

# Letters to the Editor

**CORRESPONDENCE RE: SHARIFI S, PETERSON MK, BAUM JK, RAZA S, SCHNITT SJ. ASSESSMENT OF PATHOLOGIC PROGNOSTIC FACTORS IN BREAST CORE NEEDLE BIOPSIES. MOD PATHOL 1999; 12:941-5.**

**To the Editor:** The paper by Sharifi *et al.* (1) makes a useful assessment of the amount of information that can be derived from core needle biopsies of breast cancer. However, the statistical description of the results uses only raw concordance between the information from the core needle biopsy and the subsequent excision specimen. Such description does not take into account the level of concordance that might be expected by chance alone and often can give a falsely optimistic assessment of performance. A better way of assessing such results are kappa statistics (2, 3) with calculated 95% confidence intervals (4). A kappa statistic of 0 indicates the same level of agreement as expected by chance, 1 indicates perfect agreement. Calculating the kappa statistics from results of Sharifi *et al.* gives the values shown in Table 1. Some authors have divided the kappa statistic into performance benchmarks (5) (Table 2).

These are arbitrary divisions but do give some interpretation of the statistic (6). The kappa statistics cast a rather different light on the results with less agreement than is suggested by the raw concordance. This is especially marked for histologic type, which showed a raw concordance of 81% but a kappa statistic of 0.49. The histologic grade has a lower concordance than the histologic type (75%) but a higher kappa statistic (0.62). The conclusions

**TABLE 1.**

Table in Sharifi et al.	Feature	Kappa Statistic (95% CI)
1	Histologic type	0.49 (0.26–0.72)
2	Histologic grade	0.62 (0.47–0.76)
3	Tubule formation	0.49 (0.29–0.69)
4	Nuclear grade	0.45 (0.28–0.63)
5	Mitotic index	0.43 (0.24–0.61)
6	T stage (stage 1 only)	0.03 (–0.14–0.20)
7	Lymphovascular invasion	–0.02 (–0.44–0.39)
8	Extensive intraductal component	0.24 (–0.10–0.59)

**TABLE 2.**

Kappa Statistic	Level of Agreement
<0.00	Poor
0.00–0.20	Slight
0.21–0.40	Fair
0.41–0.60	Moderate
0.61–0.80	Substantial
0.81–1.00	Almost perfect

of the paper might thus be modified to suggest that histologic grade can be predicted on core needle biopsy with a reasonable degree of reliability, histologic type with a lesser degree of reliability, and stage, lymphovascular invasion, and extensive intraductal component all at a level that is no better than chance. It is also worth noting that the 95% confidence intervals for all the kappa statistics are quite wide because the number of specimens in the study is not large, and a much bigger study would be required to give narrower estimates of reliability.

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