Bone and falls

VITAMIN D INSUFFICIENCY AND RELATED BONE TURNOVER MARKERS IN THE ELDERLY WOMEN WITH ESTABLISHED OSTEOPOROSIS
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Introduction
The concept of ‘vitamin D insufficiency’ (subclinical vitamin D deficiency) is increasingly being recognised as a biochemical entity distinct from ‘vitamin D deficiency’. The former progresses to secondary hyperparathyroidism, increased bone turnover and enhanced risk of fracture in contrast to the latter which causes osteomalacia. The traditional definition of ‘insufficiency’ using a 25 hydroxyvitamin D (25OHD) threshold level is arbitrary and it may be more appropriate to use 25OHD in conjunction with intact parathyroid hormone (PTH) levels. The aim of this study was to determine the prevalence of ‘vitamin D insufficiency’ in active elderly women with established osteoporosis in the Nottingham area and its relation to bone turnover and bone mineral density (BMD).

Methodology
90 community dwelling women, independent in all activities in daily living, aged 65 years+, with at least one osteoporotic fracture, referred consecutively to the Metabolic Bone Clinic between April-Oct were studied. Bone densitometry (DXA) [Lunar Expert] confirmed osteoporosis at either the lumbar spine or femoral neck (WHO criteria, T score £ -2.5 S.D). 25OHD, PTH, bone specific alkaline phosphatase (BSAP), osteocalcin (Oc), hydroxyproline:creatinine (Hp:Cr) and deoxyyugridoline:creatinine (Dp:Cr) were measured using standardised methods.

Results
The prevalence of ‘vitamin D insufficiency’ was 17.1% (defined by lowest tertile of 25OHD and highest tertile of PTH of the normal reference range). The mean age of the group was 71.4 +/- 4.9 yrs (range 65-90 yrs) and there was no significant difference between the ‘insufficient’ vs normal group in age, body mass index, years past menopause or type of fracture. There was a strong negative correlation between 25OHD and PTH, r = -0.52 [p<0.01]. The vitamin D ‘insufficient’ group had increased bone turnover compared to the normal group although only reaching statistical significance for bone formation markers: BSAP (191.5 vs 128.3 [p=0.01]), Oc (6.7 vs 5.7 [p =0.05]), Hp:Cr (19.5 vs 18.1 [p=0.51]) & Dp:Cr (8.3 vs 7.0) [p=0.24]). There was no significant difference in BMD between the two groups at either femoral neck or lumbar spine.

Discussion
Vitamin D and iPTH status are important in the assessment of elderly patients with established osteoporosis. This prevalence of insufficiency found between the months of Apr-Oct raises important questions in treatment where bisphosphonates are increasingly being used as first line agents. Further studies are necessary to define the absolute thresholds of insufficiency and the optimal dose and duration of calcium/vitamin D replacement therapy.

References

UNDERNUTRITION AND HIP FRACTURE: POOR OUTCOME IS NOT DUE TO EXCESS INFECTIONS

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Introduction
Undernourished hip fracture patients have poorer outcomes for undetermined reasons. An immune deficit from malnutrition could confer an excess risk for serious infection in these patients.

Methods
We prospectively studied 100 consecutive, hip fracture patients (78 women, mean age 78.9±9.3 years; nursing home residents (NH) excluded) and recorded body mass index (BMI, leg length for height), functional measures and peri-operative infections.

Results
BMI less than 20 was seen in 35% of cases. Low BMI was associated with age (r=-0.22, p=0.029), falling indoors (p=0.040) and a trend to lower prefracture Katz score (p=0.059). Patients with low BMI (<20) had a greater mean fall in Katz score (p=0.04) and more frequent deaths or NH admissions (p=0.005). While 44 patients had infections (5 wound, 35 urinary, 6 chest), no significant difference in infection rates by BMI status was seen.

Conclusions
Our data confirm that undernutrition is common in hip fracture patients and correlates with poorer outcomes. Poor outcome is not related to peri-operative infections and a severe immune deficit seems unlikely. Undernutrition may reflect increased frailty in some hip fracture patients.

CHARACTERISTICS AND OUTCOMES IN PELVIC FRACTURE PATIENTS ADMITTED TO MEDICAL AND GERIATRIC WARDS
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Introduction:
Elderly patients with closed pelvic fractures are usually admitted to medical and geriatric wards. Despite this few data are available on the aetiology of pelvic fractures and patient outcomes. The aim of this descriptive study was to identify features associated with such patients and outcomes in terms of mortality, morbidity and institutionalisation, as existing information largely relates to younger patients involved in high-energy trauma.

Methods:
The clinical coding database was used to identify all patients admitted (directly or via day-case) to medical and geriatric teams with any type of pelvic fracture over a four-year period. A trained researcher studied the case notes of these patients and data including general characteristics, fall-associated factors, medication, mobility and patient outcomes were collected. Pelvic X-rays were graded by an experienced radiologist according to their trabecular pattern (Singh Index) as a measure of bone mass.

Results:
148 patients (126 women) [mean age 83.7 ± 7.3 years, median 85.0, range 67-100] were studied. 67 (58.8%) patients were admitted from their own home, 30 (20.3%) from wards, 11 (7.4%) from nursing homes, 97 (64.5%) were readmitted in their own home or their WAF respectively. 23 (16.1%) and 26 (18.2%) patients were discharged to residential and nursing homes respectively. Prior to admission, most patients either walked normally (n=79, 53.4%) or with a simple aid (n=58, 39.2%) and only 11 (7.5%) required assistance or were immobile. Of 137 patients discharged, 67 (49.3%) were unimpaired mobility aid and the remainder needed additional help with mobility or were immobile. Adequate quality X-rays of the pelvis were examined in 107 cases of which 101 (94.4%) were graded to a Singh Index of ≤5, indicating the presence of low bone mass.

Conclusions:
Low trauma pelvic fractures in the elderly are osteoporotic in nature and commonly result from falls. Although such patients generally have better outcomes than those with hip fractures, there are associated mortality, disability, dependency and institutionalisation rates. Further work is needed on longer-term consequences, health and social services costs and whether preventative strategies aimed at reducing bone loss and falls can lower the incidence.