast, early JXGs show dense monomorphic histiocytic infiltration without lipidization of histiocytes and giant cells. Late (transitional) JXGs show a prominent, storiform proliferation of spindle cells. The typical histological features of JXG are not detectable in early or late lesions. Therefore, a distinction of JXG from other histiocytic proliferative disorders can be difficult without ancillary techniques.⁴⁻⁶ Among other histiocytic proliferative disorders, LCH has common microscopic features with the early manifestation of JXG but shows more aggressive behavior than JXG, which tend to be self limited. Therefore, it is of great importance to differentiate JXG from LCH.

Immunohistochemical staining is useful for making a differential diagnosis of JXG and LCH. According to previous studies, Langerhans cells in LCH express the S-100 protein and CD1a, but rarely react with CD68 and FXIIIa. In contrast, the histiocytes in JXG are positive for CD68 and FXIIIa, but always negative for CD1a and the S-100 protein.⁶ In contrast to LCH, Birbeck granules are never identified in histiocytes of JXG. Some investigators base a diagnosis of JXG on the immunohistochemi-

cal negativity for the S-100 protein of histiocytes.^{4,8,9} However, recent studies reported many cases of S-100 protein positive JXG with CD1a negativity and the lack of Birbeck granules.^{5,6,11-13} Kaus *et al.*¹¹ suggested that neither a factor XIIIa negative nor a S-100 protein positive result should rule out a diagnosis of JXG when the morphological and phenotypic parameters are consistent with that diagnosis. Their suggestion was confirmed by identifying the nuclear and cytoplasmic reactions for the S-100 protein.

In most cases, post-biopsy treatments are not indicated in cutaneous JXG because it tends to regress spontaneously. However, tumor excision is recommended for mucocutaneous lesions for diagnostic, and functional and cosmetic purposes. On the other hand, adjuvant chemotherapy is indicated in rare systemic JXG.⁶

We present the clinical, microscopic and immunohistochemical aspects of a case of S-100 positive JXG in the nasal cavity. It is expected that this report will improve the understanding of the characteristics and diagnosis of JXG.

REFERENCES

1. Cohen BA, Hood A. Xanthogranuloma: report on clinical and histologic findings in 64 patients. *Pediatr Dermatol* 1989; 6: 262-6.
2. Adamson HG. A case of congenital xanthoma multiplex. *Br J Dermatol* 1905; 17: 222.
3. Tahan SR, Pastel-Levy C, Bhan AK, Mihm MC Jr. Juvenile xanthogranuloma. Clinical and pathologic characterization. *Arch Pathol Lab Med* 1989; 113: 1057-61.
4. Sangueta OP, Salmon JK, White CR Jr, Beckstead JH. Juvenile xanthogranuloma: a clinical, histopathologic and immunohistochemical study. *J Cutan Pathol* 1995; 22: 327-35.
5. Dehner LP. Juvenile xanthogranulomas in the first two decades of life: a clinicopathologic study of 174 cases with cutaneous and extracutaneous manifestations. *Am J Surg Pathol* 2003; 27: 579-93.
6. Janssen D, Harms D. Juvenile xanthogranuloma in childhood and adolescence: a clinicopathologic study of 129 patients from the kiel

- pediatric tumor registry. *Am J Surg Pathol* 2005; 29: 21-8.
7. Saravanappa N, Rashid AM, Thebe PR, Davis JP. Juvenile xanthogranuloma of the nasal cavity. *J Laryngol Otol* 2000; 114: 460-1.
 8. Fang TJ, Lin CZ, Li HY. Juvenile xanthogranuloma of the nasal cavity. *Int J Pediatr Otorhinolaryngol* 2003; 67: 297-9.
 9. Chung BJ, Embi CS, Sellheyer K, Krakovitz PR. Pathology quiz case. Nasal juvenile xanthogranuloma (JXG). *Arch Otolaryngol Head Neck Surg* 2005; 131: 81; diagnosis 82.
 10. Suh SH, Son JY, Kim BM, Kim CK, Je JS. A case of the juvenile xanthogranuloma of the nasal cavity and testis. *Korean J Otolaryngol-Head Neck Surg* 2001; 44: 997-1000.
 11. Kraus MD, Haley JC, Ruiz R, Essary L, Moran CA, Fletcher CD. "Juvenile" xanthogranuloma: an immunophenotypic study with a reappraisal of histogenesis. *Am J Dermatopathol* 2001; 23: 104-11.
 12. Flaitz C, Allen C, Neville B, Hicks J. Juvenile xanthogranuloma of the oral cavity in children: a clinicopathologic study. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2002; 94: 345-52.
 13. Tomaszewski MM, Lupton GP. Unusual expression of S-100 protein in histiocytic neoplasms. *J Cutan Pathol* 1998; 25: 129-35.