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RESEARCH LETTERS

Anaphylaxis to levofloxacin

To the Editor,

A 55-year-old woman without prior history of drug allergy, scheduled for cataract surgery, received oral levofloxacin (500 mg) for antibiotic prophylaxis. Within minutes after levofloxacin intake, she experienced sneezing and palmoplantar pruritus followed by generalised pruritus along with facial, lingual and pharyngeal angio-oedema and subsequent dyspnoea. These clinical signs were followed by digestive (i.e. vomiting, abdominal pain and diarrhoea) and cutaneous (generalised erythema) signs. Surgery was postponed. Clinical signs resolved within hours with hydrocortisone and dexchlorpheniramine. Further clinical outcome was uneventful.

Plasma histamine (70 nmol l^{-1}, $N < 10$) and serum tryptase (32.7 $\mu g\, l^{-1}$, $N < 13.5$) measured 75 min after the clinical reaction, showed increased concentrations. Basal tryptase (3.4 $\mu g\, l^{-1}$) measured two days after remained unchanged. With the patient's consent, allergological assessment was performed four weeks later. Prick-test (PT) at 10^{-2} dilution (0.05 mg/ml) was positive in response to levofloxacin. Cross-reactivity was found with ofloxacin through PT (10^{-1} dilution: 0.5 mg/ml) while skin testing remained negative in response to ciprofloxacin (i.e. PT stock solution: 2 mg/ml and intradermal tests up to 10^{-1} dilution: 0.2 mg/ml). Pefloxacin was not skin-tested. IgE-mediated levofloxacin-induced allergy, with cross-reactivity to ofloxacin and absence of cross-reactivity to ciprofloxacin, was therefore confirmed on the basis of the typical clinical history, increased tryptase level along with skin test results. With the patient's informed consent and under medical supervision, graded drug challenge using ciprofloxacin at increasing intravenous doses (cumulative dose: 150 mg) was performed[1] and remained negative, therefore excluding ciprofloxacin sensitisation.

Although rare, immediate hypersensitivity to quinolones may be due to direct pharmacological effects (i.e. histamine release) or IgE-mediated mechanism.[2,3] Ciprofloxacin is frequently involved as it is the most commonly quinolone used.[3] The diagnostic values of skin tests in quinolone allergy remain controversial. Contradictory results regarding the sensitivity of skin tests in quinolone allergy have been reported, whereas in controls, positive skin tests were attributed to direct mast cell activation.[4] Thus, low non-irritating intradermal tests concentrations for quinolones were proposed with subsequent low sensitivity of intradermal tests to these drugs.[4] Others suggest using specific Sepharose-RIA assay to prove quinolone IgE-mediated hypersensitivity.[3] However, a few in vitro studies showed that the sensitivity of the RIA-assay and the basophil activation test differed according to the fluoroquinolone tested[5] while these results[3,5] were, in the meantime, not compared to the in vivo skin tests results.

Fluoroquinolones are synthetic derivatives of nalidixic acid with a common core of a bicyclic ring structure and cross-reactivity, related to the structure of the molecules, seems to be common.[3,4] Our patient showed cross-reactivity to ofloxacin as levofloxacin is the active L-isomer of ofloxacin. Both are fluorinated 4-quinolones containing a pyridobenzoxazine ring from positions 1 to 8 of the basic ring structure. Side chain reactivity to these sites alone might explain cross-reactivity to ofloxacin and lack of cross-reactivity to ciprofloxacin, as ciprofloxacin is devoided of any side chain in this position.[2] However, there is no general rule to predict cross-reactivity between quinolones. Thus to be complete during the diagnostic approach of quinolone-induced IgE-mediated anaphylaxis, investigation for cross-reactivity with the other commercialised quinolones should be performed in order to identify safe alternative regimens (i.e. negative skin-tested quinolones).

Intravenous challenge with ciprofloxacin remained uneventful and thus excluded cross-reactivity with related drugs (i.e. levofloxacin and ofloxacin). This allowed providing a safe alternative in cases of fluoroquinolones requirement in our patient. This finding contrasts with other reports suggesting strict avoidance of all quinolones in patients with quinolone-allergy.[3,6]

In conclusion, skin test might be a useful tool to prove quinolone-induced IgE-mediated hypersensitivity, whereas the challenge test might help to confirm the negative predictive values of skin tests to quinolones and thus authorise a safe alternative.

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Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans for this investigation.

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Allergic contact dermatitis due to sensitisation to sunscreen in two infants

To the Editor,

The active ingredients of sunscreens protect against the harmful effects of solar radiation. According to their mechanism of action, sunscreens can be classified as physical and chemical. Despite their clear benefits, chemical sunscreens can cause allergic contact dermatitis and photoallergy. The filter octocrylene belongs to the cinnamate family. Until recently, it was regarded as a stable molecule, which was neither allergenic nor irritant.[1] The dibenzoylmethane derivative azobenzone (Parsol 1789) has the capacity to absorb ultraviolet light over a wider range of wavelengths than many sunscreens and has been used in many preparations.[2]

We report two cases; in the first case, a one-year-old boy experienced an erythematous pruriginous eruption on the face that spread to the rest of his body 3 h after application of Isdin® cream (SPF 15) without exposure to sunlight. No other symptoms were observed. The eruption disappeared in five days without treatment. A month later, he developed a new eruption in the contact area after application of La Roche-Posay cream (SPF 50)®, which also resolved without treatment in a few days. In the second case, a one-year-old child developed an erythematous maculopapular eruption with intense pruritus in the contact area 2 h after application of Isdin®, which disappeared without treatment in seven days. No other clinical symptoms were observed.

In the allergy study, a standard patch testing was applied (True Test®). The results were negative at 48 and 96 h. Patch testing with the two sunscreens involved in the reactions gave a positive reading (+++) at 48 and 96 h in both

Table 1 Results of patch testing with other sunscreens.

	Solar filter brand commercial	Parsol	Octocr.	Reading 48 h	Reading 96 h
1	La Roche Posay®	+	+	+++	++
2	Heliocare gel SPF 50®	–	+	+++	++
3	Parsol 2% (butilmetoxidibenzoilmetano)	+	–	++	+
4	Eucerin Kids micropigment sun lotion®	–	–	–	–
5	Eucerin 50 plus®	–	+	++	+
6	Sunlaude SPF 50®	+	+	+++	+
7	Solcare SPF 30®	–	+	+++	++
8	Mezcla de perfumes	–	–	–	–
9	Nutraisdín®	–	+	++	+
10	Vaselina	–	–	–	–