

Bilateral Earlobe Necrosis Due to External Application of Calcium Hydroxide

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PRECÍS

We report an interesting case of severe irritant contact dermatitis-induced bilateral earlobe necrosis due to external application of *chuna*, that is, calcium hydroxide ($\text{Ca}(\text{OH})_2$).

CASE REPORT

A 38-year-old woman presented with blackish discoloration of both earlobes. Two weeks earlier, she developed split earlobes due to widened piercing hole. She went to a beauty therapist for earlobe repair, where some chemical/glue was applied over her earlobe defect; however, within 5 days, both her earlobes split. The patient then self-applied *chuna*, that is, $\text{Ca}(\text{OH})_2$, over both earlobe defects, hoping that it would lead to adhesion of the defect. Within a few hours of application, she experienced intense redness, burning sensation, and pain, and after 2 days, she noticed a blackish discoloration in her earlobes. Her and her family's history was insignificant. She denied taking any medicines. On cutaneous examination, the bilateral earlobes adjacent to prior piercings had full-thickness ulceration with necrotic crust and surrounding erythema (Fig. 1). Her routine blood investigations, including coagulation profile and antiphospholipid antibody, were either negative or normal. The patient was referred to a surgeon for further management.

DISCUSSION

In India, *chuna*, a $\text{Ca}(\text{OH})_2$ paste, is commonly consumed orally in small quantities along with chewing tobacco. It is widely used as a flocculant in water and sewage treatment and in food and paper industries for a variety of purposes.¹ *Chuna* is readily available in small



Figure 1. Full-thickness earlobe necrosis with eschar formation of both ears.

pouches (Fig. 2). Calcium hydroxide paste is a strong base with a high pH (12.5–12.8), and its action on vital tissues occurs through dissociation of Ca^{2+} and OH^- ions.² It is a caustic irritant that causes various skin reactions ranging from epithelial abrasions in oral mucosa and irritant contact dermatitis, burn, ulcer, and necrosis of the skin to full-thickness chemical burns.^{1,3} The severity of the burn depends on the concentration and duration of contact. When in contact with skin, it causes protein denaturation, even if it is neutralized, diluted, or washed off.³ The OH^- moiety of $\text{Ca}(\text{OH})_2$ saponifies fatty acids of cell membranes; rupture and death of cells ensue, leading to epithelial necrosis. Meanwhile Ca^{++} reacts with the carboxyl groups of stromal collagens and glycosaminoglycans, leading to their hydration, which results in loss of transparency of the corneal stroma of the eye.⁴ Prolonged contact with $\text{Ca}(\text{OH})_2$ can cause a

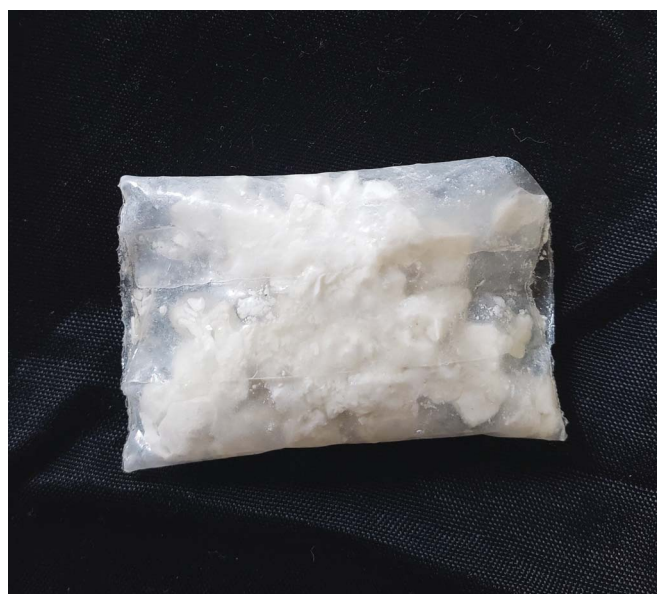


Figure 2. *Chuna* pouch.

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Names of the institutions at which the research was conducted, clearly linked to the author: Skin Clinic, Nashik.

Informed consent was obtained from all individual participants included in the study.

The author participated in this work and consented to the final, submitted version.

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thick eschar with ulcer, as observed in our patient.⁴ Calcium hydroxide-induced skin burn reactions are reported mainly in cement workers, as $\text{Ca}(\text{OH})_2$ is a major ingredient of cement, and in some soccer players because $\text{Ca}(\text{OH})_2$ is used to mark out soccer touchlines.⁵

Treatment of $\text{Ca}(\text{OH})_2$ -induced skin burns requires immediate removal of clothing and copious lavage of the contaminated skin with water. An ointment containing proteolytic enzymes is useful in the early postburn period for eschar separation, and for larger and/or deeper burns, escharectomy may be needed. In severe cases, skin grafts are indicated.^{2,3}

ZEBRA

External and inappropriate application of $\text{Ca}(\text{OH})_2$ can lead to severe irritant contact dermatitis inducing earlobe necrosis.

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Allergic Contact Dermatitis to the Ethylenediamine Component of Aminophylline in a Neck Cream

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PRECIS

We present a case report of allergic contact dermatitis caused by the ethylenediamine component of aminophylline in a cosmetic neck cream.

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DISCUSSION

A 66-year-old woman presented for evaluation of intermittent face and neck dermatitis. She described contact dermatitis from Marini Juvenile neck cream (Jan Marini Skin Research, Inc, San Jose, CA) beginning after less than 1 month of use. It rapidly cleared with discontinuation and recurred with reuse. She had a history of contact dermatitis from hydrocortisone cream but had not used it to treat the dermatitis caused by Marini Juvenile neck cream.

The patch testing result (Table 1) was positive with ethylenediamine dihydrochloride 1% petrolatum (pet), tixocortol pivalate, hydrocortisone butyrate, hydrocortisone cream, and potassium dichromate. After 7 days, there was a weak reaction to the Marini Juvenile neck cream.

Marini Juvenile neck cream contains aminophylline, the ethylenediamine salt of theophylline (2 parts theophylline to 1 part ethylenediamine). Patch testing was negative with 10 other ingredients (Table 1) of Marini Juvenile neck cream. Although the patch test with the neck cream was weak, the clinical history was unequivocal, and the ethylenediamine reaction confirmed the allergenic ingredient. As is normally the case in patients allergic to ethylenediamine, our patient was not allergic to disodium ethylenediaminetetraacetic acid. The potassium dichromate reaction did not have detectable clinical relevance.

There are reports of occupational allergic contact dermatitis (ACD) from the ethylenediamine component of aminophylline in

TABLE 1. Patch Test Results*

	Patch Test Readings		
	48 h	96 h	1 wk
Ethylenediamine dihydrochloride 1% pet	2+	2+	1+
Tixocortol pivalate 1% pet	3+	3+	1+
Hydrocortisone butyrate 1% alc	0	1+	1+
Hydrocortisone cream 1% (Taro)	2+	2+	1+
Potassium dichromate 0.5% pet	1+	1+	1+
Marini Juvenile neck cream†	0	0	Weak 1+
Ten additional ingredients of Marini Juvenile neck cream			
Cetyl alcohol 5% pet	0	0	0
Dexpanthenol 5% pet	0	0	0
Tocopherol 99+%	0	0	0
Tocopheryl acetate 10% pet	0	0	0
Ethyl alcohol 99+%	0	0	0
Ethylhexylglycerin 5% pet	0	0	0
Triethanolamine 2% pet	0	0	0
Disodium ethylenediaminetetraacetic acid 1% pet	0	0	0
2-Phenoxyethanol 1% pet	0	0	0
Decyl glucoside 5% pet‡	0	0	0

*One hundred twenty contact allergens were occluded for 48 hours on the back using IQ Ultra chambers, including the baseline series of the American Contact Dermatitis Society plus additional cosmetic and fragrance-related ingredients.

†It contains aminophylline 0.5% to 1%.

‡Marini Juvenile neck cream contains coco-glucoside (allergy to this may sometimes be detected by testing with decyl glucoside).

alc indicates alcohol.