

Short Communication

Contact sensitivity and systemic reaction to pseudoephedrine and lignocaine

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There are 4 cases reported of generalized erythema, joint swelling, tachycardia and rigors with oral pseudoephedrine (1–3), many cases of non-purpuric fixed drug eruption from oral pseudoephedrine (3); and 2 cases of positive patch tests to pseudoephedrine, 1 after a fixed drug eruption (3), and 1 after a generalized eczema (4). There are reports of adverse reactions to lignocaine following its use as a subcutaneous injection, deep dental infiltration, and as a topical application (5). Adverse reactions to lignocaine are quite common, but immune pathology cannot usually be demonstrated. Adverse reactions that are mediated by the immune system are generally of the immediate type (Type I), whilst delayed allergy is rare (6).

Case Report

A 35-year-old atopic woman was referred by her family doctor concerning the appropriate use of local anaesthetic. Following an episode of sunburn, she applied Emla[®] cream (lignocaine 2.5%, prilocaine 2.5%) to inflamed skin. This appeared to worsen the affected skin, such that within a few days, she developed blistering in this region. Several months later, she took 1 tablet of Nurofen Cold and Flu Remedy[®] (200 mg ibuprofen, 30 mg pseudoephedrine), which after several hours induced palpitations and a generalised red itchy eruption. Prednisolone 30 mg oral daily controlled the cutaneous reaction within a week. She re-challenged herself with oral Nurofen[®] without incident, but Nurofen Cold and Flu Remedy[®] produced the same symptoms, which again settled with a short course of oral prednisolone.

At a dental visit several weeks later, she was given a 2% plain lignocaine intrabuccal injection. Within minutes, she developed swollen hands, tachycardia and a red itchy eruption over her trunk and limbs. To her knowledge, she had never had a previous local anaesthetic administered. She was taking no other medication. Patch testing showed positive reactions (++) to pseudoephedrine 1% pet. and lignocaine 1% pet. at 2 and 4 days, a positive reaction (+) to prilocaine 1% pet. at D4, but negative reactions to procaine, amylocaine and the European standard series.

Discussion

Sensitization to prilocaine and lignocaine may have occurred in this patient following the topical application of Emla[®] cream to an already inflamed skin site. The presence of a benzene ring and a distally-placed nitrogen molecule, surrounded by methyl groups, in lignocaine, prilocaine and pseudoephedrine, suggests some sharing of epitopes between all 3 chemicals (5, 7). Therefore, sensitization to pseudoephedrine may be due to cross-sensitization.

Prilocaine and lignocaine belong to the amide group of anaesthetics, which is distinct from ester anaesthetics such as procaine and benzocaine. Cross-sensitization is unlikely to occur between these structurally unrelated classes. Contact dermatitis from amide anaesthetics is rare. When it has been reported, there is often cross-sensitization between amide anaesthetics (8). 4 previous cases have been reported of Emla cream[®] causing both lignocaine and prilocaine sensitization.

Patch testing confirmed allergic contact dermatitis (Type IV hypersensitivity) from all 3 chemicals. The generalized systemic upset may be Type I or Type III in origin. Type I hypersensitivity to lignocaine has previously been reported (5, 6) and was demonstrated by our patient. The timing of the response to oral pseudoephedrine is unhelpful in distinguishing the type of hypersensitivity that occurred.

Given the similarity between the chemical structures of all 3 molecules, and the temporal relationship of topical sensitization and subsequent reproducible oral challenge in our patient, cross-sensitization should be considered when patients present for assessment of either pseudoephedrine or lignocaine adverse reactions.

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