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doi:10.1016/j.aller.2009.09.011

Systemic anaphylaxis caused by moxifloxacin

To the Editor:

Fluorquinolones are antimicrobial agents with a broad range of activity against both gram-negative and gram-positive bacteria.[1]

Quinolones may be classified in four groups, based on their chemical structure and their antibacterial activity. The first generation group includes pipemidic acid; the second one embraces ciprofloxacin, norfloxacin and ofloxacin. The third group includes levofloxacin; and finally in the fourth group we find moxifloxacin[2].

Fluorquinolones have been in clinical use for more than 30 years and have been found to be generally well tolerated. Immediate hypersensitivity reactions to quinolones are uncommon, ranging in frequency from 0.4 to 2%.[3]

Contradictory results regarding the sensitivity of skin testing in quinolone allergy have been reported.[4]

We report a patient with an immediate reaction due to moxifloxacin with good tolerance to levofloxacin.

A 44-year-old woman, with no history of atopy or allergy, was treated with moxifloxacin for a respiratory infection. Ten minutes after the first dose, the patient developed pruritus and generalised urticaria with facial and hands angio-oedema. In addition, she presented with dyspnoea and general discomfort. Medication was discontinued and skin lesions and respiratory symptoms resolved completely in two hours with systemic corticosteroids and antihistamines. She had previously tolerated this antibiotic.

After obtaining informed consent from the patient, we performed skin prick tests with moxifloxacin (4 mg suspended in 1 ml saline), norfloxacin (1 mg/ml), pipemidic acid (4 mg/ml), ciprofloxacin (1 mg/ml) and levofloxacin (5 mg/ml) with negative results. Histamine (10 mg/ml solution) and buffered saline were used as positive and negative controls, respectively. Intradermal test with moxifloxacin (0.004 mg/ml dilution) was positive (Figure 1), whereas negative results were obtained with norfloxacin (0.001 and 0.01 mg/ml dilution), pipemidic acid (0.004 and 0.04 mg/ml dilution), ciprofloxacin (0.001 and 0.01 mg/ml dilution) and levofloxacin (0.005 and 0.05 mg/ml dilution). We performed the same complete panel to 10 controls who had previously tolerated moxifloxacin. Intradermal test with moxifloxacin (0.04 mg/ml dilution) was positive in our patient and in the 10 controls subjects. We considered these results as an irritant response and not a truly positive answer. Intradermal tests with moxifloxacin (0.004 mg/ml) in 10 control subjects were negative, while it was positive in our patient; so, this result was considered as positive.

To investigate possible cross-reactivity among quinolones, we performed a single-blind oral challenge with levofloxacin, with a negative result. Therefore, we recommended our patient to use of levofloxacin for future treatments requiring a quinolone antibiotic.

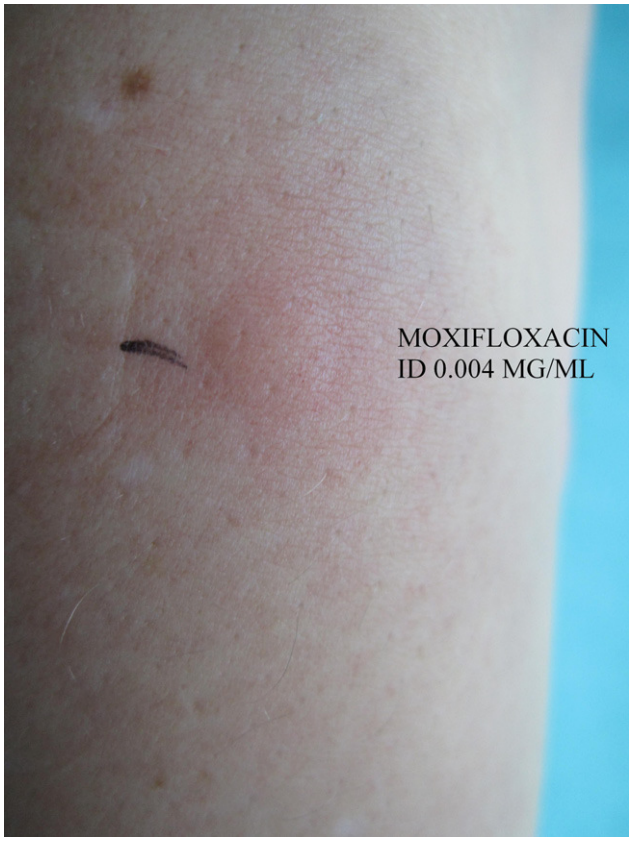

Figure 1

Moxifloxacin is a new quinolone with a methoxy group (COH—) on carbon 8 that differentiates it chemically from the other fluorquinolones.[2]

The quinolones are generally well tolerated. The spectrum of adverse reactions to quinolones ranges from gastrointestinal symptoms, which are the most frequent, to neuropsychiatric symptoms, haematologic abnormalities and hypersensitivity reactions.[2]

Urticaria[5], anaphylaxis[4], hypersensitivity syndrome[3], acute generalised exanthematous pustulosis[1], fixed drug eruption[1], toxic epidermal necrolysis[1], photosensitivity[1] and anaphylactoid reaction[6] have occasionally been reported with quinolones.

The association between immediate reactions and positive skin tests results suggests an Ig E mediated mechanism. Some reports[5–7] discarded the use of skin tests for quinolone allergy diagnosis. Our patient presented a positive intradermal test with moxifloxacin 0.004 mg/ml dilution. Therefore, in our case, the diagnosis was based on the skin test results. Consequently, we recommend to perform skin tests with several quinolones in patients with adverse reactions to these drugs before exposing them to an oral challenge.

doi:10.1016/j.aller.2009.09.008

Cross-reactivity studies between quinolones have been published. These studies conclude that the level of cross-reactivity among this group of antibiotics is important and all quinolones should be avoided.[5,7,8] In our case, the patient tolerated a single-blind oral challenge with levofloxacin; for that reason, we recommended this antibiotic whenever a quinolone was required.

In summary, we report a case of anaphylaxis due to moxifloxacin. An IgE-mediated mechanism is suggested, as demonstrated by positive intradermal test with moxifloxacin. Negative skin tests and single-blind oral challenge results with levofloxacin establish, in our case, no cross-reactivity between both moxifloxacin and levofloxacin.

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