

Commentary

All the articles chosen for this issues literature highlights are loosely based around general radiology themes. The first abstract highlights the fact that plain films (even digitally acquired images) remain very poor at estimating bone mass. Despite the obvious advantages of digital imaging such as standardisation and correction for exposure differences and other variables, the investigators were not able to show a significant correlation with the absolute bone density measurements. DEXA and other quantitative methods remain the mainstay in this area.

Multiple Myeloma has long been a condition which was best assessed by plain films. The lesions are usually not associated with increased bone turn over and are therefore photopaenic on bone scans making their visualization difficult. This area is also being encroached upon by the newer modalities of Whole Body MR and Whole Body CT. Both these show a higher sensitivity for picking up marrow lesion of multiple myeloma.

The last two abstracts are related. By and large orthopaedic films are poorly reported by radiologists. The two reviews give the basic orientation to the very common situation of hip prosthesis and outline the normal anatomy, normal and abnormal findings and most importantly the terminology involved in the reporting of these films. This is highly recommended reading for all radiologists.

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Evaluation of Singh index for assessment of osteoporosis using digital radiography

Evaluation of Singh index (SI) as a simple means for estimating bone mass on radiographs has been subject of numerous studies. All of these studies used plain film radiographs for assessment of SI. Digital radiography may improve validity and reliability of SI assessment. Aim of this study was to evaluate SI gradings assessed on digital radiographs.

Digital pelvic radiographs of 100 patients were graded using SI by five independent observers (two radiologists, three traumatologists) blinded to dual energy X-ray absorptiometry (DXA) results and re-graded by all observers for assessment of intraobserver agreement. SI was correlated with DXA measurements and after grouping the patients according to World Health Organisation (WHO) criteria (osteoporosis, osteopenia, normal). Logistic regression analysis was performed in order to identify influential parameters on the SI grading process.

Mean intraobserver agreement was 0.648 ± 0.18 (Kendall's Tau) and 0.43 ± 0.28 (kappa). Mean interobserver agreement was 0.488 ± 0.193 (Kendall's Tau) and 0.199 ± 0.248 (kappa). Mean correlation between SI and trochanteric BMD and T scores was 0.219 ± 0.04 and 0.210 ± 0.05 (Spearman's coefficient). Only one observer (senior radiologist) reached the significance level after grouping the patients' DXA results according to WHO criteria and correlating the results with SI gradings. Logistic regression analysis revealed a significant influence of trochanteric T score in two observers while other variable parameters failed to reach the significance level.

Even though we found reasonable intraobserver agreement assessment of SI is highly subjective and interobserver agreement is generally poor. Moreover, using digital radiography could not improve correlation with DXA measurements

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Imaging in multiple myeloma

In multiple myeloma, imaging is required to determine the stage of disease and to anticipate impending bone fractures. Whereas the traditionally used Durie and Salmon staging system includes lytic bone lesions in plain films as criteria, modern systems include MRI findings. MRI is most sensitive to both diffuse bone marrow involvement as well as solid plasma cell tumors. Whole-body low-dose CT (WBCT) may replace plain films in the near future, since it is quicker, more sensitive and is better tolerated by patients. Intramedullary

lesions are well seen as long as they are located in long bones where they are surrounded by fat. Diffuse bone marrow infiltration as well as intravertebral lesions, however, are difficult to detect with WBCT in the absence of frank destruction of cancellous bone. PET or PET-CT with 18-fluoro-deoxyglucose (FDG) are insensitive to diffuse bone marrow infiltration, but may help to assess treatment response in solitary or multiple solid plasma cell tumors which have a high FDG uptake before treatment.

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Hip arthroplasty. Part 1: prosthesis terminology and classification

Hip arthroplasty is an extremely common orthopaedic procedure and there is a wide array of implants that are in current use in the UK. The follow-up of patients who have undergone insertion of a hip prosthesis is shifting from a consultant-lead hospital service towards primary care. As this change in patient care continues it becomes increasingly important that an accurate

description of the radiographic features is communicated to the primary-care practitioner so appropriate specialist input can be triggered. This review focuses on the terminology and classification of hip prostheses. This acts as a precursor for Part 2 of this series, which describes the normal and abnormal radiographic findings following hip prosthesis insertion

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Hip arthroplasty. Part 2: normal and abnormal radiographic findings

This review addresses the normal and abnormal radiographic findings that can be encountered during the follow-up of patients with total hip arthroplasty (THA). The relative significance of different patterns of radiolucency, bone sclerosis, and component position is discussed. The normal or pathological significance of these findings is correlated with design, surface, and fixation of the prosthetic components. It is essential to have a good knowledge of expected and unexpected

radiological evolution according to the different types of prostheses. This paper emphasizes the importance of serial studies compared with early postoperative radiographs during follow-up in order to report accurately any sign of prosthetic failure and trigger prompt specialist referral. Basic technical guidelines and schedule recommendations for radiological follow-up are summarized