

**Are we biased when
reading a doubtful patch
test reaction to a 'clear-
cut' allergen such as the
thiuram mix?***

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The authoritative chapter on how to perform a patch test by Wahlberg and Lindberg [(1), p. 374] states that 'Reading of patch tests is based on morphological criteria only. Reading of a patch test ... is a question of strictly following objective criteria'. The reading of a patch test is the first of three successive steps: (i) reading, (ii) interpretation as allergic versus nonallergic (irritant or unclear), and (iii) the evaluation of clinical relevance in those patch test reactions deemed allergic (2). However, the comparison of ratings of a 'Patch test quiz' (3) before and after unblinding the nature of the substance seems to indicate that knowledge of what is being tested may compromise the strict application of objective criteria mandatory in the first step.

Methods and Results

The images and the method of data collection have been published (3). Each image had first been rated blinded with regard to the test preparation by each of the 122 participants. After data entry for this image, the same image was presented again but with additional information on substance, concentration, and vehicle, to be rated a second time. Backwards navigation, to review or change the initial rating, was disabled. The two subse-

quent ratings, blinded and unblinded, were cross-tabulated for each image.

In case of an image showing a '?' reaction to the thiuram mix [image 1p in (3)], 13% of the participants rerated this in the allergic range, after having initially classified the reaction as ? or irritant (IR) (both in the blinded and in the unblinded presentation of the image explicit information on the *absence* of palpable infiltration had been given, furthermore no papules were visible on the test area) (Table 1).

Thus, 16 participants who previously regarded the reaction as either ? ($n = 6$) or IR ($n = 10$) rerated as '+' or even '++', while 4 participants corrected from + to ?, that is to the gold standard rating, after disclosure of the allergen ($P = 0.01$, exact McNemar test on the dichotomized outcome +/++ versus 'neg.'/?/IR). The incorrect re-classification in 16 cases was not significantly related to years of experience in patch testing, although with increasing experience a trend to more misclassification was observed (from 7.5% in the lowest of three categories according to the tertiles of the distribution to 18.6% in the highest). However, dermatologists ($n = 95$) significantly less often reclassified incorrectly than non-dermatologists ($n = 27$) (8.4% versus 29.6%, $P = 0.008$, Fisher's exact test).

Discussion

In the light of the guidelines quoted, it can be argued that knowledge of the substance being evaluated is not necessary: an erythematous, infiltrated reaction (possibly with papules) is a + reaction, no matter whether it has been caused by colophonium or sodium lauryl sulfate, for instance. Similarly, a purely erythematous

reaction is a ? reaction, no matter whether a potential irritant or a 'straightforward allergen' such as the thiuram mix has caused it. However, the evidence provided here seems to point to a conceptual problem with the traditional patch test reading scale: using this scale, only the +, ++, and '+++' categories imply the interpretation as 'allergic' (positive). The apparent wish to classify the above reaction as allergic after learning a straightforward allergen is involved has presumably led a notable proportion of participants to frankly to disregard the information on the absence of palpable infiltration and opt for a + or even ++ classification. We suspect that this might be a problem not only in our somewhat artificial study setting using digital photographs but also in clinical practice. In addition to a recent suggestion of differentiating between two morphological entities of weak positive reactions (4), we thus recommend a discussion of possible solutions to eliminate the inherent inconsistency of the traditional classification system.

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Table 1. Cross-tabulation of initial, blinded rating, and the subsequent rating with context information of an image depicting an erythematous (?) reaction to the thiuram mix (1% pet.)

Blinded first rating	Second rating with context information					Total
	neg.	?	+	++	IR	
neg.	—	—	—	—	—	0
?	2	57	4	2	5	70
+	—	4	14	—	—	18
++	—	—	—	—	—	0
IR	2	15	9	1	7	34
Total	4	76	27	3	12	122

IR, irritant; neg., negative.