

Marking patch tests sites: description of a practical, clean, durable and inexpensive method

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We propose an original method to mark patch test sites. A transparency is applied on the patient's back, surrounding patch tests, immediately after their application. Marks are performed with an erasable pen on test sites and on permanent skin lesions like naevi. For further readings performed after patch test removal, the transparency applied on the patient's back permits the attribution of a positive reaction. This method is clean (without ink marks on skin and without contamination of clothing), more comfortable for the patient (allowing back washing immediately after the 1st reading, never inducing allergy to inks), durable (permitting delayed readings after several days or weeks) and inexpensive (because transparencies can be reused).

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Marking patch test application sites is performed to indicate where the different allergens have been tested. This marking is necessary from one reading to another, and it is recommended that the marks remain on the skin for at least 1 week (1, 2). Several ways have been proposed like dye solutions (e.g. gentian violet), inks or marking pens. Because such methods consist in applying marks on the patient's skin, they have weaknesses like transience and contraindication to washing the back. During a patch test study performed in an industrial environment, as most workers suffered excessive sweating and were reluctant to avoid washing their back after test removal, we decided to change our previous classical patch test marking technique.

Materials and Methods

Transparencies

The new method requires A4 size (21 × 29.7 cm) transparencies, used for transparent photocopies for back light and suitable for inkjet or laser printers. Transparent polyethylene or polypropylene multipunched pockets (A4 size) are another possible and cheaper way. Depending on the number of tests, each patient needs from 1 (up to 40 tests) to 4 transparencies (to cover his/her entire back). A3

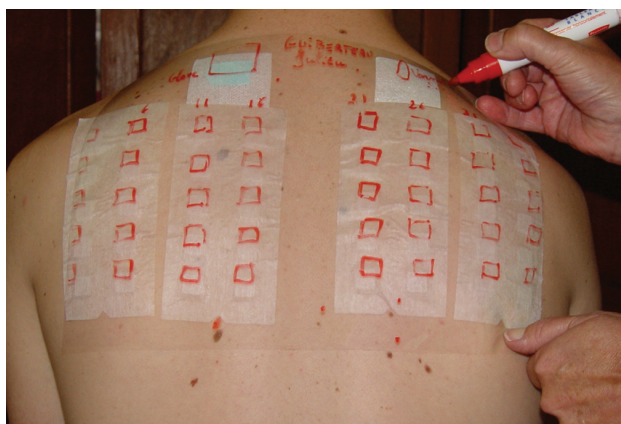
(29.7 × 42 cm) transparencies can cover the entire patch tested back of most people.

Pens

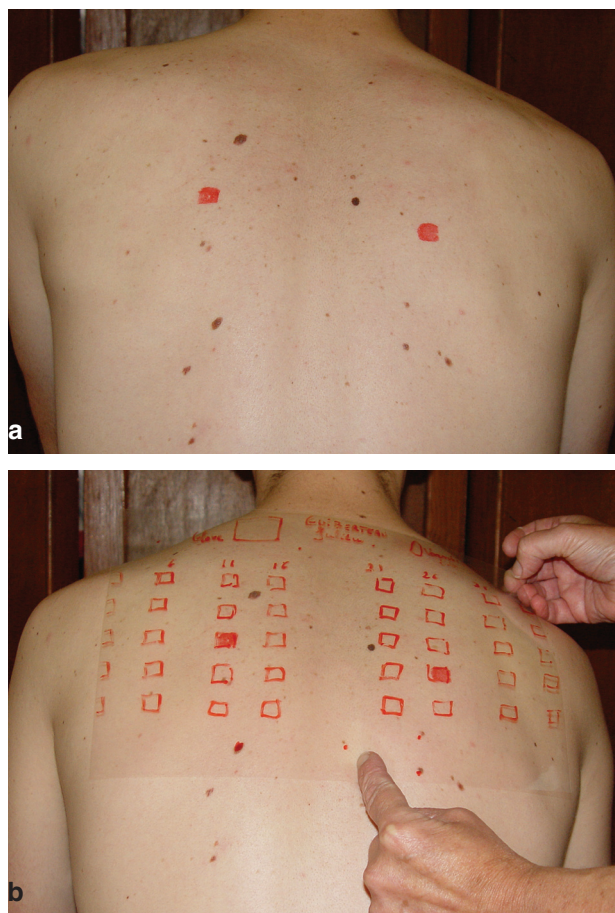
Several dry erasable pens (e.g. marker for white boards Velleda® Conté, Clichy, France) are needed, of different bright colours: red, black, blue, green, violet, etc. Permanent pens can be used for polyethylene files.

Marking patch test sites

Immediately after the application of patch tests, the transparency is put on the patient's back, covering the adhesive tapes. Contours of each test area are carefully marked with erasable pen, concomitantly with at least 3 permanent lesions for each transparency, mainly naevus, lentigo, seborrhoeic warts, rubis angiomas or tattoos. These lesions should preferably be located at the periphery of the transparency (Fig. 1). When the skin appears devoid of permanent lesions, 3 or more marks have to be performed with a permanent pen and immediately covered with tape to avoid their fading away. A cleaner system consists in applying 3 or 4 pieces (5 mm long) from a (not necessarily sterile) strong adhesive (e.g. Urgostrips, Laboratoires URGO, Chenove, France) that will be used as permanent skin marks.



Cleaning of ink is done with a compress of cotton soaked in diethylic ether that rapidly



- 1) Their transience generally does not allow readings after D4, and marking has to be repeated to ensure durable staining, particularly when delayed readings are needed (e.g. for corticosteroids).

- 2) Staining contraindicates washing the back, which some patients, and particularly industrial workers, are reluctant to accept.
- 3) Inks induce unaesthetic marks for several days, particularly in summer and for women who have décolleté.
- 4) Except for yellow fluorescent ink (visible under black light examination and needing Wood's light) that does not stain clothing, inks frequently contaminate clothing, in an irremediable way in some instances.
- 5) Pens used for skin marking are relatively expensive, because adhesive residues from tapes, allergens in petrolatum and sebum rapidly deteriorate their tip. They can also dry during storage.
- 6) In cases of delayed reaction due to active sensitization occurring after D10, it is generally required to perform a further patch test session with several allergens formerly tested on the area. With this method, only the single positive test has to be reapplied.

At the onset of our technique, we performed marking just after removal of tests, which encouraged contamination by adhesive residues and sometimes serous fluids from ++ or +++ tests. We then attempted to mark just before removing the tests, but the best seems to be to mark patch tests immediately after their application. This may, moreover, be useful when patch test removal occurs spontaneously before the visit after 2 days. A side effect of inks, although rare, is allergic contact dermatitis. Several reports have concerned ninhydrin contained in skin markers used in 3 patients (3), a modified phenolic formaldehyde maleic anhydride resin (4) or triethanolamine (5). Castelain (6) reported a personal observation, and cited similar from colleagues, of an allergic contact dermatitis from resorcinol contained in the fuchsia ink of a skin marker. In some instances, however, the allergen from the marker remains unknown (7). Other components like phenolic resins used in marking pens (8) also have the potential to induce allergic contact dermatitis during marking of patch tests. Although not reported as a complication, transmission of microorganisms might be suspected, particularly when tests are exudative, if pens are contaminated. The price of back light transparencies is around 0.50 € per piece. Because of their cost, they can be replaced by transparent polypropylene A4, suitable, inexpensive (approximately 2.50 € for 100 pieces) and possibly thrown out after their use. A3 transparencies can cover the entire back of many people but are expensive (around 4.5 € per piece). According to their purchasing power, the practitioners can employ transparencies used for photocopies (with erasable pen and then recycled) or bags (with erasable or permanent pens and then thrown out). Permanent pens are preferable when long

storage of transparencies is needed, particularly if a re-test is expected.

Conclusion

Our method is practical, clean, durable and inexpensive. The transparency may be used for different further readings in the same patient. Patients are allowed to wash their back immediately after the 1st reading, and their clothes are never stained by inks. We keep sheets for 4–6 weeks, but they can be used for as long as it is necessary to detect delayed reactions, active sensitization or to perform retesting. The only difficulty occurs when patients have no skin lesion: in such cases, artificial marks may be performed with strong adhesive tapes, perhaps preferable to ink marks covered by adhesive tape.

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References

1. Rietschel R L, Condé-Salazar L, Goossens A, Veien N K, eds. *Atlas of Contact Dermatitis*. London: Martin Dunitz, 1999: 28.
2. Wahlberg J E. Patch testing. In: *Textbook of Contact Dermatitis*, Rycroft R J G, Menné T, Frosch P J, Lepoittevin J P (eds), 3rd edn. Berlin: Springer, 2001.
3. Schlacke K-H, Fuchs T H. Allergisches Kontaktekzem auf Ninhydrin. *Derm Beruf Umwelt* 1989; 37: 179–180.
4. Maibach H I. Marking pen dermatitis: allergic contact dermatitis due to a fast drying resin (Arochem 455). *Contact Dermatitis* 1975; 1: 268.
5. Hamilton T K, Zug K A. Triethanolamine allergy inadvertently discovered from a fluorescent marking pen. *Am J Contact Dermatitis* 1996; 7: 164–165.
6. Castelain M. Complications des tests épicutanés. In: *16^{ème} Cours d'Actualisation en Dermato-Allergologie*. Arcachon: Médiscript, 1995: 233–244.
7. McKenna K E, Burrows D. Allergy to patch test marking ink. *Contact Dermatitis* 1994; 30: 182–183.
8. Hagdrup H, Egsgaard H, Carlsen L, Andersen K E. Contact allergy to 2-hydroxy-5-tert-butyl benzylalcohol and 2,6-bis (hydroxymethyl)-4-tert-butylphenol, components of a phenolic resin used in marking pens. *Contact Dermatitis* 1994; 31: 154–156.

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