Pseudolymphoma Induced by Ear Piercing

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We present a patient who developed a pseudolymphoma after ear piercing. A patch test showed gold sensitivity. Therefore, long standing dermal exposure to gold from a pierced-type earring might have produced the patient's disease. This patient did not respond to an intralesional steroid injection and was finally treated with a complete resection of the lesion. It is proposed that every patient with a hyperplastic lesion in the ear lobe should be taken a biopsy in order to rule out the possibility of a pseudolymphoma. When a pseudolymphoma develops in the ear lobe, a complete surgical excision could be the treatment of choice, especially for the prevention of recurrence. (Ann Dermatol 16(1) 9~12, 2004)

Key Words: Gold hypersensitivity, Ear piercing, Pseudolymphoma

INTRODUCTION

There is an increasing distribution and social acceptance of piercing. So it is becoming more popular as a form of body art throughout the world. Nevertheless, complications such as infection, keloids, and allergic reactions brought about by this fashionable insult are often neglected. In this report, a case of a pseudolymphoma (cutaneous lymphoid hyperplasia) secondary to ear piercing is presented. This was a serious complication that required a surgical resection.

CASE REPORT

A 21-year-old Korean female presented with an eight-month history of masses on both ear lobes, which developed one month after ear piercing. She had no other specific illness, and complained of pain and local heatness around the lesion. A physical examination revealed relatively well demarcated, purplish, peanut sized, oozing, slightly tender tumors on both ear lobes without lymph node enlargement (Fig. 1).

Initially, the lesion was thought to be a keloid, and the patient received an intralesional injection of triamcinolone acetonide every two weeks for three months. Nevertheless, there was no improvement. Consequently, a biopsy was performed in order to obtain a proper diagnosis. The biopsy specimen from the left ear lobe showed a dense nodular dermal infiltrate of lymphocytes that formed lymphoid follicles with a distinct germinal center like a structure resembling a lymph node (Fig. 2 and 3), which was consistent with a pseudolymphoma. A narrow grenz zone was present. A small number of eosinophils and plasma cells were also observed in the dermis. There was so called 'bottom-heavy' patterns of infiltration that characterized many cases of cutaneous lymphoma. Immunohistochemical staining also showed the features of a pseudolymphoma; anti-CD3 as a pan T-cell marker and L26 as a B-cell marker were focally positive, MIB1 (an antibody to Ki-67), a proliferation marker, was positive in 2%. There were no abnormalities in the laboratory examinations including blood cell analysis and chemistry.

Several reports on pseudolymphoma related to gold jewellery have been published[1-3], and the patient had worn pierced-type 14-carat gold earrings immediately after piercing. Therefore, a patch test was performed with the European standard series

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Fig. 1. A well-demarcated purplish nodule is evident on the left ear lobe.

Fig. 2. A dense nodular dermal infiltrate of lymphocytes that forms distinct germinal centers resembling lymph nodes can be seen (hematoxylin and eosin: original magnification × 10).

(S-1000, Chemotechnique Diagnotics, Malmo, Sweden), 0.5% gold sodium thiosulfate, and 0.5% sodium thiosulfate on the back. The patches were removed after two days, and readings were made two and four days later. The 0.5% gold sodium thiosulfate and 1% cobalt chloride tested positive at two days, and became more prominent after four days (Fig. 4). All other tests were negative.

The patient underwent a complete excision, and

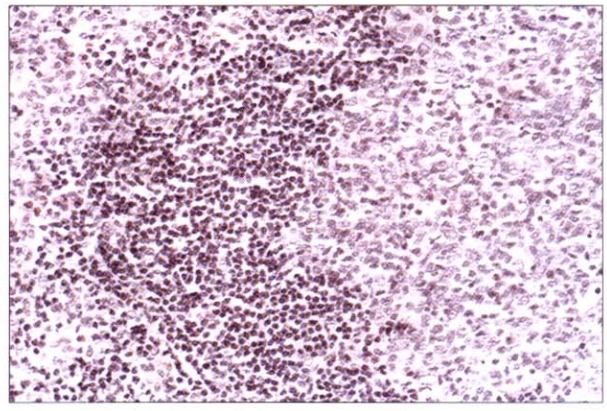

Fig. 3. The dense infiltrate in germinal center like structure was mostly lymphocytes. There were also a few plasma cells and eosinophils. (hematoxylin and eosin: original magnification × 100).

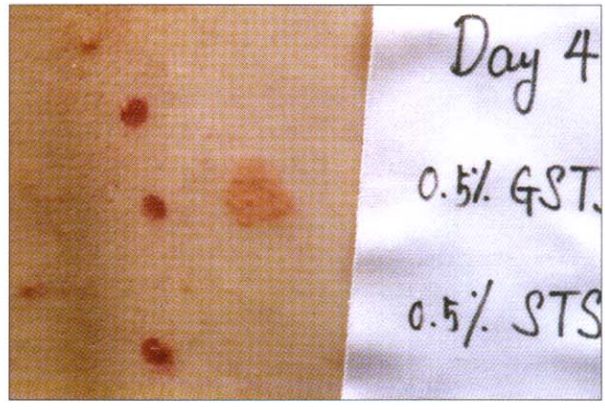

Fig. 4. Positive patch test result with 0.5% sodium thiosulfate at day 4.

no evidence of a recurrence has been found after 18 months of follow-up (Fig. 5).

DISCUSSION

As ear piercing is becoming more popular, doctors are encountering an increasing number of complications. The reported complication rate after ear piercing varies from 30% to 52%[4-6]. The most common hyperplastic condition after ear piercing is a keloid[4,5]. With this condition, clinicians do not normally perform a biopsy for a routine diagnosis. However, when a patient with hyperplastic compli

Fig. 5. The left ear lobe 18 months after complete excision.

cations after ear piercing is encountered, the possibility of a pseudolymphoma should always be considered, because it cannot be controlled by conventional treatments.

Pseudolymphoma after ear piercing is very rare. In previous reports[1-3,7,8], all the cases were females aged 21 to 40 years, and the onset of the pseudolymphoma occurred within five months after ear piercing (Table 1). This is the first case of pseudolymphoma after ear piercing in Korea.

In spite of many efforts to reveal the mechanism of this disease, a pseudolymphoma is idiopathic. However, some lesions are thought to be associated with exposure to foreign antigens from arthropods, infections, tattoos, acupuncture, trauma, or vaccination[9]. There is no proven pathogenesis to date for a pseudolymphoma occurring on the earlobe. However, most reported cases have shown a strong delayed-type hypersensitivity reaction to gold or nickel (four to gold[1-3]; one to nickel[8]). These findings support the hypothesis that a long-lasting allergic reaction to certain metallic allergens can provoke pseudolymphoma in sensitized individuals, as was suggested by Iwatsuki et al.[1,2]. When gold is injected through the epidermis to a sensitized patient, allergic contact dermatitis is induced. Histological findings have included spongiosis and exocytosis of mononuclear cells in the epidermis. However, continuous exposure of the dermis to gold in a sensitized person might induce a lymphadenoid cellular reaction, which is different from those reported reactions. It is believed that direct exposure to the dermis of an antigen without Langerhans cells' antigen processing may contribute to the formation of a pseudolymphoma.

Almost every person with a pierced earlobe wears an earring immediately after piercing in order to maintain the patency of the hole. It is believed this is an important provocation of hypersensitivity, because it permits direct contact between the earrings and dermis with continuous dissolution of a small amount of gold into the tissue. This may be similar to direct injection of an antigen into the dermis. Suzuki[10] showed that small fragments of gold remained in the skin lesions of pierced earlobes for a long time, even after the studs had been removed, and caused prolonged irritation and various cutaneous reactions. Moreover, a gold compound itself is also known to alter the immunologic responses[11]. Therefore, the immunoreactive properties of gold may prolong or modify the inflammatory reaction and induce a pseudolymphoma.

Our patient showed a strong delayed-type hypersensitivity to 0.5% gold sodiumthiosulfate and 1% cobalt chloride. However, there was no cobalt in the composition of the 14-carat-gold, earrings which the patient has worn soon after piercing: gold,

Table 1. Clinical Manifestations of the Reported Cases

Case	Age/Sex	Onset after ear piercing	Results of patch test	Treatment	Reference Number
1	21/F	1 month	Au	Steroid ILI→Involusion Excision	1
2	20/F	1 month	Au	Excision	2
3	32/F	5 month	Au	Excision	2
4	27/F	Soon	(−)	Excision	7
5	38/F	A few days	Au	Excision	3
6	40/F	3 days	Ni	Steroid ILI	8
7	21/F	1 month	Au, Co	Excision	*

Au: Gold, Ni: Nickel, Co: Cobalt, ILI: intralesional injection, *: in the present case

58.5%; nickel, 17.0%; zinc 8.5%; copper, 16.0%. Therefore, it is believed that the hypersensitivity to gold from the earring was strongly related to the development of the patient's pseudolymphoma. Nevertheless, the possibility that metals other than gold or the trauma itself could induce a similar reaction cannot be discounted.

A pseudolymphoma may resolve spontaneously or persist indefinitely, and there is no standard treatment. In contrast to a keloid, it is not recommended that an intralesional steroid injection alone be used to treat a pseudolymphoma of the ear, as has been suggested in previous reports. Many authors have treated such patients by completely excising the lesion (Table 1). In our case, the intralesional steroid injection had little effect and only a complete excision was able to treat the lesion effectively and prevent recurrence. The ear lobe has a lot of redundant skin. Therefore, excision is a cosmetically acceptable treatment and the first choice for a pseudolymphoma of ear lobe.

In conclusion, when a patient develops a hyperplastic complication after ear piercing, the possibility of a pseudolymphoma, which usually requires excision, should be ruled out first.

REFERENCES

1. Iwatsuki K, Tagami H, Moriguchi T, Yamada M: Lymphadenoid structure induced by gold hypersensitivity. Arch Dermatol 1982;118:608-611.
2. Iwatsuki K, Yamada M, Takigawa M, et al.: Benign lymphoplasia of the earlobes induced by gold earrings: Immunohistologic study on the cellular infiltrates. J Am Acad Dermatol 1987;16:83-88.
3. Kobayashi Y, Nanko H, Nakamura J, Mizoguchi M: Lymphocytoma cutis induced by gold pierced earrings. J Am Acad Dermatol 1992;27:457-458.
4. Simplot TC, Hoffman HT: Comparison between cartilage and soft tissue ear piercing complications. Am J Otolaryngol 1998;19:305-310.
5. Biggar RJ, Haughie GE: Medical problems of ear piercing. N Y State J Med 1975;75:1460-1462.
6. Cortese TA, Dickey RA: Complications of ear piercing. Am Fam Physician 1971;4:66-72.
7. Zilinsky I, Tsur H, Trau H, Orenstein A: Pseudolymphoma of the earlobes due to ear piercing. J Dermatol Surg Oncol 1989;15:666-668.
8. Zemtsov A, Cameron GS, Montalvo-Lugo V: Nickel-induced lymphocytoma cutis of the earlobe. Contact Dermatitis 1997;36:266.
9. Wood GS: Inflammatory Diseases that simulate lymphomas: Cutaneous pseudolymphomas. In: Freedberg IM, Eisen AZ, Wolff K, et al. (eds). Fitzpatrick's Dermatology in General Medicine, 5th ed, Vol. 1. New York, McGraw-Hill Companies, 1999, pp1259-1274.
10. Suzuki H: Nickel and gold in skin lesions of pierced earlobes with contact dermatitis. A study using scanning electron microscopy and x-ray microanalysis. Arch Dermtol Res 1998;290:523-527.
11. Walz DT, Griswold DE: Immunopharmacology of gold sodium thiomalate and auranofin (SK&F D-39162): Effects on cell-mediated immunity. Inflammation 1978;3:117-128.