Osteoporosis: management

1. AUDIT OF UNMET NEED IN OSTEOPOROSIS - REVISITED AT 3 YEARS

LM Mackenzie1, HA Capell1, F Lovett1, A McLellan2, 1Rheumatology, Centre for Rheumatic Diseases, Royal Infirmary, Glasgow, Scotland, United Kingdom; 2Medicine & Therapeutics, Western Infirmary, Glasgow, Scotland, United Kingdom

Background: In 1999, an audit of secondary prevention in postmenopausal women presenting with forearm fracture was performed. This identified that few patients with risk factors for osteoporosis had been investigated or treated for osteoporosis. A part-time osteoporosis specialist nurse was employed to address this unmet need in February 2002.

Objective: To audit the identification of risk factors, investigation of bone mineral density and management of osteoporosis in postmenopausal women presenting with forearm fracture in 2002.

Methods: Patients were identified from accident and emergency or subsequent fracture clinic attendances for 3 months. The osteoporosis nurse wrote to all patients. Risk factors were identified by questionnaire; DEXA scans were performed; and GPs and patients were provided with the guidance on the best management to prevent future fractures.

Results: 52 postmenopausal women age 50+ were identified. 25 subsequently attended the osteoporosis nurse. The mean age was 67 (range 55-80). Risk factors: 48% were current or ex-smokers, 24% had a family history of osteoporosis, 24% had a history of previous fracture, 64% took no regular weight-bearing exercise, 32% had a menopause before age 45. Therapy: 20% were on a recognised therapy for osteoporosis (1 bisphosphonate, 1 calcium supplement, 3 HRT). The BMD classifications were 40% osteoporotic, 52% osteopenic and 8% normal. As a result of the consultation, a change in therapy was recommended in 68% of cases (bisphosphonate/Ca/vit D in 12, Ca/vit D in 6 and HRT +/- bisphosphonate in 1). Lifestyle advice was also provided.

Conclusions: The introduction of a dedicated osteoporosis nurse has facilitated the identification, investigation and improved management of patients at risk of fracture. Further work is required to increase the proportion of patients who benefit from this service.

References


2. AUDIT OF OSTEOPOROSIS MANAGEMENT IN PATIENTS WITH PREVIOUS DISTAL FOREARM FRACTURES

T Ding, T Frang, S Edmonds, M Webley. Rheumatology, Stoke Mandeville Hospital, Aylesbury, Bucks, United Kingdom

Background: Osteoporotic fractures represent a serious and growing threat to our aging population. Treatment of high-risk individuals is both cost-effective and socially important. Royal College of Physicians (RCP) osteoporosis guideline states that a previous fragility fracture is a strong independent risk for further fractures and recommends that patients with previous fragility fractures should have bone density measurement (BMD) performed to confirm the diagnosis and determine the severity of disease. As forearm fractures typically occur earlier in life and less costly than do hip fractures, it has been suggested that intervention be targeted to this group. This audit was done to investigate whether proper assessment and intervention of osteoporosis were offered to patients attending accident and emergency (A&E) department with minimal trauma distal forearm fracture.

Methods: Patients attended A&E department at Stoke Mandeville Hospital (SMH) with distal forearm fracture between December 2000 and June 2001 were identified through computer database. Only low impact fractures were included. Eligible patients have been contacted in writing. They were then contacted by telephone and consents were sought for a telephone interview. Information was gathered on each patient with respect to their index fracture and subsequent investigations (including bone density (DEXA) scan) and interventions.

Results: 27 (87.1%) were women (26 postmenopausal) and 4 were men. The mean age was 65 years. Four patients had menopause before age of 45 years. 3 patients (10%) out of 31 patients had DEXA scan after the index fracture and given the diagnosis of osteoporosis. One patient out of the 31(3%) patients had received the diagnosis of osteoporosis after the index fracture without DEXA scan. All 4 patients were started on bisphosphonate. 1 of the 26 postmenopausal women was taking HRT prior to index fracture. 1 patient was taking didroclone PMO prior to index fracture. Both patients have continued with the medication after the fracture and no DEXA scan was performed. One patient was put on calcium post index fracture.

Conclusions: Patients who present with forearm fracture do not currently receive RCP recommended osteoporosis intervention. In general the occurrence of a distal forearm fracture did not appear to be routinely recognized by physician as manifestation of osteoporosis and therefore did not offer a workup for osteoporosis. We propose that patients with forearm fractures seen in the A&E could be given a standard letter that states RCP recommendation for subsequent investigation and treatment. This is in addition to laminated poster in A&E, fracture clinics, falls clinics and rheumatology clinics with recommendations. The efficacy of these interventions are to be reassessed by a follow up audit.

3. HEALTH CARE UTILISATION AND DIRECT MEDICAL COSTS IN OSTEOPOROTIC HIP FRACTURES

ER Soriano1,2,3, F Gonzalez Bernaldo de Quiro2, L Catoggio1,2, E Langlois3,4, M Marchetti5, H Michelangelo3,4, C Perrota5, S Figar6, M Angelillo7, F Gonzalez6, G Ferrari7,7, L Vicario7,7, A McLellan2, 1Reumatologia, Servicio de Clinica Medica, Hospital Italiano, Buenos Aires, Argentina; 2Fundacion PM Catoggio, Buenos Aires, Argentina; 3Gerencia Medica Plan de Salud, Hospital Italiano, Buenos Aires, Argentina; 4Reumatologia, Servicio de Clinica Medica, Hospital Italiano, Buenos Aires, Argentina; 5Medicina Plan de Salud, Hospital Italiano, Buenos Aires, Argentina; 6Gerenciamento de Custos e Qualidade, PHARA, Buenos Aires, Argentina; 7Medicina Plan de Salud, Hospital Italiano, Buenos Aires, Argentina

Background: The most common outcomes of osteoporosis are fractures of the spine, forearm and hip. Of these, hip fractures are the worst, causing substantial mortality, morbidity and costs.

Objectives: To analyse health care utilisation and direct medical costs from the insurer point of view in patients with osteoporotic hip fractures, and to compare direct medical costs before and after the hip fracture.

Methods: Design: Descriptive study in a cohort of people enrolled in a hospital based Health management Organisation (HMO). Patients and methods: All patients 65 years or older with a hip fracture during year 2000 that was not secondary to severe trauma or related to cancer were included. Hip fractures were identified from the HMO admissions database (ICD9 codes 820*, 821*). Patients had to be enrolled with the HMO for at least 6 months prior to the hip fracture. Health care utilisation and direct medical costs were obtained from the HMO administrative database, and were calculated for the hip fracture event (including in-hospital care) and during the 6 months before (pre-fracture period) and 6 months after the episode (post-fracture period) for each patient.

Statistical analysis: cumulative hip fracture incidence (I) was calculated. Health care utilisation and costs after and before the hip fracture were compared with the Wilcoxon signed rank test. Costs were calculated in US dollars (year 2000).

Results: During year 2000, 70 hip fractures were identified the 16124 members (6.85 per 1000 members per year) Mean age was 79 years (66-90) and 62 (88%) were females. Health care utilisation: patients had a significant increase in the number of hospital admissions in the post-fracture period compared with pre-fracture: Rate Ratio: 3.1 (95% CI: 1.9-5.1). There were no significant differences in drug utilisation (median number of drugs per pre-fracture (interquartile range): 8.5 (2-19) vs. post-fracture: 10.5 (3-18); p=0.71), or in the number of programmed medical visits (median number of visits pre-fracture (interquartile range): 1(0-4) vs. post-fracture: 3 (1-6); p=0.27) or in the number of emergency room visits (p=0.42). Direct medical costs: the mean cost per fracture episode was $ 5828 (SD: $ 2632). Mean direct medical costs in the post-fracture period were 105% higher than in the pre-fracture period ($3307/patient/year Vs $1714/patient/year).

Conclusions: Patients with osteoporotic hip fracture had significantly more hospital admissions leading to higher direct medical costs in the 6 months after the event compared with the previous 6 months. Study partially supported by an unrestricted educational grant from Aventis Pharma Argentina
4. ZOLEDRONATE IN THE TREATMENT OF PAGET’S DISEASE

A Bhata, G Chung, A Allowworth, R Keen. Metabolic Unit, The Royal National Orthopaedic Hospital Stanmore, Stanmore, Middlesex, United Kingdom

Background: Bisphosphonates are effective inhibitors of osteoclastic bone resorption and are used clinically in the treatment of Paget’s disease. Zoledronate a cyclic nitrogen containing third generation bisphosphonate, is the most potent of the currently available bisphosphonates. We report 3 patients with active and resistant Paget’s disease that have been treated with zoledronate (all having received previous bisphosphonates).

Methods: To date 5 patients have been treated. Patients 1 and 2 were treated with a single 4 mg intravenous infusion of zoledronate. Patient 3 was treated with two 4 mg intravenous infusions of zoledronate 2 months apart.

Response in terms of pain reduction and serum total alkaline phosphatase (SAP) were assessed on follow up. Data is presented on 3 patients. A further two patients have been treated (4 mg single dose) although response data is not currently available but will be presented.

Results: All three patients achieved both symptomatic relief and full biochemical remission. The overall treatment response was a 90-96% decrease in SAP. The reduction of SAP following treatment is shown in table 1:

Table 1: Serial SAP (μU/L) in Three Patients Treated with Zoledronate

<table>
<thead>
<tr>
<th>Time after intra-venous zoledronate (months)</th>
<th>Patient 1</th>
<th>Patient 2</th>
<th>Patient 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Treatment (Male AV 65 yrs old)</td>
<td>569</td>
<td>561</td>
<td>469</td>
</tr>
<tr>
<td>One (Male AV 67 yrs old)</td>
<td>285</td>
<td>446</td>
<td>417*</td>
</tr>
<tr>
<td>Two</td>
<td>206</td>
<td>162</td>
<td></td>
</tr>
<tr>
<td>Three</td>
<td>211</td>
<td>114</td>
<td></td>
</tr>
<tr>
<td>Five</td>
<td></td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>Eight</td>
<td></td>
<td></td>
<td>116</td>
</tr>
<tr>
<td>Ten</td>
<td></td>
<td></td>
<td>102</td>
</tr>
</tbody>
</table>

Patient 3 treated with second infusion of zoledronate

Patients 1 and 2 reported no side effects following treatment. Patient 3 experienced transient hypophosphataemia and this may have been related to the higher cumulative dose.

Conclusions: All 3 patients previously resistant to intravenous pamidronate and other bisphosphonates (patient 3) responded symptomatically and achieved full biochemical remission after zoledronate therapy. Therefore zoledronate has a potential role in the management of patients with active Paget’s disease and the results of further randomised studies are awaited.

5. ASSESSMENT OF HIP FRACTURE RISK IN OLDER PEOPLE AND PREVENTION WITH CALCIUM AND VITAMIN D SUPPLEMENTATION

AY Chan, I Foteva, J McNally, A Bradlow. Department of Rheumatology, Royal Berkshire and Battle Hospitals NHS Trust, Reading, Berkshire, United Kingdom

Background: The incidence of hip fractures increases exponentially with advancing age in patients over 75 years of age. The present study was undertaken to determine the prevalence of risk factors for hip fractures in older people based on Cummings’ study1 and the use of calcium and vitamin D in those at risk. Patients with 5 or more Cummings’ risk factors have an incidence of hip fracture of 27 per 1000 woman years1.

Methods: We studied 70 consecutive Caucasian patients (58 female, 12 male) aged greater than 75 years who attended our hospital via acute unscheduled medical take. The mean age was 85.3±5.9 years. Patients with 5 or more Cummings’ risk factor screen were identified as at-risk group. The 12 risk factors assessed included age (> 80 years), maternal risk of hip fracture, fracture since age 50 years, self assessed state of health, thyroid function, use of drugs (anticonvulsants and long-acting benzodiazepines), decrease in weight since age 25 years, caffeine intake (> 2 cups of coffee or > 8 cups of tea a day), on feet for > 4 hours per day, walking for exercise, inability to rise from chair without using arms and pulse rate > 80/minute. We assessed the use of calcium and vitamin D supplementation in those at-risk of hip fracture.

Results: Lack of exercise (83%) and inability to rise from chair without using arms (80%) were the commonest risk factors. The prevalence of the other risk factors were: on feet for < 4 hours per day (56%), pulse > 80/minute (44%), height at age 25 years > 168cm (36%), decrease in weight since age 25 years (36%), poor state of health (31%), fracture since age 50 years (27%), increased caffeine intake (20%), hyperthyroidism (7%), maternal hip fracture (6%), current drug treatment - anticonvulsants (4%) and benzodiazepines (3%), weight loss (6%) of our patients had 5 or more risk factors (at-risk group).

Of this at-risk group, 20 (29%) had 5 risk factors, 15 (21%) had 6 risk factors, 7 (10%) had 7 risk factors and 4 (6%) had 8 risk factors. Only 3 patients (7%) of the at-risk group were on calcium and vitamin D at the time of hospital admission.

Conclusions: Cummings’ risk factor screen is more sensitive than screening for ‘classical’ risk factors (low body weight, previous fragility fracture, history of maternal fracture and smoking) or DEXA scanning in identifying older people at risk of hip fractures who will benefit from calcium and vitamin D. This is a cheap, effective and important strategy in the line with our aim to achieve the goals set by the National Service Framework (NSF) for Older People which emphasises the importance of prevention and treatment of osteoporosis in order to reduce the number and cost of fractures.

References

6. ASSESSMENT OF VITAMIN D DEFICIENCY: USEFULNESS OF RISK FACTORS, SYMPTOMS AND ROUTINE BIOCHEMICAL TESTS

GR Smith1, PO Collinson2, PDM Kiey1. 1Department of Rheumatology, St. George's Healthcare NHS Trust, Blackshaw Road, Tooting, London, United Kingdom; 2Department of Chemical Pathology, St. George's Healthcare NHS Trust, Blackshaw Road, Tooting, London, United Kingdom

Background: To assess the association of risk factors, clinical symptoms, and abnormal routine biochemical tests with hypovitaminosis D.

Methods: ROC curve analysis was used to assess the value of serum alkaline phosphatase, calcium and phosphate concentrations in the detection of hypovitaminosis D in 467 samples. Subgroup analysis was performed of serum alkaline phosphatase, calcium and phosphate concentrations in 129 patients with hypovitaminosis D, and of the symptoms and risk factors for hypovitaminosis D in 50 patients with severe deficiency.

Results: The areas under the ROC curves for alkaline phosphatase, calcium and phosphate were all less than 0.7, the criterion for a useful test. In 129 patients with hypovitaminosis D, normal concentrations of serum alkaline phosphatase were found in 76%, calcium in 90% and phosphate in 95%. In the 50 patients with the most severe hypovitaminosis D, 66% were vegetarian or vegan, clothing was partially or completely occlusive of sunlight in 72% and 60% of this cohort went outdoors less than 5 times per week. Symptoms were non specific in the majority and replacement treatment was commenced in only 52%.

Conclusions: Routine measurement of serum alkaline phosphatase, calcium and phosphate is of no use in predicting hypovitaminosis D. In contrast, risk factors for vitamin D deficiency are highly prevalent in patients with hypovitaminosis D, and should be actively sought in the assessment of patients with non-specific musculoskeletal symptoms.

7. ASSESSMENT OF WOMEN AFTER COLLES FRACTURE FOR OSTEOPOROSIS AND HIP FRACTURE RISK USING THE ‘BLACK FRACTURE SCORE’

L Dolan, S Califf. Dept. of Rheumatology, Queen Elizabeth Hospital, Woolwich, London, United Kingdom

Background: Colles Fractures are one of the earliest low impact fractures to present and are a ‘red flag’ for identifying and treating osteoporosis. Fracture clinics have in the past been poor at this. Fracture Intervention nurses have recently been used to identify and arrange DEXA on these patients. The ‘Black Fracture Score’ is a well validated tool to assess future hip risk. It is based on age, previous fracture, maternal hip risk, smoking and inability to rise from a chair. It has two forms with and without BMD. This idea is analogous to the risk assessment provided in cardiovascular disease by ‘Sheffield tables’. Such an assessment has not previously been reported in a Colles # cohort.

Methods: Sequential women attending the fracture clinic at Queen Elizabeth Hospital were identified by a fracture nurse and referred for DEXA. They completed a risk factor questionnaire. The ‘Black fracture score’ was calculated.

Results: 83 Women with Colles fracture were identified over a 6 month period. Median age was 65 yrs, range 31-83yrs. 98% were Caucasian. 31.3% had spine BMD T score < -2.5, 36% had spine BMD T score < -2.5 or < -1, 13.2% had hip BMD T score < -2.5, 18% had hip BMD T score < -2.5 or < -1. Thus 34/83 satisfied criteria for hip or spine BMD criteria for treatment (41%). Major risk factors in the cohort were early menopause (32%), low BMI (8.7%), previous falls (9%), use of arms to stand from chair (35%), smoking (20%). Few had major fractures, with no hip #, 2 pelvic fractures and 2 had vertebral #, but 23% of other peripheral fractures. Previous use of corticosteroid protective treatment was low with 7 already on bisphosphonates, 9 on HRT and 9 on calcium/D. Calculation of the Black fracture score showed 28 had a