

Low Yield for Extended Reading of Patch Tests with Topical Corticosteroids

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Background: On the basis of reports that up to 30% of patch-test reactions are missed if an extended reading is not performed, we required that patients who were being patch-tested with the corticosteroid series return for a reading at least 1 week after placement of the allergens.

Objective: To report our institutional experience with extended readings (day 7 or beyond) of patch-test reactions to the corticosteroid series.

Methods: We retrospectively reviewed patch-test reactions to corticosteroids since extended readings were implemented (April 2001 to June 2004).

Results: A total of 135 patients were patch-tested with 1,656 corticosteroid allergens. On day 5, five patients had five positive patch-test reactions; by the time of the extended reading, no new reactions had developed in these patients. Of the patients with no reactions on day 5, two had a positive result at the extended reading: each had a relevant reaction to budesonide 0.1%, one on day 7 and the other on day 9.

Conclusions: Only 2 reactions (to 1,656 corticosteroids) became apparent at the extended reading. Extended readings were of limited value in our experience.

DURING THE PAST 15 YEARS, contact allergy to topical corticosteroids has been increasingly recognized. Several excellent reviews of the subject have been published.¹⁻³ The current literature indicates that an extended reading (beyond day 4 or 5) of patch-test reactions to corticosteroids is important in order to pick up late reactions. It has been estimated that up to 30% of corticosteroid reactions are missed if a reading on day 7 is not performed.⁴⁻⁶

Therefore, at our institution, we began to request that all patients undergoing testing to the extended patch test series for corticosteroids have readings not only on days 3 and 5 but also between days 7 and 10. The purpose of this study was to determine whether this strategy detected as many reactions as have been reported elsewhere.

Methods

We retrospectively reviewed our experience of patch-testing with corticosteroids since extended readings were implemented (April 2001 to June 2004). Patients suspected of having allergic contact dermatitis to topical

corticosteroids were evaluated and were patch-tested with a screening series of corticosteroid allergens purchased from Chemotechnique Diagnostics AB (Malmö, Sweden) and from our institution's pharmacy. The allergens used are shown in Table 1. The patients were patch-tested by means of a standardized technique as previously outlined by the North American Contact Dermatitis Group (NACDG),^{7,8} with Finn Chambers (Epitest Ltd Oy, Tuusula, Finland) on Scanpor tape (Norgesplaster A/S, Vennesla, Norway). The patches remained in place for 2 days, and test sites were evaluated three times: initially at day 3 after initial placement ("day 1" reading), again at day 5, and between days 7 and 10 ("extended" reading).

The patch-test readings were performed in a manner identical to that used by the NACDG.^{7,8} A positive allergic patch-test result was interpreted as being a reaction characterized by erythematous papules, vesicles, or a spreading reaction with crust and ulceration. We excluded any reactions graded as macular erythema, doubtful, or questionable. The relevance of each patch-test reaction was determined by considering the patient's history and skin examination findings.

The patch-test records of all patients tested with corticosteroids in the stated time frame were reviewed to determine the results of their patch tests. We specifically examined the number of reactions to corticosteroids that

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Table 1. Allergens Used in the Corticosteroid Patch Test Series*

Hydrocortisone acetate, 1% [†]
Betamethasone-17-valerate, 1% [‡]
Alclometasone-17,21-dipropionate, 1% [‡]
Clobetasol-17-propionate, 1% [‡]
Dexamethasone-21-phosphate disodium salt, 1% [‡]
Amcinonide, 1% in 70% ethanol [†]
Fluocinolone acetonide, 1% in 70% ethanol [†]
Fluocinonide, 1% [†]
Prednisone, 5% [†]
Halcinonide, 1% [†]
Betamethasone dipropionate, 0.5% in 70% ethanol [†]
Mometasone furoate, 0.1% [†]
Desoximetasone, 0.05% [†]
Tixocortol-21-pivalate, 1% [‡]
Hydrocortisone-17-butyrate, 1% in 70% ethanol [†]
Triamcinolone acetonide, 1% [‡]
Budesonide, 0.1% [‡]

*All allergens were in petrolatum unless otherwise specified.

[†]Obtained from institution's pharmacy.

[‡]Obtained from Chemotechnique Diagnostics, Malmö, Sweden.

were seen on day 5 and the number seen at the extended reading between days 7 and 10. Approval for this study was obtained from our institutional review board.

Results

Overall, 156 patients were patch-tested with a total of 1,934 corticosteroid allergens. However, 21 patients did not return for their extended readings at days 7 to 10 and were excluded for the purposes of this study. The remaining 135 patients were patch-tested with a total of 1,656 corticosteroid allergens and returned for readings of their patch tests on day 3, day 5, and days 7 to 10.

Five of the 135 patients had five positive patch-test reactions to corticosteroids at day 5; by the time of the extended reading at days 7 to 10, no new reactions had developed in these patients (Table 2). Of the patients who had no reactions on day 5, only two had a positive reaction to one corticosteroid allergen at the extended reading (one patient at day 7 and one patient at day 9) (see Table 2). Both of these patients had a strong edematous vesicular reaction to budesonide 0.1%, and both reactions were relevant. At day 5, one of these patients had no reaction and the other had macular erythema.

Discussion

The extended reading at 7 to 10 days was of low yield. Of 135 patients, the extended reading identified only

2 (1.5%) additional patients reacting to corticosteroids. Put another way, additional reactions to only 2 (0.1%) of the 1,656 corticosteroid allergens became apparent at the extended reading.

Extended readings present issues of logistics and costs for patients, many of whom do not like having to return for another reading (for both practical and financial reasons); it also presents logistic scheduling problems for the patch testing team. It is debatable whether arranging for these extended readings is worthwhile given the low yield we observed. Recognition of the late reaction was important for the two patients in whom it was observed, but 135 patients had the additional expense and trouble of returning to the patch test clinic for these reactions to be recognized.

According to convention, only clearly positive reactions were included in this report. Reactions graded as macular erythema, doubtful, or questionable were excluded. One of the two patients who had a reaction at the extended reading also reacted with macular erythema at day 5. This implies that macular erythema reactions should be considered in the interpretation of these patch-test reactions. We recognize that corticosteroids can produce blanching and physiologic erythema at the first patch-test reading (day 3); these are not signs of allergy or irritation but are due to the intrinsic properties of corticosteroids.

We recognize the limitations of this relatively small study of patients who had extended patch-test readings. To adequately address whether extended readings are necessary when patients are patch-tested with corticosteroids, a correctly powered study of patients with known corticosteroid allergy and proper controls would be needed, and the subjects would have to be retested to determine when the extended reactions occur.

Nevertheless, we were interested to find that the yield of late reactions from reading patch tests at 7 to 10 days

Table 2. Patients with Positive Allergic Patch-Test Reactions to Corticosteroids

Patient	Reaction on Day 5	Reaction on Days 7–10	Relevance
1	Papules	Papules	Not relevant
2	Papules	Papules	Relevant
3	Papules	Papules, vesicles	Questionable
4	Vesicles	Papules	Relevant
5	Vesicles	Vesicles	Relevant
6	None	Vesicles	Relevant
7	Macular erythema	Papules	Relevant

was so low (1.5%), much lower than that reported by others (up to 30%).⁴⁻⁶ The reason for the discrepancy is not clear. While recognizing the limitations of our study, we are debating whether it is worthwhile to continue the reading of patch-test reactions to corticosteroids at days 7 to 10.

References

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