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The Scintigraphic Investigation of Sacroiliac Disease

For some years we have been interested in the subject of the quantitative evaluation of sacroiliitis, comparing radiologic and radionuclide techniques. A preliminary report on our findings was given at the meeting of the Belgian Nuclear Society in 1975 (*1*). Because our results are in disagreement with "current beliefs," our complete data have only recently been submitted for publication.

We feel compelled to comment on the paper of Lentle and his colleagues (*2*). Although our normal sacroiliac/sacral uptake ratios, recorded 4 hr after injection of Tc-99m pyrophosphate, are very similar to those of Lentle et al. (respectively 1.12 ± 0.106 and 1.11 ± 0.064), our data in the spondylitis cases disagree. Figure 1 shows the ratio of maximum activity at each sacroiliac joint, over that in the sacrum, for 50 patients with inflammatory low back pain and a group of normal controls.

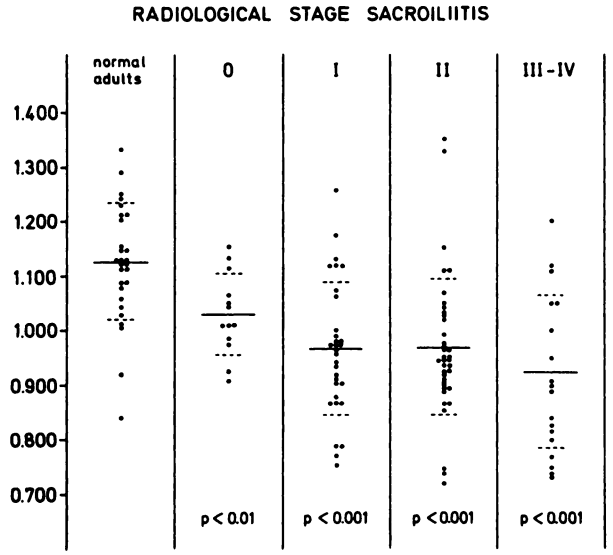

FIG. 1. Joint-to-sacrum ratios, derived from Tc-99m pyrophosphate scans, in normal adults and cases with sacroiliitis, grouped according to radiologic stage.

The values are grouped according to the radiologic stage of sacroiliitis (*3*). The patients with sacroiliitis in general have a lower ratio than the control subjects. As a group this difference is statistically significant. As the disease progresses, the joint uptake becomes lower. In both the control and the disease groups, the values are rather variable, making differentiation difficult in an individual case.

When the results of the cases with low back pain are grouped according to (a) presence or absence of pain, (b) clinical examination, or (c) erythrocyte sedimentation rate, no significant differences are disclosed (Fig. 2).

Upon careful analysis of the paper by Lentle and colleagues, and an earlier publication by the same team, some problems arise that need clarification. Although each patient has two sacroiliac joints and thus two sacroiliac/sacral ratios and two radiologic gradings, they do not consider these distinctions. Do they use the higher or the lower ratio, or use the mean of the ratios for the two joints? We ask because they admit a striking asymmetry in Reiter's syndrome and a less consistent one in other diseases.

What happened to the seven out of ten patients with ankylosing spondylitis and grade 1 radiograph, mentioned in their earlier paper (*4*)? These were not presented in the figures and table, because they had normal scans. Are they now included in the suspected group of ankylosing spondylitis grade 0/1? Why do the authors use different grading systems for the radiologic evaluation of sacroiliac joints in their two papers on the same subject?

In the discussion, Lentle et al. admit that the method has its limitations because of its nonspecificity. They say that abnormal findings have been encountered in certain patients with osteoarthrosis. In Tables 1 and 2, however, the reported values for the osteoarthrosis group are within the normal range of the control group. If in this osteoarthrosis group there were "abnormal" findings we would expect a larger standard deviation and range!

We retain a conviction that quantitative scintigraphy of

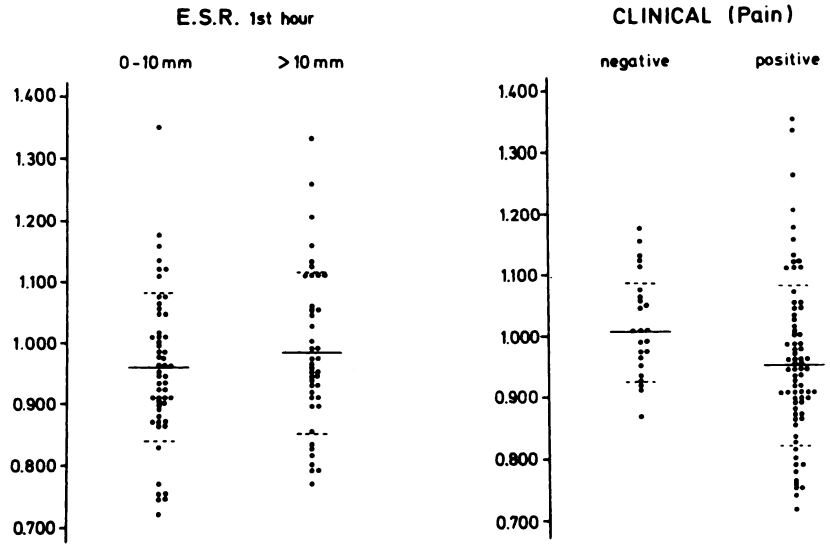

FIG. 2. Joint-to-sacrum ratios from Tc-99m PPi scans, grouped according to erythrocyte sedimentation rate (ESR) and pain on clinical examination.

the sacroiliac joints is neither a specific nor sensitive method for the detection of early sacroiliitis.

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Reply

I regret that my colleagues and I were not familiar with the report by Dequeker and DeRoo in the Belgian literature.

The main point they make appears to be that in their extensive series of patients, radiologic sacroiliitis is associated with a decreased uptake of radionuclide at the S.I. joints. We are unable to reconcile this finding with our own data, and it is at variance with published (*1*) and other reports (*2–5*).

At present, radiologic evidence of sacroiliitis is an essential requirement for the diagnosis of ankylosing spondylitis. In the paper dealing specifically with ankylosing spondylitis (*6*), we felt that it was most important that we include only those patients who fitted the currently accepted diagnostic criteria for this disease. The grades of sacroiliitis used in your correspondents' Table 1 are unusual. The designation "Grade 0" is generally assigned to mean normal x-rays without sacroiliitis, yet they have a separate column for normals. Similarly, Grade 1 means equivocal, that is, without definite change.

It is to be expected, of course, that patients with late-stage disease (ankylosed joints) do not demonstrate the abnormalities we have described. In that very limited sense it would be valid but meaningless to observe that the more radiologic stage is advanced, the more the uptake at the joint is lower.

In reply to other specific points, the individual sacroiliac ratios are determined separately and both values used in reporting the ranges recorded (*7*). The grading of sacroiliitis used has differed only numerically, since we have used the international grading of 0–4, and, in our separate publication (*6*), adopted a more common-sense grading of 0 to 3 that leaves out the unfortunate designation of equivocal change. The seven patients described in the original report (*6*) did not fulfill the complete diagnostic criteria for ankylosing spondylitis, and did not have radiologic sacroiliitis. Their data, therefore, were not included in the later, more complete study (*7*).

During the period of the study, we had examined a limited number of patients with osteoarthrosis of various peripheral joints, and there appeared to be a clear difference between this group and patients with inflammatory joint disease involving the sacroiliac joints. With increasing experience, however, on some occasions we have found abnormalities of the sacroiliac joints in patients with, for example, osteoarthrosis of the hip, perhaps related to their limping gait.

The Belgian group appear to attach importance to the ESR in the assessment of ankylosing spondylitis. It is our experience, shared by others, that this is a very unreliable guide to the presence or activity of disease (*8*).

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