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Osteoporosis risk assessment and treatment intervention after hip or shoulder fracture A comparison of two centres in the United Kingdom

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Summary This study compares the investigation of and treatment for osteoporosis in two groups of fracture patients at two orthopaedic centres in the UK. One centre had a formal fracture liaison service (FLS) responsible for screening fracture patients for osteoporosis. The other centre relied upon individual clinicians to initiate investigation or treatment for osteoporosis in patients following fracture.

Patients who had been treated in either centre for a proximal humeral or hip fracture during a 6-month period were followed up 6 months later to identify how many had received screening or treatment for osteoporosis. Information was retrieved from a prospectively compiled database or by postal questionnaire.

The study revealed that in the centre with an FLS 85% of patients with a proximal humeral fracture and 20% with a hip fracture had been offered a dual-energy X-ray absorptiometry (DEXA) scan. Approximately 50% and 85%, respectively, were receiving treatment for osteoporosis 6 months following their fracture. This compared with DEXA being offered to only 6% and 9.7% of humeral and hip fracture patients, respectively, and 20% (hip) and 27% (proximal humerus) receiving osteoporosis treatment in the other centre.

The presence of an FLS resulted in a considerably higher proportion of patients receiving investigation and treatment for osteoporosis following a hip or proximal humeral fracture.

Introduction

Fragility fractures due to osteoporosis are an increasing health care burden. More than 180,000 osteoporosis related fractures occur each year in

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the United Kingdom costing an estimated £1.7 billion to treat.[20] The morbidity following hip fracture is significant with 40% of patients unable to walk independently 1 year after their injury and one fifth of patients becoming fully dependent on carers.[2] Previously, it was felt that little could be done to prevent such fractures occurring and orthopaedic services concentrated on treating the fractures as they occurred. However, effective treatments are now available which have been shown to reduce the incidence of osteoporotic hip and vertebral fractures in appropriately targeted individuals.[3,7,12,1,5]

The strongest predictor of subsequent fragility fracture is low bone mineral density (BMD) measured by dual-energy X-ray absorptiometry (DEXA) scan.[8,11] Clinical factors such as low body mass index, family history or smoking are relatively weaker predictors of low BMD or fracture.[6,19] After low BMD, the strongest predictor of subsequent fracture is a previous fragility fracture.[14,21] Patients who have sustained a previous hip fracture are at up to eight times more likely to fracture the opposite hip than the general population[16] and a proximal humeral fracture increases the likelihood of a future hip fracture by almost six-fold.[15] As a result patients with a history of previous fragility fracture have been identified as a subpopulation requiring investigation for osteoporosis risk treatment where appropriate. Orthopaedic services therefore have a key role in this process by identifying this group of patients and ensuring appropriate further care.

Some orthopaedic centres in the UK have approached this role actively and have set up funded fracture liaison services (FLS).[9] These services are intended to ensure that patients who sustain an incident fracture are offered investigation and preventative treatment for osteoporosis where necessary.

An audit was carried out to compare the prevalence of axial DEXA scanning and pharmacological treatment for prevention of osteoporotic fracture between two large orthopaedic centres in the UK. One centre had a formal FLS in place while the other relied upon a local unit protocol for identifying and treating osteoporosis.

Methods

The two UK centres chosen for the audit served populations of approximately 550,000 (Centre A) and 450,000 (Centre B) with similar population demographics with regard to age, social class and fracture incidence.

Unit policies

Centre A, had no formal policy for investigation or treatment of osteoporosis for fracture patients. Patients were referred for DEXA or commenced on treatment at the individual clinician's discretion.

Centre B had an FLS in place with an osteoporosis specialist nurse and lead clinician (consultant physician). In this centre all fracture patients aged over 50, excluding those with facial fractures and those with fractures caused by a road traffic accident, were considered for axial DEXA scanning. Of this group, all patients scanned with an axial T-score less than −2.0 were recommended to start a bisphosphonate and calcium/Vitamin D preparation. Where it was thought that a bisphosphonate was not an appropriate therapy DEXA scanning was not carried out (for example, in a confused patient with no home carer), however, these patients were treated with high dose calcium and Vitamin D (1000–1200 mg calcium/800 IU Vitamin D daily). Patients over age 70 presenting with an incident hip fracture were started on a bisphosphonate and a calcium/Vitamin D preparation without recourse to DEXA scanning. Similar to above, a bisphosphonate was not recommended if contraindicated or there were concerns about the patient managing the relatively complex instructions for bisphosphonate use. In this situation high dose calcium and Vitamin D was recommended. Patients presenting to Centre B with a hip fracture who were under 70 years of age were referred for a DEXA scan and treated with a bisphosphonate and calcium/Vitamin D if their axial T-score was less than −2.0.

Study groups

Two groups of fracture patients were chosen for the audit. Patients over 50 who had sustained a proximal humeral fracture and patients over 50 who had sustained their first intracapsular hip fracture. These groups were chosen due to the high relative risk of future fracture associated with both injuries. Patients who were living in long term care were excluded due to concerns about difficulty with completing a questionnaire. All patients who met the above criteria during the period from January 2002 to July 2002 were included.

In Centre A, ethical permission was obtained to contact patients by post via their general practitioner. Appropriate patients were identified from local databases. These patients were sent a postal questionnaire 6 months after their injury asking about current medication and whether any had had an osteoporosis related investigation. Additionally the records of the local DXA service were exam-