

Exanthema caused by ingestion of potassium *p*-aminobenzoate (POTABA-Glenwood®)

Ulf Meyer-Hoffert, Jens-Michael Jensen and Jochen Brasch

Department of Dermatology, Allergology and Venerology, University Hospitals of Schleswig-Holstein Campus, 24105 Kiel, Germany

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Case Report

As treatment for his Peyronie's disease (PD) a 55-year-old patient started to take 4.5 g of POTABA-Glenwood® (potassium *p*-aminobenzoate) daily. After 4 weeks, he developed a generalized rash, which disappeared after cessation of treatment. Scratch tests with the POTABA-Glenwood® capsular content and pure sodium benzoate showed no reactions after 20 min and on D1. On D2, however, erythemas had developed at both scratch test sites, and increased until D3. Therefore, subsequent patch tests were performed with sodium benzoate [20% (wt/wt) in pet.] and the POTABA-Glenwood® capsular content [20% (wt/wt) in pet.]. In accordance with common guidelines (1), small Finn Chambers® mounted on Scanpor tape (SmartPractice, Phoenix, AZ, USA) were attached for 1 day to the patient's back. Positive allergic reactions were classified as weak (+), moderate (++), or strong (+++) (1). There was a ++ reaction to sodium benzoate on D2–D3, but no positive reaction to the POTABA-Glenwood® capsular content within 5 days. After oral re-exposure with 4.5 g of POTABA-Glenwood® daily for 3 days, the patient again developed a disseminated, erythematous rash. A lesional skin biopsy histologically was consistent with an acute exanthema and contact eczema. Laboratory findings showed moderate increases in the levels of the serum transaminases alanine-aminotransferase (ALT/GPT 54 U/l) (normal, < 35 U/l) and aspartate-aminotransferase (AST/GOT 75 U/l) (normal, < 35 U/l), but a normal blood count without eosinophilia. After systemic treatment with 40 mg of methylprednisolone

per day for 3 days, the rash cleared. The transaminases returned to normal levels 3 months later. Oral testing with sodium benzoate was refused by the patient, and he has subsequently avoided taking POTABA-Glenwood® and sodium benzoate.

Discussion

PD (also known as 'induratio penis plastica' or 'chronic inflammation of the tunica albuginea') is a connective tissue disorder involving the growth of fibrous plaques in the soft tissue of the penis. It affects up to 10% of men. A variety of treatments have been used, but none has proved completely successful.

Potassium *p*-aminobenzoate was introduced as a treatment for PD after it was shown that it leads to a decrease in collagen production in cultured fibroblasts (2). As possible mechanisms, an improved oxygen supply with increased glycosaminoglycan secretion and increased monoamine oxidase activity were suggested. A recent survey among 636 German urologists showed that 46% of patients suffering from PD were treated with POTABA-Glenwood® (3). Although the package insert lists skin reactions as occasional side-effects, a rash like our patient's has not been reported previously. Other reported side-effects include nausea and liver inflammation (4). The latter can be suspected in our patient too, as a reason for the slightly increased levels of liver enzymes. Since 2008, only six reports have linked the oral use of potassium *p*-aminobenzoate to acute liver injury. We suspect that the number of undiagnosed cases could be much higher, especially when enzyme elevation is only low to moderate. Recently, photosensitization to POTABA-Glenwood® was reported as another adverse reaction (5).

Formerly, 3–5% *p*-aminobenzoic acid (PABA; CAS number 150-13-0) was used topically for ultraviolet protection (6). PABA is still a common and freely available food additive and preservative, and it serves as the starting

Correspondence: Ulf Meyer-Hoffert, Department of Dermatology, University Hospitals of Schleswig-Holstein, Campus Kiel, Schittenhelmstraße 7, 24105 Kiel, Germany. Tel: +49 431 597 1602; Fax: +49 431 597 1611. E-mail: umeyerhoffert@dermatology.uni-kiel.de

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material for the synthesis of azo dyes, folate, and local anaesthetics. Contact allergy to PABA and contact allergies to related substances such as *p*-amino-*p*-phenylenediamine (7), as well as cross-reactions with certain antihistamines, procaine penicillin, and sulfonamides, have been observed. It is thought that these aminobenzene substances undergo oxidation and further processing to quinonimine structures, which may act as haptens (8). Quinonimines have been proven to be hepatotoxic.

Notably, the patch test for POTABA-Glenwood® was negative, whereas the patch test for benzoate was positive.

This suggests that, after ingestion, the *p*-aminobenzoate was deaminated to benzoate, which then caused the rash in our patient. Therefore, we advised him to avoid benzoic acid in food unless further testing proved that it was not noxious. Finally, it remains unclear whether the reaction in our patient should be considered as a non-immunological intolerance reaction, an allergic rash, or systemic contact dermatitis. According to the RegiSCAR criteria (9), the reaction of our patient could be classified as a DRESS syndrome, even though no eosinophilia was observed.

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