

Contact urticaria caused by a silk bed quilt in a young atopic female

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Immediate allergic reactions to silk, including both anaphylaxis and respiratory disease, are well known (1). Rarely, silk can also induce contact urticaria (CU), which is probably caused by sericin, a water-soluble glycoprotein, or other antigens from insects of the genus *Anthrenus* contained in silk materials (2).

Case Report

An atopic 7-year-old girl presented with a past history of severe itching and erythematous and oedematous lesions mainly localized to her trunk and face. Such lesions appeared after naps on a sofa, where she covered herself with a multicoloured bed quilt. She denied having any breathing difficulties. On further questioning, she reported similar episodes in the past related to white pillows. Hence, suspecting CU caused by silk, we performed a prick-to-prick test with both a dry piece and a moistened piece of her silk quilt. The latter caused a wheal of 4 mm (histamine, 6 mm; negative control, 0 mm; a positive prick test result was defined as a wheal ≥ 3 mm in diameter) (Fig. 1). An open patch test was performed by applying a dry piece and a moistened piece of the same bed quilt to the patient's back and leaving it in occlusion for 20 min. Only the damp piece produced multiple wheals (Fig. 1). Prick-to-prick and open patch tests were repeated with a moistened piece of Alpretec[®] silk, a purified sericin-free fabric, with negative results. Prick-to-prick tests with moistened pieces of the culprit silk quilt gave negative results in 10 control subjects. Radioallergosorbent tests gave positive

results for silk waste (*Bombyx mori*, k73) 0.78 kUA/l and natural silk (k74) 0.61 kUA/l. The patient's total IgE level was 460 kU/l. Prick tests for aeroallergens gave positive results for *Dermatophagoides farinae*, *Dermatophagoides pteronissynus*, and *Parietaria*. The patient avoided further contact with silk, and did not observe any recurrences.

Discussion

Silk is a well-known allergen causing immediate-type reactions such as occupational asthma in silk-industry workers (3), allergic rhinitis with specific IgE against silkworm (1), or nocturnal asthma caused by silk components (4). Rarely, it is also reported as the cause of CU (5–7) that may also be associated with anaphylaxis (8). The frequency of these allergic reactions apparently increased, especially in atopic patients aged >30 years, after silk material had started to be used for the filling of bed quilts and pillows (9).

We describe a case of CU caused by a silk quilt in a young atopic female without any respiratory symptoms that was confirmed by *in vivo* and *in vitro* tests together with the patient's history. Prick-to-prick and open patch tests showed positive results only to damp pieces of silk. This might be explained by the peculiar composition of silk in terms of a double strand of fibroin (its structural protein, with a low allergenic potential) glued to sericin, a water-soluble glycoprotein that is usually removed from silk material during the manufacture of silk threads. Considering this, we may speculate that contact with sweaty skin might play a key role in the development of allergic reactions by liberating sericin. Alpretec[®] silk, a purified sericin-free hypoallergenic fabric suited for atopic subjects, gave negative results in our patient, highlighting the possible allergenic role of sericin. Our case confirms that silk can induce CU without respiratory symptoms, affecting mainly atopic subjects, also at a very young age.

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Fig. 1. Positive prick-to-prick and open patch test result with moistened pieces of the patient's silk bed quilt.

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