INTERNATIONAL JOURNAL OF LEPROSY

Volume 66, Number 4
Printed in the U.S.A.
(ISSN 0148-916X)

CORRESPONDENCE

This department is for the publication of informal communications that are of interest because they are informative and stimulating, and for the discussion of controversial matters. The mandate of this JOURNAL is to disseminate information relating to leprosy in particular and also other mycobacterial diseases. Dissident comment or interpretation on published research is of course valid, but personality attacks on individuals would seem unnecessary. Political comments, valid or not, also are unwelcome. They might result in interference with the distribution of the JOURNAL and thus interfere with its prime purpose.

Bone Scintigraphy in Leprosy

TO THE EDITOR:

Bone scintigraphy is gaining popularity in clinical practice for the early detection of bone changes in various diseases such as osteomyelitis, malignancy, bone tumors (benign), avascular necrosis, infection, osteomalacia, Paget's disease ([3]), etc. The various investigators of previous studies ([1, 2, 4]) have used Gallium-67 scintigraphy to detect cutaneous lesions or organ involvement in leprosy. However, Techneticum-99 labeled methylene diphosphonate (MDP) shows exquisite sensitivity for skeletal abnormality.

We utilized this technique to detect bone changes in leprosy before they become evident clinically or radiologically, and have tried to correlate this with the cutaneous lesions/infiltration/nerve thickening on the corresponding areas of the body and bone and joint symptoms.

Fifteen adult leprosy patients (11 males, 4 females) diagnosed clinically and confirmed by slit-skin smear and skin biopsy were studied. Relevant serological (RA factor and ANF) and biochemical investigations and radiological examinations were done in patients with bone and joint symptoms to rule out any other disease. Techneticum-99 MDP ≃ 20 mci was injected intravenously and a static whole-body planner scanning was done 3–4 hr later using overlapping spot views on a "Picker" Gamma Camera. The sites of abnormal bone scintigraphy were correlated with cutaneous lesions/infiltration/nerve thickening on corresponding areas of the body.

RESULTS AND DISCUSSION

Of the 15 patients 6 had paucibacillary (PB), 7 had multibacillary (MB), and 2 had pure neuritic leprosy of durations ranging from 2 months to 2.5 years. A history of joint pain and stiffness was present in five patients. None of these patients was in reaction. Ten patients had peripheral anesthesia without trophic ulcers.

Of the 15 patients, 11 (5 PB, 6 MB) showed abnormal radiotracer uptake on bone scintigraphy. The two patients with pure neuritic disease showed an abnormal scan. In seven patients all bones and joints with abnormal radiotracer uptake had cutaneous lesion(s)/nerve thickening on corresponding areas of the body. In the remaining four patients two sites each (ribs and tarsal bones) had positive scintigraphy in addition to the presence of radiotracer at other sites. Two patients with a positive rib scan had multiple joints involved but had no symptoms pertaining to the rib cage; possibly costochondral rib joint involvement was part of the generalized pathology. One patient with tarsal involvement had minimally painful restricted movement of the ankle joint but was without any skin lesions. For one patient with a positive tarsal bone scan no satisfactory explanation can be put forth; however, a minor trauma or trivial injury would be difficult to exclude. Out of the five patients with bone and joint symptoms, four patients showed abnormal bone scintigraphy in the corresponding bones and joints. In none of the PB patients with claw hand deformity was any scinti-

graphic abnormality detected in the clawed fingers although these patients had an abnormal bone scan of other bones and joints. Of the 10 patients with peripheral anesthesia, six showed abnormal radiotracer uptake in the bones/joints corresponding to anesthetic areas. There was no correlation between an abnormal bone scan and the bacterial index or the duration of disease.

Both specific and nonspecific changes are seen in about 15% of leprosy patients ([5]). Specific changes occur because of direct invasion of the bones by *Mycobacterium leprae,* seen as leprous osteitis (which usually involves long bones) where granulomas produce focal areas of cortical and medullary destruction. The destructive process, if accompanied by periosteal bone formation ([6]), may be detected by a bone scan at an early stage. In patients with peripheral anesthesia and claw hand deformity, the radiotracer uptake was away from the deformed digits. The absence of scintigraphic positivity at the peripheral sites confirms the absence of any real inflammatory activity, lack of vascularity, or any osteoblastic activity in these small bones and joints. The trophic changes, deformities and resorption of bone are noninflammatory in nature, because these changes are secondary to anesthesia and muscle involvement. The presence of the radiotracer uptake at sites away from the clawed fingers is due to the increased stress and more inflammation in these joints.

In the absence of any identifiable cause, we assume that the bone changes picked up by scintigraphy at nonperipheral sites are due to bone involvement by the disease process which, at the moment, is limited to the release of inflammatory mediators like cytokines. In the absence of any identifiable bone lesion, it is likely that these scintigraphy-positive patients on prolonged follow up may develop symptoms and/or bone involvement may occur.

To conclude, bone scintigraphy is a useful and sensitive technique to detect even minimal inflammatory changes in the bones in leprosy.

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