Letters to the Editors

Reproducibility of grading systems for breast carcinoma

I wonder if I might be allowed to comment on the paper by Stenkvist *et al.*[1] in the October issue of your journal?

The paper analyses the reproducibility of subjective grading systems for breast carcinoma, using those of WHO[2 3] and the one I published in 1971. It is obvious that a great deal of work has gone into the paper, both at the microscope and on computer level. However, some points need to be raised concerning the use of the latter typing system. Firstly, Stenkvist *et al.*, describing their use of the system, note that each factor was examined at a magnification of 400. Reference to my paper will show that it was essential that the tumours were 'classified from groups of cells that stood out on low power as cells nearest to the type seen in tumours recurring 10 years or more after operation, irrespective of the findings elsewhere on the slide'. It is to these cells that the criteria apply; that is to say, one must first select a field on low power before the criteria can be studied on high power. When the cells are not in groups they do not express their characteristic morphology (see Table III of Hartveit).[4]

Stenkvist *et al.* also note that 'Hartveit's parameters gave rise to a number of combinations from 3111 (I) to 1333 (III). All intermediate types (79 alternatives) were categorised as type II'. This is a much more rigid application of the criteria than has been described previously when 'an intermediate pattern was accepted as type I or III if it differed by one grade only. For example: $-+\pm$ 1 would be accepted as type I ($-++$ 1), $+-\pm$ 2 would be accepted as type III ($+--$ 3) while $+\pm+$ 2 stays type II whatever'.

Further, I would like to point out that the majority of breast carcinomas I have seen are of type I. Type III is better represented in our necropsy material than type II.[4] In surgical specimens, type I again predominates, while type III is very rare. Turner and Berry[5] found: type I 83%, type II 17%, and type III 0%, while Maehle and Hartveit[6] found: type I 89%, type II 10%, and type III 1%. In the material analysed one would thus expect at most two type III cases, the remainder being mainly type I. The more rigid use of the criteria mentioned above and, probably (this is not clear from the text), classification on the basis of infiltrating cells rather than cell groups could well explain that all the cases landed in type II.

In conclusion, while it is of interest to note the relationship of nuclear lobulation to the other systems analysed, the system could not be expected to stratify the material used (176 surgical specimens) 'into three categories of tumours'.

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References

1 Stenkvist B, Westman-Naeser S, Vegelius J, *et al.* Analysis of reproducibility of subjective grading systems for breast carcinoma. *J Clin Pathol* 1979;**32**:979-85.
2 Scarff RW, Torloni H. Histological typing of breast tumours. (*International Classification of Tumours, No. 2.*) Geneva: WHO, 1968.
3 Black MM, Speer FD. Nuclear structure in cancer tissues. *Surgery, Gyn Obstet* 1957;**105**:97-102.
4 Hartveit F. Prognostic typing in breast cancer. *Br Med J* 1971;**4**:253-7.
5 Turner DR, Berry CL. A comparison of two methods of prognostic typing in breast cancer. *J Clin Pathol* 1972;**25**: 1053-5.
6 Maehle BO, Hartveit F. Prognostic typing in breast cancer. *J Clin Pathol* 1973;**26**: 784-91.

The authors reply as follows:

Concerning the comment of Dr Hartveit on our paper, we found that all the grading systems we studied had a significant but low reproducibility. Included in this study were the various components of the grading systems we analysed. We also applied the method of Dr Hartveit as she describes it in her letter, although we could not find a higher reproducibility of her grading system when compared with the other grading systems. We think that it is extremely difficult, or even impossible, for any human being to reproducibly remember and strictly adhere to the characterisation of complex nuclear population textures. However, computers are most valuable for such tasks. We have performed a study of reproducibility of nuclear morphometry using computers[1] and concluded that computerised nuclear morphometry can be a remarkably useful aid in helping the pathologist to more exact grading of the malignancy of a tumour. This was also the opinion of a working group at Dahlem Konferenzen in Berlin last year.[2] The usefulness of computers in recognising nuclear texture not perceptible by humans is further underlined by studies performed by Julesz *et al.*[3]

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References

1 Stenkvist B, Westman-Naeser S, Holmquist J, *et al.* Computerized nuclear morphometry as an objective method for characterizing human cancer cell populations. *Cancer Res* 1978;**38**:4688-97.
2 Stenkvist B, Pressman N, Bartels PH, *et al.* Biomedical pattern recognition and image analysis of cells and tissues. In: Dahlem Konferenzen Series, *Biomedical Image Analysis and Pattern Recognition*, Berlin, 1979.
3 Julesz B, Gilbert EN, Shepp LA, Frish HL. Inability of humans to discriminate between visual textures that agree in second-order statistics-revisited. *Perception* 1973;**2**:391-405.

Cyanmethaemoglobin Reference Preparations

The publication of specifications[1] for Cyanmethaemoglobin Reference Preparation by the International Committee for Standardization in Haematology (ICSH), and agreed by the World Health Organization, was a significant advance in quality assurance of haemoglobin measurement. These specifications have been adopted universally as a means of attaining good inter and intra laboratory comparability of haemoglobin. The ICSH protocol specifies that the preparation must be dispensed in sealed 10 ml ampoules of amber glass under sterile conditions. There are valid reasons for this requirement,