Measuring the Value of Review of Pathology Material by a Second Pathologist

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Abstract

In many departments, some cases are reviewed routinely by a second pathologist within the same department before sign-out. The value of this practice is not known. We reviewed and compared the disagreement and amendment rates for cases reviewed by 1 or more pathologists based on the results of blinded review.

A total of 8,363 cases underwent blinded review, and of these, 1,087 (13.0%) were reviewed by more than 1 pathologist before sign-out. The disagreement rate for cases reviewed by more than 1 pathologist (4.8%) was significantly lower than for cases reviewed by only 1 pathologist (6.9%; \( P = .004 \)). The amendment rate decreased to 0.0% from 0.5%, but this decrease was not statistically significant (\( P = .12 \)).

Review of material by a second pathologist before sign-out is associated with a lower disagreement rate. These results suggest second review of surgical pathology is of value, but the best selection of cases to be reviewed remains to be defined.

Diagnostic accuracy is crucial in anatomic pathology, including surgical pathology and cytopathology, and remains a subject of considerable research interest. A mainstay of measuring accuracy is the review of material by a second observer. Indeed, many pathologists and pathology organizations recommend review of outside material before undertaking procedures within their own institutions. In addition, many institutions routinely review specific material a second time, most commonly material with a diagnosis of malignancy, before making an official diagnosis.

Nevertheless, although specific information concerning the value of interdepartmental consultation is available, information concerning the value of intradepartmental second review is limited. To address this, we compared the disagreement and error rates of cases that had been reviewed by only 1 pathologist or more than 1 pathologist.

Materials and Methods

The results of blinded review of material at the Baptist Hospital of Miami, Miami, FL, for the January 2001–August 2005 period were reviewed. Some of the cases in this review have been included in earlier publications, although the association with a second review has not been examined previously.

The method of blinded review has been described. In brief, cases were reviewed after being signed out but without knowledge of the original diagnosis or history. If a disagreement was identified that might be of clinical significance, the case was reviewed with the original pathologist. The original pathologist issued an amendment only if he or she believed such an action was warranted. If there was continued disagreement
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concerning a case, the case was sent to an outside consultant and the consultant’s diagnosis was considered the “gold standard.” Cases were divided into those with only 1 pathologist’s name on the original report and those with more than 1 pathologist’s name on the report. In our department, there are no official criteria for having a second pathologist review a case before sign-out. In general, pathologists show a case around if they consider it difficult or if they believe there are clinical or social reasons that make having a second name on the case desirable.

Statistical analysis was done using a 2-tailed $\chi^2$ test. A $P$ value of .05 or less was considered significant.

Results

A total of 8,363 surgical pathology and nongynecologic cytology cases were reviewed Table 1. In addition to the 578 cases with disagreements, there were 29 additional cases in which the lesion was missed on blinded review (sensitivity, 99.7%).

There were 1,087 cases (13.0%) that originally were reviewed by more than 1 pathologist before sign-out Table 2. The disagreement rate for cases reviewed by more than 1 pathologist (4.8%) was significantly lower than for cases reviewed by only 1 pathologist (6.9%; $P = .004$). The amendment rate decreased to 0.0% from 0.5%, but this decrease was not statistically significant ($P = .12$).

Discussion

The purpose of the study was simple—we sought to determine whether review of cases by another member of the department before sign-out improved the accuracy of the pathology reports. By using subsequent blinded review as the method of detecting disagreements, we have shown that cases that are reviewed by more than 1 pathologist have a lower disagreement rate. The amendment rate was also lower, although the decrease was not statistically significant. These results imply that review by a second pathologist leads to a lower error rate for surgical pathology and nongynecologic cytology.

We were somewhat surprised that cases that were reviewed by more than 1 pathologist had a lower disagreement rate. In general, the cases in this department that have more than one name on them are cases that the pathologists consider more difficult. It is possible that the second review led to a more accurate diagnosis, and this is what was reflected in the results. On the other hand, it is possible that because the original pathologist clearly recognized the difficulty in the case and showed it to a second pathologist, the pathologists then also constructed a report that reflected the difficulty in the diagnosis and at least raised the possibility of the alternative diagnosis. Thus, the decreased disagreement rate may reflect a less specific diagnosis rather than necessarily a more accurate one.

Although we believe that second opinions add value, a critical question remains how to determine which cases require review by a second pathologist. Our previous studies suggest that errors can result in virtually any type of specimen and are not directly related to the complexity of a case or the presence of neoplasia. Although one could argue that a second review of all cases is the best method, few practice settings have the personnel to achieve this. As a result, defining a subset of cases that are enriched with cases with possible errors is an important task. One of the most common ways to do this is to review all cases of neoplasia. Although this is a reasonable method, there are drawbacks to this method. Specifically, there are cases of neoplasia that are so straightforward that a second review of the case adds little value. In addition, many practices have general pathologists and specialists in particular areas. For example, it would seem of little value for a general pathologist with little specific training in dermatopathology to review a difficult case of melanoma that has been diagnosed by a pathologist who specializes in dermatopathology. Yet in many practice settings, a second pathologist with specific training in dermatopathology is not available. Also, reviewing cases of neoplasia will not allow any false-negative cases to be identified. Finally, reviewing cases of neoplasia does not ensure that all difficult cases, including cases with atypia or possible infection, are reviewed.

As an alternative to this, our group has emphasized that all cases that appear difficult be reviewed by a second pathologist. In our hands, this results in 13% of diagnoses being changed (unpublished data). Comparable results from other centers are not available. Certainly these preliminary results suggest that...
further studies to best define the “enriched sample” of cases that should be reviewed more than once is warranted.

We have shown that review of cases by a second pathologist within a group results in lower disagreement on subsequent blinded review. The best set of cases to review remains to be defined.

References


