

## Case Report

# Immediate Allergic Reaction, Generalized Urticaria and Palmar Itching, After Application of Hair Dye

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## Case Presentation

We report a case of a 26-year-old woman, a hairdresser referred to the Allergology service for a study of allergy to hair dyes.

Her personal history includes migraine treated with indomethacin on demand and intervention for appendicitis and otoplasty in 2006.

She reported that 3 months ago after applying a hair dye, she immediately presented a picture of generalized urticaria and itching on the palms of her hands, for which she went to the emergency department. Upon arrival she presented a TA: 110/75; FC: 75; O<sub>2</sub> saturation: 99%, urticaria was observed on the neck and arms. Rest of exploration was normal. Methylprednisolone and dexchlorpheniramine were administered and she was discharged with oral corticosteroids and levocetirizine. At 2 days she presented flaking on the scalp.

Open epicutaneous tests were performed on the hairdressing group, which were negative. Skin prick tests to the hairdressing group, we used saline serum as a negative control and histamine as a positive control. At 20 minutes, a 5x7 mm papule was observed in o-nitro-p-phenylenediamine (Figure 1). We carried out 10 controls with hairdressing battery being all negative.

## Discussion

PPD (p-phenylenediamine) and its derivatives (para-aminodiphenylamine, o-nitro-p-phenylenediamine and paratoluenediamine), p-aminophenol, m-aminophenol and resorcinol are chemicals with a powerful sensitizing effect, they are found in hair dyes, clothing and black henna used for temporary tattoos [1].

They are frequent cause of dermatitis, contact allergy on the scalp, due to hair dyes, a frequent cause of hand eczema in hairdressers and second eczema to tattoos due to the use of black henna [2].

Published clinical cases on immediate reactions to dyes are limited. Reactions of urticaria, angioedema and some anaphylaxis with fatal outcome have been reported.

In 1987 the first case of severe immediate reaction [3] due to PPDA with good evolution was described, later in 1998 the case of



Figure 1: Skin prick test hairdressing group.

a woman with several episodes of recurrent urticaria and 2 episodes with systemic symptoms after applying a hair dye was reported [4].

In 1996, the first death of a 68-year-old woman from anaphylaxis after applying a dye was reported [5].

We describe an immediate allergic reaction after applying a hair dye and whose allergological study was positive to o-nitro-p-phenylenediamine.

## References

1. Haruko O, Tsuyoki T, Tsunao O, Michiyuki K. Contact anaphylaxis due to para-aminophenol and para-methylaminophenol in hair dye. *Contact Dermatitis*. 2001; 45: 359.
2. Mukkanna K, Stone N, Ingram J. Para-phenylenediamine allergy: current perspectives on diagnosis and management. *J Asthma Allergy*. 2017; 10: 9-15.
3. Goldberg BJ, Herman FF, Hirata I. Systemic anaphylaxis due to an oxidation product of p-phenylenediamine in hair dye. *Ann Allergy*. 1987; 58: 205-208.
4. Pasche-Koo F, French L, PA Piletta-Zannic, C Hauser. Contact urticarial and shock to hair dye. *Allergy*. 1998; 53: 904-905.
5. Belton Austin L, Chira Thamrong. Fatal Anaphylactic reaction to Hair Dye. *The American Journal of Forensic Medicine and Pathology*. 1997; 18: 290-292.