Case Report

Persistent nodular contact dermatitis to gold: Case report of two cases

Vandana Mehta, C. Balachandran

Department of Skin and STD, Kasturba Hospital, Manipal - 576 104, Karnataka, India

Address for correspondence:
Dr Vandana Mehta, Department of Skin and STD, Kasturba Hospital, Manipal - 576 104, Karnataka, India.
Email: vandanamht@yahoo.com

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ABSTRACT

Metallic gold has long been regarded as a relatively safe and inert material when in contact with the skin and mucosal membranes, with only sporadic reports of allergic contact dermatitis. We report two cases, where persistent nodules developed at sites of gold piercing with gold jewelry with positive patch test reactions to gold.

Key words: Gold, persistent nodular contact dermatitis, patch test

INTRODUCTION

Metallic gold has long been regarded as a relatively safe and inert material when in contact with the skin and mucosal membranes with only sporadic reports of allergic contact dermatitis or stomatitis.[1-5] This is probably due to its stability with low tendency to ionization. We report two cases where persistent nodules developed at sites of gold piercing with positive patch test reactions to gold.

CASE REPORTS

Case 1

A 24-year-old nursing student presented with an asymptomatic skin colored nodule on her nose of 10-year duration [Figure 1]. Before ten years, she had her nose pierced with a 22 carat gold nose ring, following which she developed a nodule over the pierced site. There was neither any history of previous dental procedures using gold alloys nor of dermatitis on contact with jewelry at other body sites. Considering the lesion to be a simple keloid following nose piercing, a surgical excision of nodule was done on two occasions before she presented to us, but every time the nodule recurred following nose piecing with gold. An excision biopsy of the nodule demonstrated numerous granulomas in the dermis composed of foreign body giant cells with refractive material within them, lymphocytes and epitheloid cells [Figures 2 and 3]. Patch testing was performed with Indian standard series containing nickel, chromium, cobalt in addition to the standard battery of other antigens and 1% gold sodium thio-sulfate applied in petrolatum as a standard patch demonstrated a 2+ reaction to gold sodium thio-sulfate at 48 and 72 hours [Figure 4]. She was advised application of potent topical steroids to prevent recurrence of the lesions.

Case 2

A 21-year-old female presented with asymptomatic reddish nodules at the site of ear piercing with 18 carat gold earrings of three-month duration. Approximately one month after ear piercing, she developed pain, swelling and tenderness of the affected sites which subsided with a course of antibiotics and topical steroids. Despite removing her earrings and avoiding further contact with gold, she developed persistent nodules at each pierced site, which have remained unchanged since then. There was no history of any previous allergy to metals or atopy. Patch test with Indian standard series which contained nickel, chromium, cobalt and 1% gold sodium thio-sulfate in petrolatum applied as a standard patch revealed a 2+ reaction to gold sodium thio-sulfate at 48 and 72 hours. She was apprehensive about the surgical procedures and refused to undergo a biopsy of the nodules.

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Figure 1: Clinical picture showing a nodule on the nose at the site of nose piercing

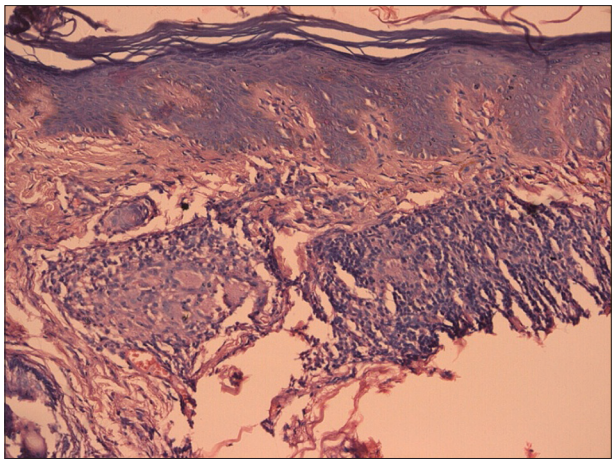

Figure 2: Photomicrograph showing a granulomatous infiltrate in the dermis (H and E, ×20)

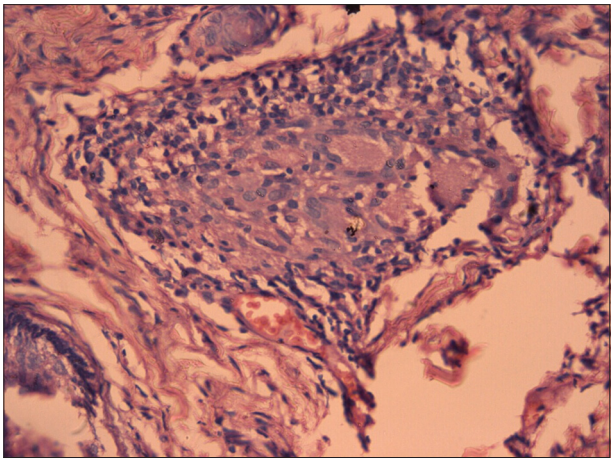

Figure 3: Photomicrograph showing close up of the granuloma with refractile material (H and E, ×40)

Figure 4: Positive patch test reaction to gold sodium thio-sulfate

DISCUSSION

Gold allergy was traditionally regarded as a rare occurrence, however, the new fashion of piercing multiple body sites in youngsters have triggered frequent reports of contact dermatitis to gold. A female predominance with involvement of the head and neck region, particularly in a seborrheic distribution, has been reported frequently in previous studies.[1]

Gold contact allergy may present clinically as a chronic papular eruption characterized by minimal eczematous changes, but with prominent dermal involvement. This presentation has been observed in gold sensitive individuals who have worn pierced type gold earrings; in whom discrete nodules have developed at the site of piercing, which have remained despite avoidance of further gold contact.[2,3] For insoluble and inert gold to induce dermatitis, small amounts of it need to be converted to a soluble form by the action of amino acids in sweat which is subsequently absorbed into the skin.[4] Hence, contact between skin and gold jewelry or between gold and the oral mucosa are the most important sources of sensitization. Ear or nose piercing with gold allows direct contact between gold and the dermis and is also associated with a trauma related inflammatory response. Both may facilitate the development of hypersensitivity.[5] Histologically, these nodules show minimal epidermal change and a dense dermal lymphocytic infiltration often associated with lymphoid follicles. Individuals with such lymphocytoma cutis type lesions frequently display strong positive patch test reaction to gold salts.

Both our patients developed nodules at the sites of ear and nose piercing with 18 and 22 carat gold jewelry

which persisted despite avoidance of gold. Further biopsy of our first patient displayed a granulomatous reaction with presence of refractive material within the giant cells. The composition of the refractile material in our case could not be found out because we did not have facilities for the same at our centre, however, the presence of a positive patch test reaction to gold with a negative reaction to nickel and other metals more or less confirmed our diagnosis of gold allergy. Gold incorporated in the dermis via piercing is difficult to eliminate, causing the antigen to remain at the local site for long. Its persistence within the macrophages explains the ongoing immunological activation and the resultant granulomatous reaction.[6] When gold penetrates via the epidermis an eczematous allergic contact reaction ensues which explains the eczematous nature of the patch test reaction. This indicates that the cellular response in the dermis with continuous antigen exposure is distinct from that characterized by contact sensitivity in the epidermis.[3]

On the basis of clinical, histopathological and patch test findings in our cases, we postulate that the persistent nodules at the site of piercing were simply an expression of contact dermatitis to gold. Hence, any patient with presence of nodules at the site of ear, nose, belly button piercing should be patch tested; if necessary the lesions be biopsied to confirm the diagnosis of contact allergy.

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