

ruled out. This justifies the airborne mechanism of the ACD in the present case and in the other case reports of the literature.

The present case emphasizes the role of olanzapine in the development of occupational contact dermatitis, even when using appropriate personal protective equipment. In this situation, it is major to educate employees in following proper protective measures in their workplace. In addition, it is recommended to inspect the local facilities of the patient's workplace to ensure that these measures are pursued. When sensitization occurs, avoidance of the allergen is fundamental for the resolution of the skin condition. In more serious cases, it is necessary to provide the patient a job relocation or even changing profession.

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Effects of Immunomodulatory Agents on Patch Testing: Expert Opinion 2012

To the Editor:

Experience over the last century or so has suggested that patch testing (PT) is best performed on the back in individuals who are currently free of dermatitis and who are not taking any medications or treatments that may reduce cutaneous immunoresponsiveness. In practice, however, we are sometimes called upon to perform PT on patients who need systemic immunomodulating medications for control of their skin disease or for a variety of other conditions such as prevention

of transplant rejection, treatment of autoimmune disease, treatment of malignancy, and so on. Although small case surveys have been published, except for systemic corticosteroids, there is little concrete data on the likelihood of having false-negative PT results in patients who may be immunosuppressed. The members of the North American Contact Dermatitis Group (NACDG) collectively have significant PT experience and are often asked to render opinions on this matter. The NACDG is undertaking a prospective survey to attempt to shed more light on this question.

The members were asked the following questions:

1. What is the minimum withdrawal time before PT for (a) topical corticosteroid or calcineurin exposure to the test site, (b) natural or artificial UV light, (c) systemic corticosteroid (prednisone) intake, and (d) intramuscular corticosteroid (triamcinolone acetate)?
2. What is the highest dose of prednisone acceptable during PT to minimize the chance of false-negative results?
3. Which of the following drugs are likely to impair PT responsiveness: methotrexate, azathioprine, mycophenolate mofetil, cyclosporine (CSA), tacrolimus, tumor necrosis factor α (TNF- α) inhibitors (etanercept, adalimumab, infliximab, golimumab, etc), and ustekinumab?

RESULTS

TABLE 1. Results of Poll of NACDG Members Regarding Effects of Various Agents on PT Reactions

Agent	Range of Recommendations	Consensus Opinion
Topical corticoids on test site	Avoid for 3–7 d	Evenly split between 3 and 7 d
UV exposure at test site	Avoid for 0 d to 2 wk	Avoid for 1 wk
Oral prednisone—maximum dosage	OK to test on 10–20 mg/d	OK to test on 10 mg, but best if able to DC
Oral prednisone withdrawal time	Avoid for 1–14 d	Avoid for 3–5 d
40 mg IM triamcinolone	Wait between 3 and 4 wk	Wait until 4 wk after injection
Methotrexate	Unknown to little/no effect	Little to no effect
TNF- α inhibitors	Unknown to little/no effect	Little to no effect
Ustekinumab	Unknown to little/no effect	Little to no effect
Azathioprine	Dose-dependent inhibition	Dose-dependent inhibition
Cyclosporine	Dose-dependent inhibition	Dose-dependent inhibition
Mycophenolate mofetil	Dose-dependent inhibition	Dose-dependent inhibition
Tacrolimus(systemic?)	Dose-dependent inhibition	Dose-dependent inhibition

DC indicates discontinue; IM, intramuscular; UV, ultraviolet.

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DISCUSSION

Wee et al¹ from the United Kingdom reported patients who were tested from 2006 to 2009 while on assorted immunomodulating medications, often more than 1. Of 6 patients taking methotrexate, 5, including 3 on TNF- α inhibitors, had positive PTs, as did 2 of 3 on TNF- α inhibitors alone. Of 12 patients on CSA (generally 3 mg/kg per day), 6 had positive reactions. In contrast, only 2 of 10 patients on azathioprine (half of which were on low-dose prednisone) had positive PTs. A report from a single center in the United States indicated that 3 of 3 patients on CSA (200–300 mg/d) had strong positive PTs, as did 1 on TNF- α inhibitor.² One patient on mycophenolate mofetil (2 g/d) had several nonrelevant reactions but was tested later off the drug and had a new relevant PT to formaldehyde.

A report from Denmark carefully demonstrated a decrease in PT reactivity to a dilutional nickel series in patients taking 20 mg/d of prednisolone.³ Likewise, and not surprisingly, Condie and Adams⁴ showed that 40 mg/d of prednisone for 7 days reduced responsivity to Rhus antigen in 10 volunteers. Although the NACDG consensus suggests avoiding topical corticosteroids on the PT site for 3 to 7 days, Clark and Rietschel⁵ showed that treatment for 1 week with triamcinolone acetonide ointment 0.1% only inhibited mild, questionable reactions to some allergens.

CONCLUSIONS

1. It is sometimes impossible or impractical to stop or reduce the doses of immunomodulating medications in patients who require PT.
2. Positive PT has been reported in patients taking immunomodulating agents.
3. The reliability of PT in patients on immunomodulating drugs is not certain. False-negative PT may occur in some patients, and if practical, PT should be repeated when patients are off immunomodulating medications.
4. The consensus opinions of the NACDG members are presented in Table 1, which may serve as a guide to the practicing patch tester in the absence of definitive studies.
5. Physicians are encouraged to formally report their experiences with this subset of patients, especially if they are patch tested while on immunomodulating agents and after stopping them.
6. Taken together, experimental data are minimal, and therefore, controlled, prospective trials are encouraged.

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