Assessment of the usefulness of a diagnostic test: A survey of patient preference for diagnostic techniques in the evaluation of intestinal inflammation

ABSTRACT

This patient preference combined with the reported accuracy of white cell scanning further establishes the usefulness of this means of IBD diagnosis.

INTRODUCTION

Background The radio labeled white cell scan has been shown to be an accurate means of detecting intestinal inflammation. Our initial report of the use of Indium111 radiolabeled white cell scanning in the diagnosis of inflammatory bowel disease described a sensitivity and specificity of 97% and 100% respectively in 49 scans in 39 patients in all of whom confirmatory studies were done. Since that time, 1130 scans have been performed at our institution. Clinical follow-up of these patients has revealed only three cases of confirmed false negative scans. No cases of false positive scans have been encountered. This accuracy, it should be stressed, is not in the grading of disease activity, but in the dichotomous determination of disease presence and its anatomic location. The lack of confirmatory testing of all subsequent patients certainly results in the overestimation of accuracy, but not greatly so, since all patients have been available for clinical follow-up and diagnostic errors would become apparent with the passage of time. Even if it is a ten fold overestimate, the white cell scan still compares well with other diagnostic modalities. In 1993 Indium111 became unavailable in Chicago and we switched to the use of Technetium99. We found that the higher radiation dose of Technetium injected (20 mCI versus 0.5 mCI Indium) resulted in clearer images with less motion artifact, yet its shorter half life resulted in the total radiation dose to the patient being similar to Indium111. First images are available within 5 hours from the patient's arrival using Technetium, compared with 30 hours for Indium, making this applicable to emergent situations. In routine clinical follow-up, no measurable change was noted in the number of false positive or negative scans since the change to Technetium99 (unpublished data). These advantages of Technetium over Indium have resulted in our continued use of Technetium for white cell scanning (WCS). The further establishment of the usefulness of this diagnostic clinical intervention was our next goal. Usefulness depends in the final analysis upon the likelihood that a patient will decide to undergo the intervention. Patient preference may therefore be an important part of the process of determining clinical usefulness. In order to establish further its usefulness, a survey was conducted in which subjects were asked to rank their preference for white cell scanning in relation to other means of diagnosing intestinal inflammation.

CONCLUSION

Two different groups were chosen for the survey to obtain different perspectives of these exams: individuals who had experienced all of the tests and were burdened with a chronic illness, and individuals who had experience or prior impressions of none or few of the tests and were representative of a healthy population. The former group is often faced with repeated testing in the course of their disease and must decide along with their physician when and how often to undergo evaluation of disease activity. The latter naive group may at some time face the decision how much intervention to undergo in the evaluation of symptoms that may only

be functional in etiology such as diarrhea or pain. The impressions of these two groups were remarkably similar. Both showed a clear preference for WCS over barium enema and colonoscopy, except for some concern about the time it takes to perform the radiolabeled white cell scan (Figure 1). If we are to take these preferences seriously, they could then be incorporated, along with other outcomes and risks, into a decision analysis of testing options in inflammatory bowel disease that seeks to maximize the patient's expected utility.