

**Contact granulomatous hypersensitivity to indium in a patient with
orofacial granulomatosis**

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Indium-induced allergic granulomas have never been reported to date.¹ Herein, we describe a case of orofacial granulomatosis (OFG), where sarcoidal-type granulomas developed at a patch test site of indium chloride.

Case Report

A 55-year-old woman presented with a 1-year history of persistent swelling of both lips. Physical examination revealed no abnormality of oral mucosa or facial paralysis. She has had two front upper teeth replaced with metal-containing post crowns. Periodontitis was not present. A biopsy from the lip showed granulomatous inflammation. There were no clinical or laboratory findings of sarcoidosis and Crohn disease. A diagnosis of OFG was made. Patch tests with a metal series (Torii, Tokyo) were conducted on the upper back using IQ Ultra chambers (Yayoi, Tokyo). The reactions were evaluated on day (D) 2, D3 and D7 according to ICDRG criteria. Doubtful reactions to mercury chloride 0.05% aq. were observed on D2 and D3. She returned on D37 because she noticed palpable erythema on her back where indium chloride 1% aq. had been applied

(Fig 1). Histological examination demonstrated sarcoidal-type granulomas and little epidermal alteration (Fig 2). Polarized light microscopy revealed no foreign bodies. Retesting for indium chloride was conducted and was read on D2, D3, D7, D15, D21, D28, and D49. Results were as follows: D15, ?+; D21, ?+; D28, +; D49, infiltration without erythema. She underwent dental treatment to replace the post crowns of the front upper teeth with indium-free ones. Qualitative analyses by wavelength-dispersive X-ray spectrometry at Tokushima Prefecture Industrial Technology Center detected indium, gold, palladium, tin, silver, and calcium in the removed crown. The lip swelling subsided within one year.

Discussion Rarely allergic contact granulomas due to metals have been described.^{2,3} In these cases, patch testing showed a transition from eczematous to granulomatous reactions. In our case, patch test reactions to indium chloride were negative until D7. There was little epidermal change histologically. These suggested that the granulomas were induced without the preceding eczematous reactions in this case. Granulomas form as responses to insoluble or slowly

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released antigens. Indium ions are soluble at pH4 or below, and precipitate at pH7 or above.⁴ Indium ions applied on the skin may precipitate in the dermis, and may exist persistently as an antigen inducing allergic granulomas.

Contact hypersensitivity to dental metals has been implicated in the pathogenesis of OFG in several cases, based on positive patch tests and beneficial effect from removal of culprit materials.⁵ OFG is characterized histologically by granulomatous inflammations.⁶ However, patch test reactions were not granulomatous but eczematous in the reported cases. In our case, indium chloride induced epithelioid granulomas on patch testing. The clinical manifestations improved after removing indium-containing dental alloys. Contact granulomatous hypersensitivity to indium appeared to be relevant to the occurrence of OFG in this case.

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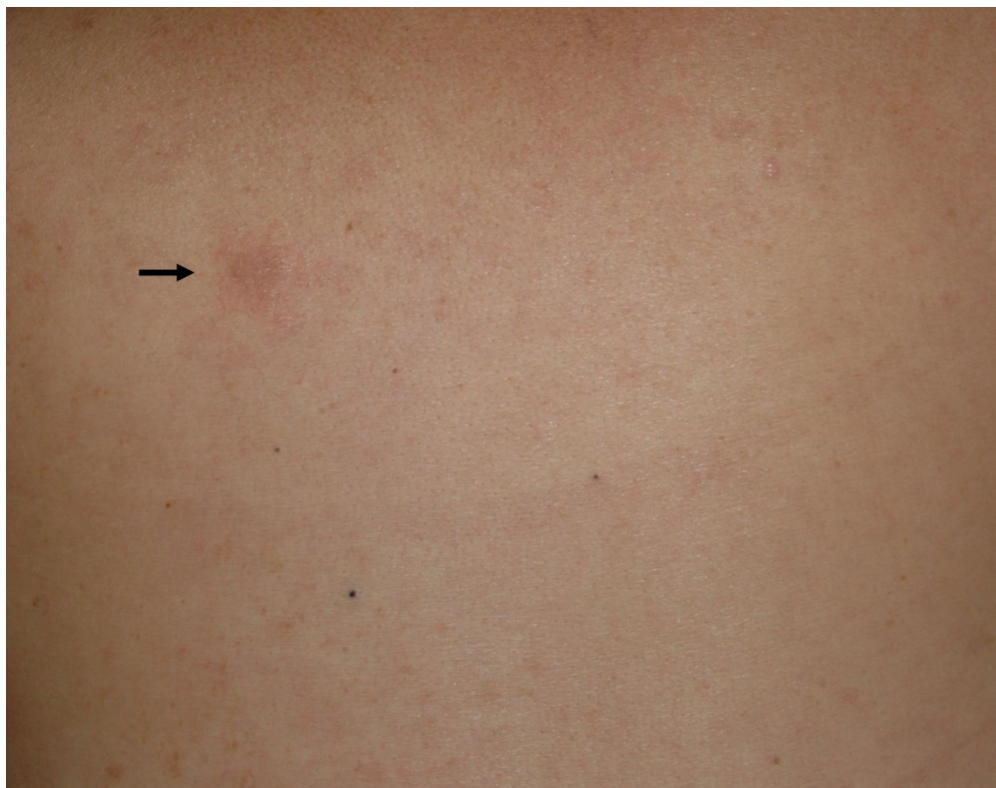
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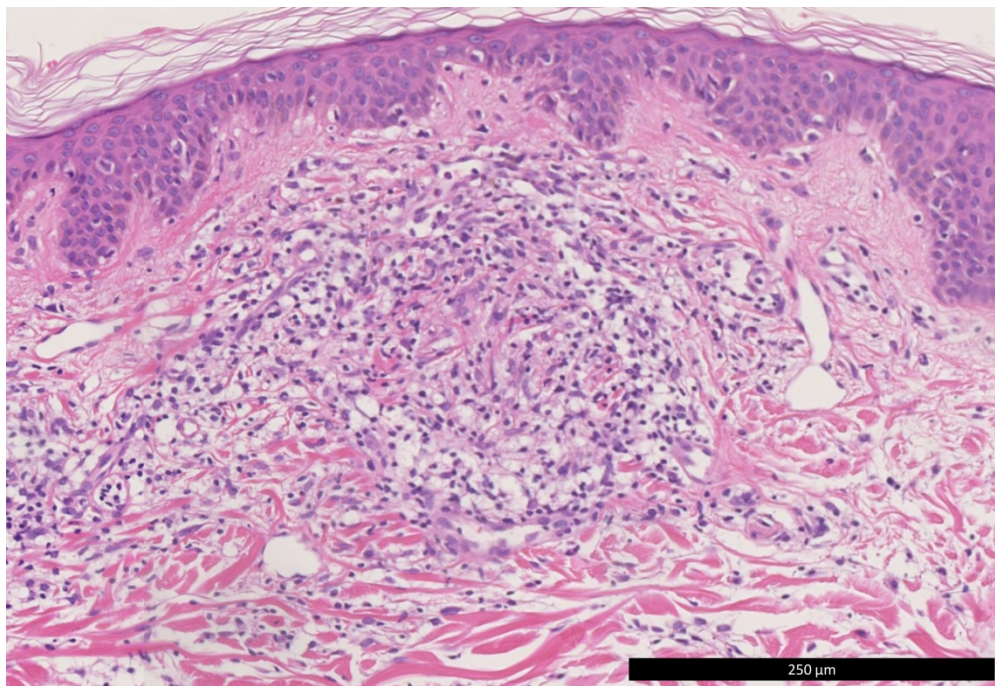
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Fig 1. Erythema with infiltration on her back where indium chloride had been applied was observed on day 37 (arrow).

Fig 2. Histological examination of the erythema induced by indium chloride revealed sarcoidal-type granulomas surrounded by lymphocytes. There was little change in the epidermis (Hematoxylin-eosin stain; scale bar: 250 μ m).



180x140mm (300 x 300 DPI)



180x122mm (300 x 300 DPI)