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The detection of patients with 'fragility fractures' in fracture clinic – an audit of practice with reference to recent British Orthopaedic Association guidelines

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ABSTRACT

INTRODUCTION The British Orthopaedic Association published guidelines on the care of fragility fracture patients in 2003. A section of these guidelines relates to the secondary prevention of osteoporotic fractures. The objective of this audit was to compare practice in our fracture clinic to these guidelines, and take steps to improve our practice if required.

PATIENTS AND METHODS We retrospectively audited the treatment of all 462 new patients seen in January and February 2004. Using case note analysis, 38 patients who had sustained probable fragility fractures were selected. Six months' post-injury, a telephone questionnaire was administered to confirm the nature of the injury and to find out whether the patient had been assessed, investigated or treated for osteoporosis. A second similar audit was conducted a year later after steps had been taken to improve awareness amongst the orthopaedic staff and prompt referral.

RESULTS During the first audit period, only 5 of 38 patients who should have been assessed and investigated for osteoporosis were either referred or offered referral. This improved to 23 out of 43 patients during the second audit period.

CONCLUSIONS Improvements in referral and assessment rates of patients at risk of further fragility fractures can be achieved relatively easily by taking steps to increase awareness amongst orthopaedic surgeons, although additional strategies and perhaps the use of automated referral systems may be required to achieve referral rates nearer 100%.

KEYWORDS

Fragility fracture – Osteoporosis – DEXA

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The national and international profile of osteoporosis as a cause of fracture has increased greatly in the last few years, as awareness of the scale of the problem has widened.[1,2] The economic burden to society is already great, with costs to the NHS of osteoporosis and osteoporotic fracture care estimated at almost £2 billion per annum.[3] In the next 40 years, the number of people in the UK over the age of 60 years will rise by about 50%, and the number over 90 years will double. This change in the age profile of the population will inevitably pose challenges to our already busy orthopaedic trauma units, as well as to society in general.

These concerns led the British Orthopaedic Association (BOA) in September 2003 to publish their 'blue book' of guidelines to the orthopaedic community on *The Care of Fragility Fracture Patients*.[4] Various elements of a comprehensive response to the issue were suggested, and one of the key areas identified was that of secondary prevention of osteoporotic fractures. The guidelines point out that a first osteoporotic fracture is the strongest risk factor for sustaining a future fracture, increasing the risk for subsequent fractures as much as 2–5-fold.[5] It is recommended that: 'all patients more than 60 years old presenting with fragility fracture should be evaluated for osteoporosis by measurement of bone density, preferably by means of axial DEXA (dual-energy X-ray absorptiometry) if this is available'. Treatment is then advocated on the basis of DEXA scan results. In addition, the guidelines state that patients younger than 60 years with fragility fractures should be assessed for the presence of risk factors for osteoporosis and scanned only if such risk factors are present.

The majority of patients with osteoporotic injuries sustain fractures of the hip, spine, wrist and proximal humerus. Clearly, patients with vertebral and hip fractures are usually admitted to hospital and potentially looked after both by orthopaedic surgeons and 'orthogeriatricians', where such a service exists. However, patients with distal radius and proximal humerus fractures are often treated as out-patients, or have short in-patient stays, generally see no

other specialists and often do not see their general practitioners (GPs). In a cohort of over 22,000 patients, the relative risk of a fracture of the hip following a fracture of the wrist or proximal humerus was 3.22 and 5.76, respectively.[5] It is with this subset of patients that this audit is concerned.

East Surrey Hospital had an established infrastructure available to its orthopaedic staff for referral of patients with suspected osteoporosis prior to this audit. Patients could be referred to an osteoporosis nurse specialist, who would carry out a risk assessment for osteoporosis and arrange for DEXA scanning and referral to one of the hospital's two rheumatologists as appropriate. The osteoporosis nurse specialist also received referrals from other departments in the hospital and local GPs.

The aim was to establish how often patients with fragility fractures were referred for assessment and/or DEXA scanning by the orthopaedic surgeons in the department, as recommended in the guidelines by the BOA. An initial audit was carried out and practice changed on the basis of those results – a further audit was then carried out a year later. The method and ethics of this audit were approved by the trust's clinical audit department.

Patients and Methods

The initial audit was carried out retrospectively. A list of all new patients seen in the daily fracture clinic during the two months of January and February 2004 was obtained. Using details of the age, history and diagnosis from patients' notes, all those over the age of 50 years that might have sustained a 'fragility fracture', usually of the wrist or proximal humerus were selected. A telephone questionnaire was administered at least 6 months after the index injury to confirm that the mechanism of injury was consistent with the definition of a fragility fracture, in other words, a fall from standing height or less. Further, each patient was questioned on whether they had been referred for osteoporosis assessment, or indeed been assessed or treated for osteoporosis by their GP. All these patients were first contacted by letter, letting them know of the imminent interview and giving them the option of declining it, without penalty, if they so wished.

After the first audit, steps were taken to improve practice. This included incorporating a session on fragility fracture management into the rolling educational programme, as well as placing permanent reminder notices above the desks in all the fracture clinic consultation rooms. In addition, each clinician in fracture clinic was given a list of the names of the new patients at the start of each clinic, and asked to tick boxes indicating whether each patient seen should be assessed for osteoporosis. A tick in the appropriate box and/or a copy of the fracture clinic letter to the osteoporosis nurse was considered sufficient to act as a referral. This became a permanent part of the clinic routine, with the aim of providing the orthopaedic surgeons with an *aide memoire* so that referral of these patients would not be overlooked, as well as enabling further audit. Finally, the osteoporosis specialty nurse kept a record of the source of all the patients referred to her.

Table 1 Comparison of the first and second audits, conducted a year apart

	Audit 1	Audit 2
New patients	462	470
Fragility fracture patients	38	43
F:M ratio	33:5	40:3
Mean age (years)	71.8	72.0
Number of wrist fractures	33	40
Number of humeral fractures	4	3
Number of hip fractures	1	0
Number of patients referred	5 (13%)	23 (53%)

A year later, in the months of January and February 2005, referral rates were re-audited. Anecdotally, the osteoporosis specialty nurse had noticed a significant and maintained increase in the number of referrals received by letter. However, by this time many of the middle-grade orthopaedic surgeons had changed, and several months had passed since the last mention of this issue in the educational programme. It was felt, therefore, that a realistic impression of any change in practice would be obtained. The audit was carried out in a similar manner – a combination of the new patient lists and the osteoporosis nurse specialist's record of referrals was used as evidence of specific patients being referred.

Finally, all the patients in either of the audits who should originally have been assessed for osteoporosis were contacted by letter and offered appointments with the nurse specialist.

Results

First audit

In the 8 weeks of January and February 2004, 462 new patients were seen in the fracture clinic. Using patient notes and copies of the letters sent to the patients' GPs, 41 patients were identified as having sustained probable fragility fractures. There were no objections to telephone interviews from any of these patients, so attempts were made to contact all of them. Three patients were excluded – two

suffered with severe dementia, and the third was not contactable by telephone. The responses of the remaining 38 patients were obtained successfully. The cohort of 38 was made up of 33 female and 5 male patients, with a mean age of 71.8 years (range, 54–87 years).

All the patients were able to confirm that the mechanism of their injury was consistent with a fall from standing height or less. Only two of these patients had been referred on by the orthopaedic surgeon for assessment and/or investigation of possible osteoporosis – one to their GP, and the other to the osteoporosis nurse. The former had received a DEXA scan which was positive, and had already been started on bisphosphanates. One patient had been on bisphosphanates for the previous 3 years, while two further patients were offered assessment by the osteoporosis nurse but declined the offer. This left a total of 33 patients out of 38 who had not been investigated nor treated presumptively for osteoporosis, either by the fracture clinic or by their GP.

Second audit

In the 8 weeks from mid-January to mid-March 2005, 470 new patients were seen in the fracture clinic. Using patient notes and copies of the letters sent to the patients' GPs, 43 patients were identified as having sustained probable fragility fractures. The cohort of 43 was made up of 40 female and 3 male patients, with a mean age of 72 years (range, 50–90 years). Of the 43 patients, 23 were referred directly to the osteoporosis nurse specialist for risk assessment, and then DEXA scanning and treatment if appropriate. The referral rate of patients with osteoporosis during the second audit was, therefore, 53%. Of the 23 patients referred, 15 have already been seen by the nurse specialist, 12 have received DEXA scans (one patient declined), and eight have been started on treatment with bisphosphanates. The results of both audits are summarised in Table 1.

Discussion

The results of our first audit confirm that the vast majority of patients who had sustained fragility fractures were not being referred for further investigation of osteoporosis, either to their own GP or to the osteoporosis nurse specialist; in addition, these patients were not being independently screened by their GPs. These results were not altogether surprising – researchers have documented similar deficiencies in other countries where guidelines exist for the secondary prevention of osteoporotic fractures.[6–8] To our knowledge, no such study focused entirely on fracture clinic practice has been carried out in the UK since the release of the BOA guidelines in September 2003.

Simple changes in the infrastructure of our fracture clinic, accompanied by a programme to increase awareness of the recent guidelines, achieved a substantial improvement in rates of referral to the osteoporosis nurse specialist to around 50%. This was achieved in the context of an already established service of risk assessment, axial DEXA scanning and referral to rheumatology clinics provided by the osteoporosis nurse specialist – precisely the type of arrangement suggested by the BOA,[4] but not universally available in the UK.

However, a 50% referral rate is clearly not the ultimate target. Researchers in orthopaedics and other clinical areas have demonstrated that 'simply providing guidelines may not be sufficient to change clinical practice, and that additional strategies may be necessary'.[9] Awareness and education are key – a recent multinational survey revealed a wide-spread lack of knowledge and confidence amongst orthopaedic surgeons in treating or even diagnosing osteoporosis, and may even have underestimated the extent of this lack of knowledge.[10] Continued efforts will have to be made both locally and nationally to highlight the importance of this issue but the crucial role of the orthopaedic surgeon in referring these patients is now being realised.[4,10,11] An increased awareness amongst the orthopaedic community of the efficacy of medical treatments in reducing the risk of future fracture[12,13] would, in our opinion, make it more likely for guidelines such as those issued by the BOA to be followed. It may also be necessary to consider an automated referral system – for example, certain key words in the surgeon's dictation could be used to trigger the generation of a referral letter to the osteoporosis specialist nurse automatically.

Finally, the results of this audit have to be interpreted in the light of the recent NICE guidelines on the prescription of bisphosphanates, selective oestrogen receptor modulators and parathyroid hormone for the secondary prevention of osteoporotic fragility fractures in postmenopausal women.[14] The NICE guidelines essentially advocate the prescription, without the need for DEXA scanning, of one of these three classes of drugs to all women with fragility fractures over 75 years of age and are likely to be adopted nationally. Those younger than 75 years would still require DEXA scans. If the model of practice used in this audit were followed, the role of the orthopaedic surgeon would still reasonably be limited to one of detection and referral, and the responsibility for prescription itself passed on from the nurse specialist to GP, rheumatologist or geriatrician depending on local service and funding agreements. The osteoporosis nurse specialist would also act to ensure that other simple interventions such as life-style changes, diet changes and falls' assessments are instituted.

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