

## CONTACT DERMATITIS TO METALS IN SHIMLA ( HIMACHAL PRADESH )

N L Sharma and R C Sharma

Metal dermatitis accounted for 13% of the total contact dermatitis cases and about 0.17% of the total outpatient attendance. Nickel was the commonest sensitizer (34.09%). Cobalt, copper, aluminium and iron sensitivity was seen in 13.6%, 6.8%, 2.3% and 4.5% cases respectively. There was a complete absence of chromate sensitivity.

Key words : Contact dermatitis, Metals, Sensitivity.

Contact dermatitis due to metals can develop from a variety of items like jewellery, metallic components of clothes, shoes and watches, in addition to numerous articles of daily use. This sensitivity has been studied by a number of workers in other countries,<sup>1-3</sup> but only a few in India.<sup>4-6</sup> The findings of our clinic are being presented in this communication.

### Materials and Methods

The patients suspected to have contact dermatitis due to metals were patch tested with nine metals. The antigen impregnated discs devised by Pasricha<sup>5</sup> were used for patch testing. Various salts and their strengths used are shown in table I. The results were read after 48 hours of applying the tests.

### Results

Out of a total attendance of 25,200 in the Skin OPD, from June, 1981 to January, 1984, there were 338 (1.34%) cases suspected of contact dermatitis. Of these, 44 (13%) were suspected to have sensitivity to metals and were patch tested. Twenty one cases (47.7%) were found to have positive patch tests, 15 reacted to only one metal and six were sensitive to two metals. The females outnumbered the males in a ratio

of 4.5:1. More than half of the cases were in the third decade. Duration of dermatitis varied from 3 days to 20 years.

Half of the suspected cases were housewives, of which 8 (18.2%) were found to have sensitivity to metals. In a majority (62.5%) of these, nickel was responsible. Cobalt gave positive tests in two cases, while iron, copper and aluminium were positive in one case each. The next commonly affected group was of students in whom 8 cases were tested and 7 were found to be allergic to metals. Again nickel accounted for 4 cases. Of the five tested cases who were engaged in clerical work, 4 gave positive tests, all with nickel and one in addition, was also cobalt sensitive. The total results are shown in tables I and II.

### Comments

In the present study, metal dermatitis accounts for 13% of the contact dermatitis cases and about 0.17% of the total outpatient attendance. Women outnumbered men.

A striking feature of the present study was a complete absence of chromate sensitivity. Chromate sensitivity is common in industries, particularly cement workers, painters, paper, shoe and textile workers.<sup>1</sup> Studies in Delhi,<sup>5</sup> Varanasi<sup>6</sup> and Indian contact dermatitis group (unpublished data) reported it in 19.4%, 16.6% and 12.2% cases respectively. Himachal Pradesh is a hilly terrain and has practically no such industries, except for the construction work

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From the Department of Dermato-Venereology, H. P. Medical College, Shimla (Himachal Pradesh), India.

Address correspondence to : Dr. N. L. Sharma.

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Table I. Results of patch tests with various metallic solutions used as antigen-impregnated-discs.

Occupation	Number of patients tested	Number of patients showing a positive patch test with				
		Nickel sulphate 5%	Cobalt chloride 5%	Copper sulphate 5%	Ferric chloride 2%	Aluminium sulphate 10%
Housewives	23	5	2	1	1	1
Students	8	4	—	2	1	—
Office goers	5	4	1	—	—	—
Mechanics/Engineers	4	—	1	—	—	—
Nurses	2	2	1	—	—	—
Painters/Masons	2	—	1	—	—	—
Total	44	15	6	3	2	1

Table II. Source of the allergen.

Source	Nickel	Cobalt	Copper	Iron	Aluminium
Jewellery	6	1	1	2	—
Watch strap	4	2	1	—	—
Metal parts of clothing	2	—	—	—	—
Occupation/Hobby	1	2	—	—	1
No source	2	1	1	—	—
Total	15	6	3	2	1

and exposure to cement. Complete absence of chromate sensitivity has also been reported in an Indonesian study.<sup>2</sup>

Like other series,<sup>5,6</sup> nickel remains the commonest sensitiser (34.09%) in our study. The incidence varies from 0.8-21% compared to 19.8%, 50% and 39% for Delhi, Varanasi and the Indian contact dermatitis group respectively. Almost all the studies show a female preponderance excepting Kuwait<sup>8</sup> where more men suffer from nickel sensitivity than women. In the present series there was no male patient, jewellery produced dermatitis in 41% cases, watch strap in 26.6% cases, metal parts of under-clothing in 20% and no source was found in the remaining. Combined sensitivity to nickel and cobalt was seen in two cases, both had dermatitis to electroplated watch straps. Similarly, two patients

had combined sensitivity to nickel and copper, out of which one had dermatitis due to electroplated watch strap and the other to artificial jewellery. Another combined sensitivity of nickel was with iron and in this case the patient had dermatitis due to jewellery.

The next common sensitising metal was cobalt accounting for 13.6% of the cases. Most of the cases of cobalt sensitivity occur in association with nickel sensitivity in women and with chromate sensitivity in men. Present study had 3 cases (all males) of sensitivity to cobalt alone, and combined with nickel in 2 cases, and with iron in 1 case. Of the six cases of cobalt sensitivity, three had dermatitis due to metal components of wearing apparel, two because of their occupational environment and in one the source of metal could not be detected.

Copper sensitivity was seen in three females (6.8%). Of these, two patients had combined sensitivity with nickel in the watch strap and artificial jewellery respectively. The third patient was a student and had dermatitis of hands, but the source of metal could not be traced.

Aluminium sensitivity is quite uncommon<sup>1</sup> and its incidence is 3.2% (Indian contact dermatitis group). It was seen in a housewife who had dermatitis on hands, back and face. Probably, the knitting needles were responsible for it.

The cause of dermatitis in two iron sensitive patients was jewellery. In one, sensitivity occurred in association with cobalt and the patch test reaction was more severe to iron than cobalt. In the other, it was associated with nickel sensitivity.

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