A limitation of the study was the absence of follow-up bone scan in Grade 3 patients. However, bone metastases were not confirmed in any of the patients with even more abnormal bone scan (Grade 2) who did have extensive metastatic work-up and serial follow-up bone scan.

It could be concluded that skeletal metastases at presentation in soft tissue sarcoma patients are low (13.9%). The low rates of skeletal metastases in bone pain-free patients (0.9%) versus the high rate in symptomatic patients (76.1%) supports the use of bone scanning in symptomatic patients only.

References


Expert's Comments

Bone scintigraphy in oncology

Bone scintigraphy has been in use for approximately 30 years now. It is one of the main nuclear medicine procedures performed in every department around the world. Although competing modalities, such as whole body MRI are coming up, even pessimists do not foresee a rapid disappearance of this established technique. The reasons for the success of bone scintigraphy are simple: the procedure is simple, patient-friendly, relatively cheap and reliably provides relevant clinical information in an early phase where radiographs are frequently still normal. Also, there is a vast body of knowledge available worldwide on virtually every thinkable application.

In oncology, the place of bone scintigraphy is rather well established, and the method has found its place in many algorithms. Bone scintigraphy is sensitive for any abnormality in bone that causes an osteoblastic reaction (and most do), yet it is rather unspecific. This important characteristic requires that the pre-test chance of finding an abnormality, e.g. bone metastases, should not be ‘too low’, in order to avoid false positive findings caused by other (benign) pathology. This is nicely illustrated by the yield of bone scintigraphy in staging breast cancer patients, in which the percentage of abnormal bone scans rises from 0.3%, 3%, 8% to 13%, in T1, T2, T3 and T4 tumours.1 In early stage breast cancer therefore, there is no place for routine bone scintigraphy.

The pre-test chance rises considerably, when other factors are present, the most important being bone pain and increased alkaline phosphatase (AP) or calcium levels. In lung cancer staging most algorithms advise bone scans only in patients with pain or high AP, as the yield of positive bone scans is 40-74% in those patients, versus 4-19% in asymptomatic patients,2,3,4 although this has recently been questioned.5 In prostate cancer the yield of bone scintigraphy rises strongly when PSA levels are increased (e.g. >20 ng/ml).

This kind of information is however not available in all types of cancers. In this issue of the journal, Barai et al6 have studied the yield of routine bone scintigraphy in soft tissue sarcoma. Probably due to its rarity, very few have focussed specifically on the issue of routine bone scanning in these patients, and they reached the same conclusion as another report, with approximately 1% bone metastases in asymptomatic patients, versus 76% in those with bone pains, at an incidence of 13%.7 It therefore appears safe to check for pain, and when absent avoid the routine demand for a bone scan.

What incidence of the searched abnormality should be present to justify routine searching for it? It is intuitively clear that 1% is not enough, 100 scans to find one positive, is a waste of resources. Many agree, again intuitively, that 10% or more, is worthwhile, but what about 5%? These questions are difficult to answer in general, and also require an estimation of the therapeutic consequences of a positive scan, and the context of the patient, e.g. the presence of other than bone metastases (like lung metastases in sarcoma). Naturally, when lung metastases are found, the detection of asymptomatic bone metastases becomes less relevant. This complicated reasoning and weighing is the daily work of physicians around the world. Basic information, such as provided by Barai et al, helps in developing sound algorithms in the work-up of tumours, and helps individual reasoning, even after 30 years of bone scintigraphy.

With exciting new modalities coming up, such as whole body...
MRI, FDG PET, and especially sodium-fluoride-18 PET with their own new individual properties with regards to sensitivity, specificity, intra- and interindividual variation in reading, relation to bone scintigraphy, costs, availability and knowledge. The very same basic questions will come up again.

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References