

Letter to the editor

In his important review on histamine reactivity of the skin, Dreborg recommends that "computer scanning of wheal areas be used to reduce the error of measuring the wheal responses used in scientific studies" (1). I agree with him that it is necessary to determine the area, and not just the diameters of skin prick tests (SPT), since a subtle change in area size is not adequately reflected by a change in diameter.

Thus, I propose the use of the old point-counting principle for area estimation. This is a much easier way to determine the area of both the wheal and the flare reaction than using a computer and a tracing device such as a digitizer pad, which, in addition, is not available to all researchers. Furthermore, point counting can be performed on the test reaction itself without a time-consuming intermediate step of tracing the outlines and subjecting them to computerized analysis.

As shown in Fig. 1, a square lattice grid is placed upon the test reaction, and the number of crossover-points on the wheal, as well as on the flare reaction, is recorded. Since a crossover-point might be regarded as representative of one square (the so-called point associated area), the number of points times the area of an individual square yields an estimate of the total area (2, 3). This principle applies to all areas irrespective of their shape. The precision of the procedure depends on

- 1) the complexity of the area estimated
- 2) the spacing of the grid (3).

However, even with a rather coarse grid, a remarkably precise estimate is obtained with respect to the small workload. It should be mentioned that point counting is mathematically sound and not inferior to computerized analysis (3).

The grids are made by simply photocopying computer drawings or published grids, such as those described by Weibel (3), onto ordinary overhead foil.

References

1. DREBORG S. Histamine reactivity of the skin. *Allergy* 2001;56:359–364.
2. BAHMER FA. Morphometry in clinical dermatology. In: WILHELM KP, ELSNER P, BERRADESCA E, MAIBACH HI editors. *Bioengineering of the skin: skin surface imaging and analysis*. Boca Raton, FL: CRC Press, 1997:229–240.
3. WEIBEL ER. *Stereological methods*. Vol 1. Practical methods for biological morphometry. London: Academic Press, 1979.

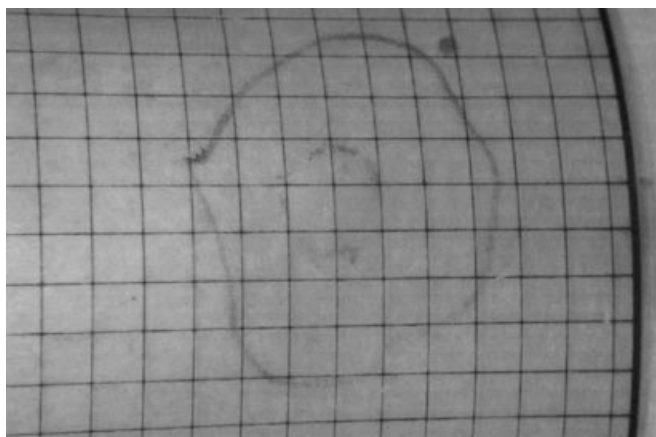


Figure 1. Histamine SPT reaction with square lattice grid superimposed. Area of one square: 5 mm^2 . Thus, the five crossover-points on the wheal represent 25 mm^2 , and the 33 points on the erythema represent 175 mm^2 (for better visibility, the boundaries of the wheal and flare reaction have been outlined).

To make area estimation in studies using SPT or similar methods both accurate and efficient, I would recommend point counting. Since this principle is universal (3), it might also be employed for area estimation of skin lesions such as tumors, ulcers, and nevi (2).

Prof. Dr med. F. A. Bahmer
Zentralkrankenhaus
Dermatologische Klinik
Sankt-Jürgen-Strasse
DE-28205 Bremen
Germany