

## Correspondence

### Is puncture skin test adequate to detect autoreactivity in patients with chronic urticaria?

doi: 10.1111/j.1365-2230.2008.02880.x

The autologous serum skin test (ASST) has been used for 20 years as an easy means to detect an autoreactive status in patients with chronic urticaria (CU). Although Sabroe *et al.*<sup>1</sup> suggested that the ASST is a screening test for autoantibodies to FcεRI or to IgE, it has subsequently become clear that such autoantibodies can be detected *in vitro* only in a subset of ASST-positive patients,<sup>2</sup> suggesting that other histamine-releasing factors play a role in this disorder. Recent studies have shown that autoreactivity can be found in up to > 90% of patients with CU if plasma (autologous plasma skin test; APST) rather than serum is injected intradermally,<sup>3</sup> and that patients with CU hyperexpress tissue factor, which activates the extrinsic pathway of coagulation cascade.<sup>4</sup> Very recently, Kimura *et al.*<sup>5</sup> reported a case of autoimmune urticaria in a 3-year-old child who showed an intense weal-and-flare reaction upon puncture skin test with autologous serum; they concluded that the puncture skin test is potentially useful to detect functional autoantibodies in patients with CU. We compared APST and puncture skin test with autologous plasma in adults with CU to assess whether they show the same sensitivity in detecting autoreactivity, and hence if the puncture skin test (which causes less discomfort) may be substituted for the intradermal test for routine analysis in these patients.

In total, 10 consecutive adult patients (three men, seven women; mean age 50 years, range 31–70) with CU underwent the puncture skin test and APST, both using fresh autologous plasma anticoagulated with sodium citrate. The patients had been off any antihistamines for 1 week before the tests were performed.

The puncture skin test was performed by placing a drop of autologous plasma on the volar forearm and slightly lifting the skin on the site with a 25G injection needle.<sup>5</sup> The APST was performed as previously reported.<sup>1,3</sup> Readings were taken at 15 and 30 min. Intradermal injection of 0.05 mL of saline solution (0.9% w/v sodium chloride) and a skin-prick test with histamine 10 mg/mL were used as negative and positive control, respectively. A red weal with a diameter of 1.5 mm greater than the saline-induced response was considered positive.<sup>1</sup>

Statistical analysis was performed using the  $\chi^2$  test with Yates' correction.

Results are shown in Table 1. Saline solution did not induce any skin reaction in any of the patients. The APST induced a clear-cut weal-and-flare reaction in 9/10 patients (90%), which was visible at both 15 and 30 min. In all cases, the reaction was equivalent to (+++) or larger than (++++), that induced by histamine. In contrast, no skin reactivity was found at the sites of the puncture skin test (0%;  $P < 0.001$ ).

The proportion of positive APST was in line with that found in larger groups of patients with CU.<sup>3,4</sup> One reason why the puncture skin test was negative in all our patients might be that in this technique the concentration of autoantibodies or other histamine-releasing factors is too low to increase the permeability of the capillary wall significantly. Furthermore, Kimura *et al.* used a serum containing high levels of autoantibodies to perform the puncture skin test,<sup>5</sup> whereas we used plasma, which may not contain autoantibodies but rather other histamine-releasing factors.

Irrespective of the possible explanation, our results suggest that (at least in adult patients with CU) the APST remains the best means to detect an autoreactive status

**Table 1** Clinical features of patients with chronic urticaria and skin test results.

| Gender | Age (years) | Symptom score | APST | Puncture skin test |
|--------|-------------|---------------|------|--------------------|
| Male   | 70          | 1             | +++  | –                  |
| Female | 37          | 1             | +++  | –                  |
| Female | 43          | 1             | +++  | –                  |
| Female | 50          | 1             | ++++ | –                  |
| Female | 40          | 1             | +++  | –                  |
| Male   | 31          | 2             | –    | –                  |
| Female | 68          | 2             | ++++ | –                  |
| Female | 47          | 1             | ++++ | –                  |
| Male   | 45          | 2             | +++  | –                  |
| Female | 67          | 2             | +++  | –                  |

APST, autologous plasma skin test; (APST). Symptom score was calculated according to the number of weals present at the time when blood was taken as follows. Grade 1, 1–10 small (< 30 mm in diameter) weals (slight); grade 2 (moderate), 10–50 small weals or 1–10 large weals; grade 3 (severe), > 50 small weals or > 10 large weals; grade 4 (very severe), virtually covered with weals.

*in vivo* and that the puncture skin test cannot be considered a valid substitute for the intradermal test.

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Conflict of interest: none declared.

Accepted for publication 5 February 2008

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