

Short Communication

Contact anaphylaxis due to para-aminophenol and para-methylaminophenol in hair dye

HARUKO OSHIMA, TSUYOSHI TAMAKI, TSUNAO OH-I AND MICHYUKI KOGA

Department of Dermatology, Tokyo Medical University, 6-7-1 Nishishinjuku, Shinjuku-ku, Tokyo 160-0023, Japan

Key words: hair dye; para-aminophenol; para-methylaminophenol; anaphylaxis; positive scratch test; immediate-type hypersensitivity; contact urticaria syndrome; cosmetics. © Munksgaard, 2001.

Case Report

A 61-year-old man was being treated by his primary physician for eczema of the hands. The patient had been using a commercial hair dye about 1× a month for the previous 20 years.

One day in May 2000, after using the hair dye, he began to develop upper airway stridor and generalized urticaria. The following month, while using the same hair dye (about 30–40 min after starting), the patient had dyspnea and generalized urticaria. He was evaluated in an emergency room, where the physician suspected anaphylaxis due to the hair dye.

Open tests and prick tests with the hair dye (1% aq.) and its ingredients (para-phenylenediamine, para-aminophenol, ortho-aminophenol, para-methylaminophenol and sodium methyl oleoyl taurate) were all negative at 1%, 5% and 10% aq.

Scratch tests with para-aminophenol (1%, 5% and 10% aq.) and para-methylaminophenol (1%, 5% and 10% aq.) were positive, using histamine dihydrochloride (1% aq.) as positive control and isotonic water as negative control. 10 control subjects also scratch tested with para-aminophenol and para-methylaminophenol were all negative.

The patient was diagnosed as having a Type I allergy.

Comment

The regular use of hair dyes has become more common among persons of all ages. This has led to a rise in the incidence of allergic contact dermatitis due to hair dyes. Type I allergy associated with hair dyes has not been reported so often, though serious clinical manifestations, such as contact urticaria, asthma and anaphylaxis, have been described (1–3).

Para-phenylenediamine (4) and its oxidation products

(1) have been reported as causal. Other such causes include henna (5), para-aminophenol (6), meta-aminophenol (7), ortho-aminophenol (7), Basic Blue 99 (8), an oxidation product of para-toluenediamine (9) and para-toluenediamine itself (10).

In the present case, the causative substances were para-aminophenol and para-methylaminophenol. To our knowledge, this is the 1st reported case of immediate-type allergy to para-methylaminophenol.

References

1. Goldberg B J, Herman F F, Hirata I. Systemic anaphylaxis due to oxidation product of p-phenylenediamine in a hair dye. *Annals of Allergy* 1987; 58: 205–208.
2. Belton A L, Chira T. Fatal anaphylactic reaction to hair dye. *Am J Forensic Med Pathol* 1997; 18: 290–292.
3. Sahoo B, Handa S, Penchallaiah K, Kumar B. Contact anaphylaxis due to hair dye. *Contact Dermatitis* 2000; 43: 244.
4. Goldberg B J, Herman F F, Hirata I. Systemic anaphylaxis due to oxidation product of p-phenylenediamine in a hair dye. *Annals of Allergy* 1987; 58: 205–208.
5. Cronin E. Immediate-type hypersensitivity to henna. *Contact Dermatitis* 1979; 5: 198–199.
6. Nagano Y, Kanao K. A case of hair dye shock (about a RAST positive case). *Hifubyoku Sinryou* 1991; 13: 57–60 (in Japanese).
7. Tsunoda T, Horiuchi N, Sato M. Two cases of contact urticaria syndrome by hair dye. *Hifu* 1993; 35 (suppl. 16): 178–183 (in Japanese).
8. Jagtman A B. Urticaria and contact urticaria due to Basic Blue 99 in a hair dye. *Contact Dermatitis* 1996; 35: 52.
9. Koo F P, French L, Piletta-Zanin P A, Hauser C. Contact urticaria and shock to hair dye. *Allergy* 1998; 53: 904–905.
10. Taniguchi T, Higashi N, Kume A, Miyamoto T, Ogiwara S, Higami K. A case of anaphylaxis due to para-toluenesiamine in a hair dye. *Jpn J Dermatallergol* 2000; 8: 7–11 (in Japanese).