Background

- Osteoporosis is a progressive systemic skeletal disease characterised by reduced bone mineral density and micro-architectural deterioration of bone tissue. In England and Wales over 2 million people have osteoporosis.1
- Over 300,000 patients present to UK hospitals with fragility fractures each year1; 2 million bed days are a result of osteoporotic fractures. Hip fractures are associated with increased mortality.2
- Prevalence of osteoporosis is more than 25% in 80 year olds and with people living longer, it is essential that they are treated effectively with evidence based treatments.
- The major consequences of osteoporosis are increased bone fragility and risk of fracture.2

Aims

- To identify whether current osteoporosis treatment is NICE recommended
- To identify improvements in bone mineral density (BMD) in patients with osteoporosis on NICE recommended treatment
- To check treatment compliance
- To identify whether patients with osteoporosis are taking calcium and vitamin D supplements

DEXA SCAN

- T - score: the number of standard deviations (SD) below the mean BMD of young adults at their peak bone mass
- Osteoporosis is defined as a T-score of ≤ −2.5 SD or below on DEXA scanning
- Severe Osteoporosis: a T - score of −2.5 SD or below on DEXA scanning PLUS fragility fracture
- Osteopenia: a T - score between −1 and −2.5 on DEXA scanning
- Normal: T - score more than or equal to −1
- DEXA scan should be done if two of these are found : maternal hip fracture, cigarette smoker, height loss of > 2 cm, low body weight and low BMD by any method other than DEXA

NICE Risk Factors For Osteoporosis

Independent clinical risk factors for fracture
- Parental history of hip fracture
- Alcohol intake of 4 or more units per day
- Rheumatoid arthritis
- Indicators of low BMD
  - Low BMI <22
  - Arthritis
  - Ankylosing spondylitis
  - Crohn’s disease
  - Conditions resulting in prolonged mobility

Audit Standards and Criteria

- Our standards are based on the national and local guidelines:
  - “Primary and secondary prevention of osteoporotic fragility fractures in post menopausal women” NICE guidance 2011
  - “SWBH medical management of men and women who are at risk of osteoporosis highlighting management of glucocorticoid induced osteoporosis”3
  - Patients should have had at least 2 DEXA scan results (before and after at least 1 year of treatment)
  - Patients should have or have previously had diagnosed osteoporosis
  - The patients should be taking calcium and vitamin D
  - The patient should be compliant with treatment

Methods & Materials

- A retrospective audit was carried out at Birmingham City Hospital between June 2011-October 2012
- Patient information from 31 patients was gathered from an electronic data base (Clinical Data Archive) and clinic notes
- 24 out of the 31 patients (77%) met the audit standards
- To assess improvement in bone mineral density we looked at DEXA scan T - scores results - we compared 2 DEXA results, before and after at least one year of treatment
- We used a data collection sheet to record information on: patient age, gender, ethnicity, diagnosed osteoporosis (Y/N), duration of osteoporosis, current treatment and compliance, any improvement in BMD, first mean hip and spine DEXA T - score, last DEXA T - score, risk factors for osteoporosis, and number of years follow up since diagnosis

Results

More than half of the patients (58%) had an improvement in their BMD on NICE guided treatment (Figure 1). 83% had diagnosed osteoporosis and 17% had improved their T-scores enough to become osteopenic. All of the patients with osteoporosis were taking calcium and vitamin D along with three quarters of the osteopenic patients. The only patient not taking calcium and vitamin D stopped treatment after a parathyroidectomy operation for an adenoma.

Conclusions and Recommendations

- Osteoporosis is an important endocrine problem with significant morbidity and mortality and there are effective current NICE guided treatments strategies available
- The mean duration of osteoporosis follow up was 4 years and the mean age of patients was 55. The majority of participants were white Caucasian females
- 70% of patients were taking alendronic acid and all osteoprotic patient were taking vitamin D and calcium
- There was an improvement in BMD of patients with osteoporosis on NICE recommended treatment in this current audit - 58% had an improvement in both femur and mean APS T - scores with a mean improvement of 1.2 SD
- Most patients adhere to their drugs although compliance was difficult to ascertain from the data base.
- In future we plan to audit compliance and patient satisfaction prospectively

References

1: Primary and Secondary Prevention of Osteoporotic fragility fractures in postmenopausal women. Implementing NICE guidance: NICE technology appraisal guidance 160 and 151; 2008
2: Osteoporosis: fragility fracture risk. Short clinical guideline CG146: Evidence and recommendations; August 2012
3: Medical Management of men and women who are at risk of osteoporosis highlighting management of glucocorticoid – induced osteoporosis: SWBH treatment guidelines

The Degree of Bone Mineral Density Improvement in Patients with Osteoporosis on Current NICE Recommended Treatment: An Audit

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