

LETTER TO THE EDITOR

Standard practices and awareness concerning *p*-phenylenediamine among salons that provide eyelash dyeing services

Dear Editor,

A considerable number of allergic contact dermatitis cases associated with eyelash dyeing products have been reported in the literature. Symptoms include blepharoconjunctivitis, centrofacial oedema, peri-orbital dermatitis, itching, and exudation of eyelids, usually caused by *p*-phenylenediamine (PPD).^{1–4} Eyelash dyeing is a procedure carried out by qualified beauticians, and is used to permanently make eyelashes darker for aesthetic purposes. In some countries, the term eyelash tinting is also used to describe the same procedure. Similar dyes are often used to dye eyebrows, and it is not uncommon for customers to have both treatments performed together. The process involves mixing dye with a developer that contains hydrogen peroxide. This mixture is then applied to the eyelashes. It is unclear how many beauticians are aware of the presence of PPD in eyelash dyes used to dye eyelashes. Salons within Tayside, UK, who dye eyelashes were therefore surveyed to assess their level of awareness and to determine their standard practices.

The survey consisted of 8 questions:

- Are you aware that eyelash dyes contain para-phenylenediamine (PPD)?
- What brand of eyelash dye is used?
- Does the eyelash dye contain PPD?
- Do you ask clients whether they have a PPD allergy prior to eyelash dyeing?
- Do you carry out patch testing on all clients for PPD allergy prior to eyelash dyeing?
- Is there an alternative eyelash dye available for clients with PPD allergy?
- Is there a pre-dyeing skin care regime?
- Is there a post-dyeing skin care regime?

Twenty-five of 34 (74%) salons took part. The survey showed that 64% of salons within Tayside who took part were aware of the fact that PPD may be present in eyelash dyes. However, 72% of these beauticians were unsure whether PPD was present in the eyelash dye that they used. Consequently, beauticians may use a PPD-containing eyelash dye on PPD-allergic clients.

Only 20% of beauticians specifically ask their clients whether they are allergic to PPD. As clients with a diagnosed PPD allergy may not realize that PPD is present in eyelash dyes, they may not share this information. PPD sensitivity can also be indicated by a history of black henna tattoo application or a previous hair dye reaction, in which case PPD-free eyelash dyes can be offered to clients instead.⁵ Most beauticians (96%) consistently carry out product consumer patch testing prior to eyelash dyeing.

As part of pre-dyeing treatment, 15 beauticians cleansed the area around the eyelid with water or cleansing wipes. Nine beauticians used petroleum jelly with eye pads during dyeing for protection. Following dyeing, 18 beauticians did not use any products around the eye, with most of the remaining beauticians using water to clean the area around the eye. Some beauticians also use pre-wax lotion, post-wax lotion, and oil. It is important to be aware of these practices, as some of these products may also potentially cause either irritant or allergic contact dermatitis themselves, owing to the presence of preservatives, fragrances, or emulsifiers.

Several additional ingredients identified within 13 of the commonly used eyelash dye brands are known sensitizers, and can also cause sensitization and allergic contact dermatitis in patients. These include cetearyl alcohol, EDTA and propylene glycol,^{5–7} resorcinol, *m*-aminophenol, and *p*-aminophenol.⁸ Patients presenting with eyelid or facial dermatitis are often investigated by patch testing with the baseline, face/cosmetic and perfume/fragrance series, and possibly others. However, contact allergens such as resorcinol, *m*-aminophenol and *p*-aminophenol are often present only in the hairdressing series. Therefore, if the hairdressing series is not added, contact allergy to these allergens may be missed.

Dye developers also contain several other ingredients that may cause contact allergy. Patients with dermatitis following eyelash dyeing should bring the dye and packaging to the clinician to establish the potential allergens.

In conclusion, eyelash dyeing is an increasingly popular treatment carried out in many beauty salons. It can cause allergic contact dermatitis, which is often attributable to PPD, a common ingredient in most dyes. This survey showed that more education to increase awareness among beauticians regarding sensitizers such as PPD is

needed. Dyes, developers and pre-dyeing and post-dyeing products used on the skin also contain other sensitizers that may also cause eyelid allergic contact dermatitis.

Conflict of interest

The authors declare no potential conflict of interests.

ORCID

Lareb Ali  <http://orcid.org/0000-0001-5742-9025>

Lareb Ali 

Sharizan A. Ghaffar

Dermatology department, Ninewells Hospital and Medical School,
Dundee, UK

Email: l.y.ali@dundee.ac.uk;s.ghaffar@nhs.net

DOI 10.1111/cod.12994

REFERENCES

1. Schnuch A, Lessmann H, Frosch PJ, Uter W. Para-phenylenediamine: the profile of an important allergen. Results of the IVDK. *Br J Dermatol*. 2008;159:379-386.
2. Hansson C, Thorneby-Andersson K. Allergic contact dermatitis from 2-chloro-p-phenylenediamine in a cream dye for eyelashes and eyebrows. *Contact Dermatitis*. 2001;45:235-236.
3. Kind F, Scherer K, Bircher AJ. Contact dermatitis to para-phenylenediamine in hair dye following sensitization to black henna tattoos—an ongoing problem. *J Dtsch Dermatol Ges*. 2012;10:572-577.
4. Matulich J, Sullivan J. A temporary henna tattoo causing hair and clothing dye allergy. *Contact Dermatitis*. 2005;53:33-36.
5. Søstved H, Rustemeyer T, Gonçalves M, et al. Contact allergy to common ingredients in hair dyes. *Contact Dermatitis*. 2013;69:32-39.
6. Britton JE, Wilkinson SM, English JS, et al. The British standard series of contact dermatitis allergens: validation in clinical practice and value for clinical governance. *Br J Dermatol*. 2003;148:259-264.
7. Thorén S, Yazıcı K. Contact allergens in “natural” hair dyes. *Contact Dermatitis*. 2016;74:302-304.
8. Uter W, Bensafra-Colas L, Frosch P, et al. Patch testing with hair cosmetic series in Europe: a critical review and recommendation. *Contact Dermatitis*. 2015;73:69-81.