

## Amulet string contact leukoderma and its differentiation from vitiligo

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### ABSTRACT

A young adult factory worker presented with a linear depigmented vitiliginous patch on his right arm at the site where a silver amulet had been fixed with a nylon thread. He claimed that it was occupational in origin and demanded compensation, but patch testing with the nylon thread of the amulet and its extracted dyes proved that the contact leukoderma was due to the thread.

**KEY WORDS:** Amulet string, Chemical leukoderma

### INTRODUCTION

Chemical leukoderma should be differentiated from vitiligo. We report a case of contact leukoderma induced by the nylon string used for tying an amulet over the arm of a factory worker.

### CASE HISTORY

A 45-year-old man factory worker was referred to us for a depigmented patch on his right arm since a year. Before its onset he had been transferred from an operations job that was fully automated to the maintenance section where he came in contact with various materials. He was convinced that handling such material had led to the depigmentation and demanded compensation.

On examination a linear depigmented macule was located on his right arm where a silver amulet was fixed with a nylon thread (Figure 1).

Contact leukoderma to the synthetic material was suspected due to the linear pattern without signs of inflammation, along the string where the amulet had been fixed for a long time.

Common suspected material contactants in the factory,



**Figure 1:** Depigmented patch on arm in contact with the nylon thread

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such as soap and detergent, white and yellow grease, compressor oil, cutting fluid, kerosene, PTBP (parateritary butylphenol), PTBC (parateritary butylcatechol), and BHT (butylated hydroxytoluene), were patch tested without conclusive positivity after 48 to 72 hours observation. A patch test with the nylon string that the patient was using was positive (++) . A patch test with scrapings from the amulet (silver) was negative and there was no reaction to formalin, which excluded sensitivity to a durable press finishing agent. Patch testing with nickel sulfate and cobalt chloride was negative, which excluded the metallic dye present in the nylon. The black nylon string was boiled in hot ethanol to extract the dye from it and soaked in distilled water for 10 minutes, before applying the nylon fibre. An aggravated response with +++ positivity was recorded after 72 hours. Patch test with the azo dye Disperse Black I and II (black dyes were chosen because the string was black in color) showed  $\pm$  reaction after 72 hours.

#### DISCUSSION<sup>1</sup>

Chemical leukoderma due to rubber products, phenol and catechol is clinically and histopathologically<sup>2,3</sup> identical to vitiligo. Differentiation for legal purposes is extremely difficult. Vitiligo commonly starts before the age of 20 years and there may be a family history.<sup>4</sup> It is often associated with specific antibody formation against melanocytes. Thyroid dysfunction, Addison's disease, vitamin B12 deficiency, pernicious anemia, and other immunological disease like alopecia areata may be associated. The sites usually involved are the exposed parts, body orifices, nipples, umbilicus, axillae, lower abdomen, and scalp. Lesions may be associated with leukotrichia, and may be seen around moles.<sup>5</sup> They may be found at sites of trauma (Koebner phenomenon). Vitiligo is often rapid in onset and has a long duration. Certain cases are stable and persist for a long time with exacerbations and remissions.<sup>6</sup> Cases with segmental vitiligo are quite stable in nature.

A definite cause is often found in chemical contact leukoderma.<sup>7,8</sup> Nylon fabrics and threads are popular items used by the public. Nylon fibers produce irritation due to non-absorption of sweat and may contain a variety of chemicals like dyes, chemical additives like formaldehyde, durable press agent or water repellents – melamine and urea. Formaldehyde resins in combination with weighters like stannous chloride, calcium and barium sulfate, biosides like organomercury compounds, antistatic agents - like polyethylene glycol, lubricants, flame retardants like "porban" and "tris", optical whiteners, detergent with benzyl salicylate perfume in it, are common sensitizers. In our patient leukoderma in a linear distribution manifested due to constant contact with a nylon string. In absence of lesions of vitiligo elsewhere the patient was diagnosed as having chemical leukoderma due to a local cause. He was subsequently treated by a conventional method with complete repigmentation.

Contact chemical leukoderma from a nylon string is rare and probably occurred due to constant wearing of nylon string as amulet binder.<sup>9</sup> Patch testing with the nylon fiber with dyes and without dyes produced a sensitivity reaction.

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