Clinical Aspects of Contact Allergy to Corticosteroids

A.		Dooms-Goossens
H.		Degreef

Department of Dermatology, K.U. Leuven, Universitair Ziekenhuis, Leuven, Belgium

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Abstract

Because of their **anti-inflammatory** activity, corticosteroids generally mask the clinical signs of a contact dermatitis to a corticosteroid preparation. The lesions usually present as chronic dermatitis, and the patients mostly report not exacerbations but failures to respond to corticosteroid therapy. Moreover, masking also occurs with **patch-test** reactions obtained with corticosteroid preparations and the corticosteroid molecules themselves. These are important reasons why contact allergy to such preparations has frequently been missed in the past.

Department of Dermatology, K.U. Leuven, Universitair Ziekenhuis, Kapucijnenvoer 33, B-3000 Leuven (Belgium)

Introduction

The anti-inflammatory activity of a corticosteroid may mask the contact allergic reaction it is causing. This is an important reason why contact allergy to corticosteroids has been frequently missed in the past. The clinical signs of the corticosteroid-allergic patient are rarely spectacular, as the lesions generally present as a chronic eczema. The majority of the corticosteroid-sensitive patients we could observe suffered from stasis dermatitis due to chronic venous insufficiency, irritant and/or allergic dermatitis of the hands, chronic eczema of the feet (sometimes in association with a shoe dermatitis), anal and/or perianal dermatitis (sebor-rheic) facial eczema [1], and also atopic dermatitis (even in children [2]). The patients generally report that they simply do not seem to respond to corticosteroid therapy any longer. The failure of the skin lesions to heal leads the attending physician then to prescribe other, still stronger corticosteroid preparations. This often brings no relief of the symptoms and causes other adverse corticosteroid effects (such as atrophy, rosacea, and perioral dermatitis that may even dominate the clinical picture). In exceptional cases, the contact allergy may express itself as an id-like reaction elsewhere on the body.

Allergic reactions may also arise upon the administration of local inhalation corticosteroids used in the treatment of rhinitis or bronchial asthma [3]. Several reports have been published regarding the occurrence of eczema located on the face (mainly the eyelids and the perioral and perina-sal areas) and sometimes also at distant body sites (even generalized); in some cases, this is associated with endona-sal intolerance and bronchoconstriction. The precise allergic mechanisms are not always clear but, in some cases, even IgE antibodies might be involved. In these cases, in which such reactions occur already 2 or 3 days after the first administration, a previously existing corticosteroid sensitivity (i.e., undetected) seems obvious. Indeed, there have been several cases with tixocortol pivalate, which indicates a contact allergy to hydrocortisone (acetate), prednisolone, etc., and with budesonide, which indicates contact allergy to other

corticosteroids, such as acetonides (amcinonide, triamcinolone acetonide) as well as to certain esters (hydro-cortisone-17-butyrate, alclomefhasone dipropionate, pred-nicarbate) [4]. Thus, such patients may have been sensitized to a chemically related corticosteroid and then react to tixocortol pivalate and budesonide, respectively.

Furthermore, drug-like eruptions presenting as eczema, exanthema, purpura, urticaria, etc., may occur following systemic intralesional and also intra-articular administration of corticosteroids in previously sensitized patients [5].

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The Clinical Aspects of Corticosteroid Patch-Test Reactions

A weak concentration of a corticosteroid in a pharmaceutical product can cause a contact allergy on the treated eczema site while producing a negative patch-test reaction or even a negative usage test on an intact test site. Moreover, the bioavailability of a corticosteroid diluted in a test vehicle like petrolatum is generally lower than in a commercial preparation for which the vehicle has been formulated intentionally to enhance skin penetration. However, alternative vehicles may provoke irritant reactions (e.g., dimethylsulfoxide) or pose storage problems (e.g., ethanol) because corticosteroids tend to degrade in them [6]. The occurrence of false-negative patch-test results has even led certain authors [7] to use intradermal testing to screen for allergies to hydrocortisone as well as to other corticosteroids. (One must keep in mind, though, that the results of intradermal testing are not always relevant to the patient's contact allergic condition.)

Masking effects frequently occur in patch-test reactions and may produce particular reactions. A curious reaction that occurs quite often at the first reading and this primarily with strongly active corticosteroids is what is called the 'edge effect' [6]: an eczematous reaction is only apparent on the edge of the patch-test site and not in the middle. Probably what is involved is a suppression by its anti-inflammatory effect in the middle of the patch, where the concentration is the highest, and a predominating allergenic effect on the edge just beyond the borders of the test material, where a small concentration of the corticosteroid has diffused into the surrounding skin. This phenomenon disappears at later readings, however, and the entire test site becomes eczematous. That this is not simply a pressure effect caused by the chamber (plastic) is shown by its occurrence also when 'dry gels' are used as test vehicles for the corticosteroids [8].

Another frequent phenomenon is a vasoconstrictive or blanching effect at the first reading, primarily when strong corticosteroids are diluted in an ethanol solution. This contrasts with what may be called 'reactive vasodilation' expressed as a faint erythema on the patch-test site, particularly at the 3- or 4-day reading. These phenomena, however, only occur in some of the patients tested, which expresses the individual variability in responses to local corticosteroids. Weak erythematous reactions, however, must certainly be checked later, since they could just as well indicate the beginning of an allergic reaction. Indeed, corticosteroids often react only after a considerable period of time (5-6 days) [6].

Furthermore, corticosteroid sensitivity is found to be particularly common among patients who use vast numbers of topical agents and so tend to develop concurrent hyper-sensitivity to several of the ingredients in them. Masking effects can also occur when corticosteroid preparations are tested, so contact allergies to other ingredients may be overlooked. In our experience, we have found that approximately 80% of corticosteroid-allergic patients react to other, mainly iatrogenic, allergens [1], and even to presumably rare sensitizers [9]. This, too, was a pitfall for the dermatologist searching for allergens present in such preparations: one was apt to be satisfied

when one could identify an allergenic ingredient while, in fact, the patient is sensitive to several, including the corticosteroid itself.

Conclusion

Corticosteroids, because of their anti-inflammatory effects, often mask the clinical signs of a patient presenting with a contact dermatitis to a corticosteroid preparation as well as the patch-test reactions obtained with the corticosteroid molecules themselves.

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