Antigranulocyte Antibody Uptake in Bone Marrow Is Age-Dependent

TO THE EDITOR: We read with great interest the article by Chung et al. (*1*) about bone marrow scintigraphy with an antigranulocyte antibody in hematologic disorders. The authors investigated 31 patients aged 17–70 yr using an in-house IgG_{2a} monoclonal antibody directed against the nonspecific, cross-reacting antigen-95 (NCA-95). A quantitative analysis calculating lumbar vertebrae-to-background and ilium-to-background uptake ratios was performed on planar scans in the posterior view. Twenty-one patients with malignant diseases, who were not further specified according to tumor entity or patient age, served as controls.

We are somewhat concerned about the validity of the control group for two reasons. First, the entities of the malignant diseases present in this group were not specified. Such information might be relevant because in patients with plasmacytomas, for example, lower uptake values of antibodies in the bone marrow have been found in 8 of 21 patients, despite the normal visual appearance of the sacroiliac region (*2*). Second, a significant decrease of antigranulocyte antibody uptake in the bone marrow with increasing age has been recently established by our group. In control subjects below the age of 40, the uptake ratios ranged from 6.4–12.6, whereas they amounted to 5.0–11.6 and 4.4–11.0 in patients between 40 and 59, and 60 yr or older, respectively ($p = 0.0025$) (*3*). This means that bone marrow uptake ratios should be compared to age-matched control subjects only.

The concept of calculating the bone marrow uptake ratio as introduced by Munz et al. (*4–6*) for nanocolloid and subsequently applied to antigranulocyte antibodies (*2,3,7*) seems to be slightly different from the approach presented in Chung's article (*1*), although the latter is not fully explained; there is lack of a precise definition of the iliac region. In addition, the anti-NCA antibody used by the European groups cited is an IgG_1. For this reason, our normal values cannot be compared to those obtained in the work under discussion.

It might also be mentioned that for comparison of small data groups for which normal or at least symmetrical frequency distributions of data cannot be assumed, nonparametric statistical tests should be used instead of Student's t-test. Apart from these comments, we completely agree with the essence of the interesting article presented by Chung et al. (*1*).

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REPLY: We thank Dr. Ivančević et al. (*1*) for their interest in our article on bone marrow antibody imaging in hematologic disorders (*1*). For the 21 control group patients, there was no patient with plasmacytoma. All patients had solid tumors, such as breast, stomach, prostate and renal cell carcinomas, without any marrow involvement. The mean age of the control patients was 49 yr, which was somewhat higher than that of patients with hematologic disorders. We calculated the lumbar bone marrow-to-background (L/B) and ilium-to-background (I/B) uptake ratios. We agree with Dr. Ivančević that bone marrow uptake ratios should be compared to age-matched control subjects. Although, due to the small number of patients in our study, it was not easy to have age-matched control subjects. In our study, patients with aplastic anemia were relatively younger, which would imply a relatively higher bone marrow uptake ratio according to Huic et al.'s findings (*2*). However, since the patients with aplastic anemia showed lower L/B and I/B ratios than the control patients, we think our findings were valid.

For the calculation of uptake ratios, regions of interest were selected over the 4th lumbar vertebra, sacroiliac region and soft tissue above the right pelvic bone. Although our antibody shares many immunologic and biologic characteristics with the BW 250/183 antibody (*3*), the two antibodies are of different isotopes and, therefore, there is the possibility that normal values or even relative uptake ratios might be different between the antibodies.

We agree that nonparametric testing is preferable for comparing groups of small numbers. We applied Wilcoxon Rank Sum test to our data as well as Student's t-test and found the same statistical significance. We thank Dr. Ivančević and his colleagues (*1*) for their useful criticism and fruitful discussion.

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Effectively Using Evidence for Decision Analysis

TO THE EDITOR: In a recent issue of *The Journal of Nuclear Medicine,* a cost-effective decision analysis on the staging and management of non-small-cell lung carcinoma has been presented by Gambhir et al. from the UCLA School of Medicine (*1*). Despite the magnitude of the work presented, the current analysis contains several key problems that limit its general applicability to daily clinical practice.

First, the use of PET is limited to few institutions across this country and, thus, the results would be similarly applied and aid in streamlining health care for few patients. Second, one of the comparative arms within the decision model includes the use of CT alone, despite the fact that, for many patients, use of CT plus bone scintigraphy represents standard care (see *ACR Appropriateness Criteria*, section TH2–1).

The model excludes the initial use of a chest radiograph that would be the screening test for most patients. If the model were to mirror clinical practice, some patients may be identified incidentally or after presentation for cough-like symptoms. Thus, observational data should be incorporated that includes realistic referral patterns for this and at each decision-making juncture. This is key to most decision analysis. Actual practice patterns may reveal that on average only 50% of patients were referred from the initial chest radiograph. Further, observational practice would reveal that