

## DERMATOLOGIC DISEASES IN SILK WORKERS

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A survey of 112 workers of a silk factory near Bangalore, for dermatologic diseases revealed, (1) a characteristic wearing off of the medial halves of the distal free edges of the finger nail plates in 10 of the 15 cocoon-sorters, (2) maceration of the palms in 58 workers of the boiling and reeling section, and (3) pitted keratolysis of the palms in 42 workers, also from the boiling and reeling section. There was no clinical evidence of contact dermatitis, and patch tests with the silk thread from the cocoons in 25 workers showed a very mild reaction in 2 workers and a doubtful reaction in another two. In addition, one worker from the skeining section had criss-cross superficial fissures on the finger tips caused by friction, two workers had paronychia of the fingers and four workers had dermatophytosis of the finger webs. As in the previous survey, these workers also had a high incidence of ichthyosis (92 workers) and hyperkeratosis of the palms (62 workers) and soles (110 workers).

**Key words :** Survey, Silk workers, Contact dermatitis, Nail dystrophy.

During a survey of the dermatologic problems of workers in a silk factory (filature) near Bangalore undertaken earlier,<sup>1</sup> the workers were found to have a very high incidence of ichthyosis, hyperkeratosis of the palms and soles, palmar maceration and pitted keratolysis. The incidence of contact dermatitis could not be established, because patch tests were not possible during that survey, but there was no clinical evidence of contact dermatitis. Subsequently therefore, another survey was planned in another filature to document the skin diseases related to the occupation of the workers.

### Materials and Methods

This filature is situated approximately 140 Km from Bangalore and has almost exactly the same sections as the filature surveyed previously,<sup>1</sup> namely, the cocoon-sorting section, the boiling and reeling section, and the skeining and packing section. Weaving however, is done elsewhere. The processes used are also the same as described previously.<sup>1</sup> The workers in this filature were almost all females, though

the supervisors were males. A total of 112 female workers were examined for the dermatologic problems. Appropriate tests were undertaken wherever possible.

### Results

The following dermatologic manifestations were recorded :

1. Cocoon-sorters Nail Dystrophy : Out of the 15 cocoon-sorters, 10 displayed a characteristic nail deformity. In each case, the medial half of the distal free edge of the nail plate was worn off (Fig. 1). This deformity was limited to the little, ring and middle fingers of the right hand. All the ladies were found to be right-handed.

2. Ichthyosis : Ichthyosiform scaling on the legs and forearms was observed in 92 workers. The scaling was generally mild, it did not involve the face, there was no erythema, and no atrophy of skin. Generally, the workers were not aware of this scaling and thus did not know about similar scaling in their family members.

3. Hyperkeratosis of the Palms and Soles : A diffuse hyperkeratosis of the soles was seen in almost all (110) of the 112 workers. Palmar hyperkeratosis was observed in only 62 workers.

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Fig. 1. Cocoon-sorters nails characterised by wearing off of the medial halves of the distal edges.

4. Maceration of the Palms : This was seen in 58 workers, all of them from the boiling and reeling section. The skin was sodden and crinkled (Fig. 2).



Fig. 2. Maceration of the hands.

5. Pitted Keratolysis : Forty two workers, all from the boiling and reeling section had pitted keratolysis of their palms. Some of them had only a few pits, but most others had extensive involvement. In relatively milder cases, the lesions tended to remain restricted to the area around the palmar creases (Fig. 3). There was no itching.

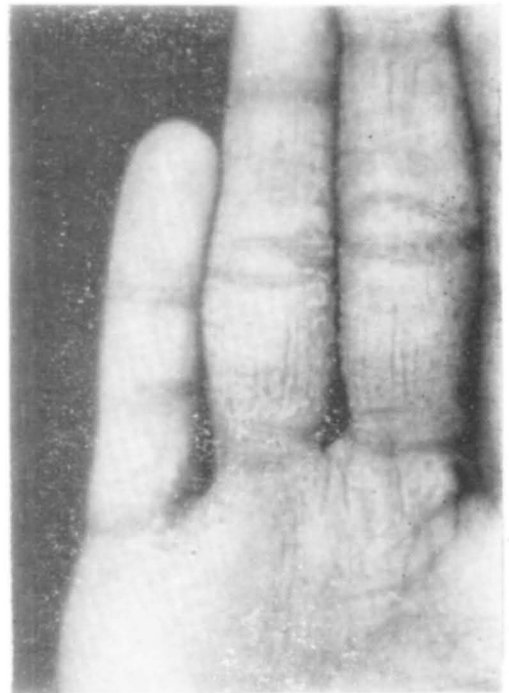


Fig. 3. Pitted keratolysis around the palmar creases.

Scrapings taken from the involved skin showed no filaments or spores on KOH examination, while culture revealed micrococci in 23, *Staphylococcus albus* in 9, *Candida* species in 2 and aerobic spore bearer in 1 case.

6. Contact Dermatitis : There was no clinical evidence of contact dermatitis in any of the workers, but 25 workers from different sections did complain of itching on the hands, especially in the interdigital regions. Patch tests were performed with the silk thread peeled off from the surface of the cocoon, used as such, and also with the antigen-impregnated-

discs<sup>2</sup> prepared by extracting the silk thread obtained from the cocoon, in 10 times the volume of water at 80°C for 3 minutes (similar to the process used in the boiling section of the filature). A mild reaction was obtained in 2 workers and a doubtful reaction in another two. In none of these, the evidence was very convincing.

In addition, one worker from the skeining section had frictional dermatitis of the finger-tips, two workers had paronychia of the fingers and four workers had itchy, papular lesions in the finger webs suggestive of dermatophytic infections.

### Comments

As in the previous survey, the prevalence rates of ichthyosis and palmo-plantar keratoderma among these workers also were high, supporting the previous conclusion that there is a high incidence of these two genetically determined dermatoses in this population. Palmar maceration and pitted keratolysis also were prevalent only in the boiling and reeling section indicating the effect of prolonged immersion of the hands in warm alkaline water. Dermatophytic infection of the hand among these workers was far less frequent. Although, 2 workers were recorded to have chronic paronychia of their fingers, its prevalence was still very low, as also reported earlier.<sup>1</sup>

The nail dystrophy seen in these workers has not been described earlier. It was simply the result of wearing away of the affected portions of the nails. The cocoon-sorters used trays having a wire gauze mesh along one side. The cocoons would be spread on these trays to pick up and remove the defective cocoons and as the workers pushed aside the sorted cocoons, these portions of their nails got rubbed over

the wire gauze net. Repeated friction in this manner led to wearing away of the medial halves of their nails. This atrophy was quite different from the notches on the silk weavers' nails produced artificially by the weavers themselves to help their work,<sup>3</sup> or the copper wire winders' nail grooves at the distal edges produced by constant friction of the copper wire in a rotating machines factory.<sup>4</sup>

Sensitizing potential of silk seems to be very low because in neither of the two surveys, any worker had evidence of contact dermatitis. This is rather in contrast to the earlier reports summarised by Schwartz et al.<sup>5</sup> Occurrence of itching on the hands complained by 25 workers in this survey cannot be accounted for because there were no lesions and the patch tests reactions were insignificant.

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### References

1. Pasricha JS : Survey of the dermatologic problems of workers in a silk factory, *Ind J Dermatol Venereol Leprol*, 1985; 51 : 202-204.
2. Pasricha JS : Antigen-impregnated-discs for patch tests, in : *Contact Dermatitis in India*, editors : Pasricha JS and Sethi NC, Lyka Lab Publications, 1981; p. 19.
3. Ronchese F : Peculiar silk weaver's nails, *Arch Dermatol*, 1955; 71 : 525-526.
4. Battu VR and Pasricha JS : Occupational dermatoses in some selected industries in India, *Ind J Dermatol Venereol Leprol*, 1985; 51 : 26-30.
5. Schwartz L, Tulipan L and Birmingham DJ : *Occupational Diseases of the Skin*, 3rd ed, Lea and Febiger, Philadelphia, 1957; p 372.