

Commentary

Hair dye dermatitis and para-phenylenediamine contact sensitivity

Sir,

We read with interest the article by Mrinal Gupta, Vikram K. Mahajan, Karaninder S. Mehta, Pushpinder S. Chauhan.^[1] Recent times have shown an increase in the use of hair coloring among the populace. In India, its use was initially restricted for disguising the grey and white hairs among the older population; recent times have seen a greater use among the younger generation who would like to experiment with their looks. Hair dye dermatitis is thus showing a higher incidence among the general population. Para-phenylene diamine (PPD) is perhaps the commonest and well-known component of hair dyes. PPD was first described in Hofmann in 1863.^[2] This is a preferred constituent in many hair dyes in view of the longer lasting nature and black natural pigmentation imparted to the hair.^[3]

PPD was labeled by the American Contact Dermatitis Society as Allergen of the year in 2006.^[2] PPD is the most commonly implicated hair dye allergen. PPD and other related chemicals are also seen in photographic chemicals, rubber goods, leather, textiles, and so on.^[4] Thus, contact sensitization to PPD can occur from numerous sources.

Population-based epidemiological studies have shown the incidence of PPD sensitivity to be 0.1%–1% among the general population.^[5] However, in patients with dermatitis and especially with those with hair dye dermatitis, the sensitivity is significantly higher.^[2] PPD also shows cross-sensitization with para-amino benzoic acid (PABA), para-amino salicylic acid, sulfonamides, azo dyes, and local anesthetics such as benzocaine and procaine.^[6,7]

PPD use has commonly been associated with acute contact dermatitis, but other dermatoses associated with PPD use include lichen planus–like, erythema multiforme–like, urticarial, lymphomatoid contact dermatitis and even pigmented contact cheilitis.^[2,6] PPD is also nowadays being combined with the

traditional henna hair dyes to impart a darker and long-lasting color.^[7] Greater use of tattoos by the younger generation predisposes them to the risk of PPD sensitization at a younger age itself.

Patch test remains the gold standard for diagnosis of contact sensitivity. Where patch test cannot be performed, the open test is recommended 48 h before using hair dyes to rule out sensitivity to PPD and other constituents.^[2,7] An *in vitro* test to diagnose PPD allergy has also been described.^[8]

Keeping the concentration of PPD to the basic minimum level in hair dyes at the manufacturing level must be considered. PPD-free labeled hair dyes and vegetable-based hair dyes are perhaps the best practical solution to those exhibiting PPD sensitization. It is however very important to check for absence of PPD in the content list of some of the vegetable and so-called herbal hair dyes. Hair stylists and patients while applying hair dyes are advised to use gloves to prevent contact with skin of the hands. Following proper instructions during hair dye application is also important.

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