NYLON HAIR-NET DERMATITIS

BY

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It is not widely known that nylon hair-nets may cause dermatitis. From the United States, however, Anderson (1950) reported several examples and Barton (1950) added another. In this country two cases were described among six patients also sensitive to dyed nylon stockings (Calnan and Wilson, 1956), and there have been three subsequent reports (Beck, 1957; Calnan, 1957a, 1957b).

Whereas the nylon fibre itself is probably inert, dermatitis may result from sensitivity to resin finish in which the net is coated, to the rubber band which keeps the net in place, and to the dye with which the net is coloured. Most cases are thought to be due to the dye, which is generally of the azo group, a chemical configuration notorious for its capacity to sensitize the skin. None of Anderson's cases of hair-net dermatitis developed dermatitis from nylon stockings, and the two patients described by Calnan and Wilson did not contract the rash from their stockings for over a year after the onset of the hair-net dermatitis.

Clinical Features

The pattern of dermatitis from hair-nets is distinctive enough when complete and uncomplicated. Often, however, the picture is only partially complete and is closely if not indistinguishably imitated by a constitutional seborrhoeic eczema; it may also be complicated by additional areas of dermatitis. Lastly, the patients rarely suspect that their trouble is caused by a hair-net, and it is only in recent years that we ourselves have become familiar with the condition.

Three principal contact sites are involved — behind the ears, the nape of the neck, and the hairline on the forehead. Retroauricular dermatitis is the commonest, and occurs in almost every instance. It affects the adjacent part of the scalp and may spread down the occipital hair margin to become continuous with patches over the nape of the neck

(see Fig.). The upper half of the ears may show a vesicular dermatitis on both the outer and the inner aspects. Such involvement should make one particularly suspicious of a hair-net contact. Suboccipital and nuchal dermatitis is frequent in women as a manifestation of a seborrhoeic eczema or a neurodermatitis. When due to hair-net sensitivity it is virtually identical with the constitutional condition. Nuchal dermatitis was present in almost every case. A linear dermatitis of the upper forehead and hairline zone was seen in only six patients. It may be so slight as to be missed or disregarded, but when seen has great diagnostic value in the presence of dermatitis of the nape and retroauricular areas. One patient had a striking linear zone of dermatitis under the chin and on the sides of the neck from a hair-net which was tied under the chin with tapes.

The typical pattern may be complicated by areas of eczema or dermatitis elsewhere on the body. In 11 instances dyes of similar nature appeared to be responsible, while in five cases the dermatitis was caused by sensitivity to unrelated substances (Table I). Nine patients had additional areas of dermatitis (Table II) for which we could not find a precise cause.

TABLE I.—Other Sensitivities

Case No.	Related Sensitivities		Unrelated Sensitivities
	Positive	Negative	
1	Stocking		
5	Petticoat strap		
6	Petticoat strap; stocking		Lipstick
7	Stocking		
8	Watch-strap		
9	Stocking		
10		Stocking	
11		Sulphanilamide	
13		Stocking	
14	Black nylon gloves	Black nylon brassiere	
15	Hair dye; paratoluenediamine		Nickel
16	Stocking		
18			Rubber glove and shoe; mercaptobenzthiazole
19	Hair dye; stocking; paratoluenediamine; yellow nylon blouse	Pink nylon nightdress	Nickel and rubber; mercaptobenzthiazole
21			
24	Stocking		Nickel

TABLE II.—Areas of Associated Dermatitis

Case No.	Skin Involved
4	Whole scalp and nasolabial areas
8	Face
13	Front of chest
14	Elbow flexures
16	Arms
17	Wrists; eyelids
21	Elbow flexures
23	Groins; perineum; axillae
26	Front of chest and elbow flexures

The severity of the dermatitis is usually subacute, consisting of erythema and scaling. It may be moist and exudative behind the ears, and occasionally on the back of the neck. Small vesicles may be found on the tips of the ears and along the hair margin. In one case there was an extremely severe local reaction associated with a widespread petechial eruption closely resembling the rash due to carbromal sensitivity.

Hair-net dermatitis may be persistent or intermittent, according to the frequency with which the net is worn. Some patients wear it for only a few hours after a visit to the hairdresser, while others wear their net regularly.

The age of onset in our cases (Table III) appears to be late when compared with other instances of allergic contact sensitivity, such as nickel (Calnan, 1956) and lipstick (Calnan and Sarkany, 1958). This finding may well have no great

TABLE III.—Age of Onset in 27 Cases of Hair-net Dermatitis

Age	No. of Cases	Age	No. of Cases	Age	No. of Cases
20-9	1	40-9	5	60-9	8
30-9	3	50-9	8	70-9	2

significance from the point of view of allergy, as hair-nets are more often worn by older women, and relatively seldom by younger women with short hair styles.

The duration of the sensitivity when first seen varied from three weeks to seven years. Most patients gave a history of some months. One must admit, however, that a number of cases were not diagnosed for long periods after their first attendance at hospital.

There was no evidence of an atopic diathesis; none had had atopic eczema, and only one patient had hay-fever.

Patch Tests

All the patients except one were patch-test positive to the nylon portion of the hair-net. The one exception (Case 24) was allergic to the rubber of the elastic band but not to the nylon. When patch testing with the rubber, one must take great care to remove all trace of the nylon thread, which is usually wound round the elastic.

In our cases, hair-net sensitivity from the nylon part was always attributable to the dye, and patch tests usually gave an acute vesicular reaction at 48 hours. A single case gave a negative reaction at 48 hours, but was positive when read 48 hours later.

No routine cross-sensitivity tests with the "para" group were done, but patients were tested with any substances which were suspected of causing their other patches of dermatitis. The results are shown in Table I. It can be seen that 11 patients (40%) showed cross-sensitivity dermatitis—a striking illustration of the importance of this phenomenon. Not all patients reacted to chemically related substances, and five cases showed additional unrelated sensitivities.

It is extremely difficult, if not impossible, to trace the precise dye used in a particular patient's hair-net. We have reason to suppose that they are usually azo-dyes, of which there are a large variety. We have patch-tested a number of our patients with paraphenylenediamine, and a red, yellow, and blue azo-dye, and the results are shown in Table IV.

TABLE IV.—Patch Tests to Dyes

Case No.	Paraphenylenediamine	Azo Dyes		
		Red	Blue	Yellow
1	++	+	+	++
2	++	±	—	++
4	+	—	—	+
6	+	—	—	+
7	—	+	+	+++
8	+	—	—	—
9	—	+	—	++
10	—	—	—	+
11	—	—	—	—
12	+	—	—	—
13	+	—	—	—
14	+	—	—	—
15	+	—	—	—
16	+	+	—	+
17	+	—	—	+
18	+	—	—	—
19	+	—	—	—
20	+	+	+	++
21	+	+	—	+++
22	++	+	—	++
23	+	+	—	±
25	+	—	—	+
26	+	—	—	+
27	±	+	+	++

These particular chemicals are employed in dyeing nylon stockings, but we have no proof that these were the actual dyes used on the hair-nets worn by any of our patients.

Discussion

The fact that we have been able to collect 27 cases within 18 months suggests that this is not a rare condition, and we think it likely that many cases go undiagnosed. The rash produced by sensitivity to nylon hair-nets so closely resembles one of constitutional origin that several of our cases were incorrectly diagnosed when first seen. In spite of increased experience we cannot always distinguish the two conditions by clinical examination alone, and it is essential

that every patient presenting an eczematous rash of this pattern should be asked if she wears a nylon hair-net. If she does so, she should be patch-tested against it. The fact that a patient can wear nylon stockings with impunity does not necessarily invalidate the diagnosis, as many of our patients were able to wear nylon stockings without getting a rash. Even those who did develop a stocking dermatitis did not do so until several months after the onset of their hair-net dermatitis.

One of our cases was sensitive to the rubber band, while the remainder gave positive patch tests to the material of their hair-nets. When tested against a routine batch of azo-dyes used for dyeing stockings, they gave positive reactions, usually to the yellow or red, but occasionally to the blue dye. Although we were unable to obtain the actual dyes used on the nets, we consider that hair-net dermatitis results from sensitivity to the dye in the majority of cases. When the nylon net was discarded, even if replaced by a silk or hair one, the rash cleared. The skin returned to normal after an interval varying from a few weeks to several months.

Summary

Twenty-seven cases of nylon hair-net dermatitis are reported.

Although closely resembling that of seborrhoeic eczema, the uncomplicated rash has a characteristic pattern.

With one exception, sensitivity to the dye appeared to be responsible.

We thank all members of the staff of St. John's Hospital for Diseases of the Skin who referred cases to us; also Dr. Sydney Thomson and Dr. David Williams for allowing us to investigate their cases.

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SUCCESSFUL TWIN PREGNANCY AFTER TREATMENT OF MALIGNANT ESSENTIAL HYPERTENSION

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The benefits resulting from the introduction of lumbo-dorsal sympathectomy and hypotensive drugs in the treatment of malignant essential hypertension are well recognized (Northfield, 1948; Smithwick, 1951; Rosenheim, 1954; Smirk, 1954; Smirk, Doyle, and McQueen, 1954; Pickering, 1955). It is, however, often impossible or impracticable to maintain the blood pressure at normal levels in some patients following one or other of these methods of treatment, although hypertensive symptoms may be relieved, papilloedema may resolve, and progressive renal damage may be arrested. Such patients then resemble those with benign essential hypertension; they may remain free from symptoms, but are still apt to develop cerebrovascular or cardiac complications. In addition, women of childbearing age may suffer the risks of hypertensive pregnancy.