

Allergic contact dermatitis caused by an ethinylestradiol–norelgestromin transdermal therapeutic system

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Transdermal therapeutic systems are being increasingly used, because they avoid first-pass metabolism, promote regular absorption, permit a low dose of the drug to be used with fewer side effects, and also result in better patient compliance.

The first transdermal contraceptive patch to be developed is a matrix system that contains a combination of 6 mg of norelgestromin and 0.75 mg of ethinylestradiol. Mild or moderate local irritative reactions have been reported by 20% of users, but have led to discontinuation in only 2.6%.

Case Report

A 20-year-old woman developed local erythema, pruritus, oedema and scaling at the application site (abdomen) of a contraceptive patch containing ethinylestradiol–norelgestromin. The reaction persisted for 5 days, and it was so intense that emergency assistance was required. Before this reaction, the patient had been using these patches for 2 months, for three consecutive weeks followed by a patch-free week with good tolerance.

Patch tests were performed with an ethinylestradiol–norelgestromin patch, a placebo patch without drug (provided by Janssen-Cilag Laboratories, Madrid, Spain), our adhesive series, progesterone 5% pet., and commercial oestradiol (2 mg) patches, with readings at D2 and D4. The adhesive series and progesterone were applied with the use of Curatest® adhesive strips for patch tests; the others were commercial patches. The tests were applied on the patient's back. A positive result was obtained with the ethinylestradiol–norelgestromin patch, showing erythema, papules and exudation at D2 that persisted for 5 days, suggesting an allergic, non-irritative reaction. The remaining patch test results were negative.

The negative test result with the placebo patch indicates that the drug was the cause of the reaction, and suggests that neither the adhesive nor matrix components were involved. We could not obtain ethinylestradiol and norelgestromin separately, so we were not able to identify the aetiological agent. However, ethinylestradiol is derived from oestradiol, which has a similar chemical structure; we therefore patch tested with oestradiol, which gave negative results.

Norelgestromin is the primary active metabolite of norgestimate, although only norgestimate is available by the oral route. In order to assess the tolerance to oral contraceptives, oral challenge tests were performed with ethinylestradiol–norgestimate and ethinylestradiol–gestodene. The patient tolerated both drugs, providing her with a contraceptive alternative.

Discussion

Transdermal therapeutic systems are composed of an outer impermeable membrane, a reservoir or polymer matrix with the solubilized drug, a rate-limiting membrane, and an adhesive. The new matrix systems have reduced the incidence of local skin reactions that were previously seen with the reservoir systems. Allergic contact dermatitis resulting from transdermal therapeutic systems is mostly attributable adhesive, reservoir or matrix components, but the drug can also be the cause.

Oestradiol patches are associated with irritant reactions that can be diminished by changing the site of application. Allergic contact dermatitis with oestradiol patches is rare, and has been described in patients who developed systemic dermatitis when oestradiol was taken orally (1, 2).

A case of allergic contact dermatitis caused by an oestradiol and norethisterone transdermal therapeutic system has been described in a patient who also reacted to an oestradiol gel. The allergy study showed a positive patch test reaction with 17- β -oestradiol 1%, 0.1% ethanol, and norethisterone acetate 1%, 0.1% ethanol, but it showed a negative patch test reaction with oestradiol 0.5% pet. The author concluded that ethanol was the ideal vehicle with which to test oestradiol (1).

A case of systemic photosensitivity has been reported in a patient using an ethinylestradiol–norelgestromin patch who had a similar reaction after the use of oral contraceptives (3). Another case of allergic contact dermatitis caused by an ethinylestradiol–norelgestromin patch has been reported in a 15-year-old adolescent who presented with pruritus and burning under the patch after 5 months of use; however, an allergy study to determine the cause was not performed (4).

We report the case of a patient with allergic contact dermatitis caused by an ethinylestradiol–norelgestromin patch. Although the allergy study could not identify the precise cause, we excluded oestradiol allergy. This patient showed good tolerance to the oral contraceptives ethinylestradiol–norgestimate and ethinylestradiol–gestodene.

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