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Use of Bone Protection on Patients with Primary Intracranial Tumours on Long-Term Corticosteroids

Jennifer Brennock¹, Norma O' Leary¹, Cliona Hayden¹
¹Our Lady's Hospice & Care Services, Harold's Cross, Dublin 6W

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Introduction

Long term use of corticosteroids can be associated with significant morbidity, including development of glucocorticoid-induced osteoporosis and resultant fractures, leading to increased pain and disability. There are currently no specific standards or guidelines pertaining to the use of bone protection in patients on long term corticosteroids in palliative care. However, given that a significant proportion of palliative care patients are on corticosteroids for prolonged periods, this is an area that should be explored further. With this in mind, and an incident locally, in which a bed-bound patient on long term steroids suffered a minimally-traumatic long bone fracture while not on bone protection, an audit of current use of bone protection in a specific sub-group of patients (those with a primary intracranial tumour, whose treatment usually includes corticosteroids over prolonged periods) was undertaken.

Aims & Standards

Aims:

- To ascertain current use of bone protection in a palliative cohort of patients with a diagnosis of primary intracranial tumour on long term corticosteroid treatment
- To identify patients in this cohort who would likely have benefitted from receiving bone protection
- To deliver education session to consultants, NCHDs, senior nursing staff and pharmacy staff to promote awareness of bone protection and its consideration in patients on long-term corticosteroids
- To perform re-audit following on from this session and measure any changes in prescribing of a bone protection in this patient cohort

Standards:

- American College of Rheumatology 2010 Recommendations for the Prevention and Treatment of Glucocorticoid-Induced Osteoporosis¹.
- Calculating a FRAX score or T – score was not possible; however, given the other likely risk factors, these patients were deemed to be at least medium risk of developing glucocorticoid induced osteoporosis.
- Therefore, the guidelines recommended for this cohort that patients on long term glucocorticoid treatment (dose ≥ 7.5 mg prednisolone daily for $\geq$ three months should be on bone protection therapy – alendronate, zoledronic acid or risendronate

Fig. 1 Glioblastoma multiforme

Methodology

Retrospective audit of patients with primary intracranial tumours first referred to and assessed by Palliative Care Team over twelve months (2015-2016)
A proforma document was created to capture the relevant data. This included basic demographics, information on steroid and bone protection medication history, duration of care under OLHC&S and palliative performance score.

Methodology

Eligible patients were identified by PAS (Patient Administration System) and charts were then reviewed manually. This was conducted by one person over three days, and proforma document completed for each chart. Evidence of corticosteroid use was checked for in initial assessment document, CPCT list of medications, Kardexes, letters from other healthcare providers, discharge letters and the medical notes.

Results were collated and analysed using Microsoft Excel software.

Duration of Steroid Use

Results

Initially 39 eligible patients identified. On manual review of these charts, 32 were eligible, n = 32.

Steroid Use & Duration:

- 28/32 (87.5%) patients were on corticosteroids (Dexamethasone) on initial assessment. Of these 28, all (100%) were on dexamethasone dose ≥ 1 mg daily (1mg dexamethasone = 7.5mg prednisolone).
- 20/32 (62.5%) had been on a course of steroids > three months on assessment, with 19/20 (95%) of these currently on steroids on assessment.
- 12/32 (37.5%) patients had been on a course of steroids for < three months prior to admission, but of these, 9/12 (75%) were on steroids on admission

Use of Bone Protection therapy:

- 1/28 (3.5%) was on calcium and Vitamin D supplementation on assessment
- 1/28 (3.5%) was on calcium supplementation alone on assessment
- 1/28 (3.5%) was on vitamin D supplementation alone on assessment
- 0% of patients were documented to have been given bisphosphonate or received bisphosphonate following initial assessment.

Prognosis:

- 14/32 (43.75%) patients remained under palliative care for $\geq$ three months (range 12 – 40 weeks), and of these 2/14 (14.28%) were not on steroids on assessment, but were both commenced on steroids subsequently during their care (duration of care under PCT 15 and 16 weeks respectively).

Palliative Performance Score:

- Palliative performance scores (PPS) ranged from 10 – 80%, mean PPS 48.5%, mode 50%.

Discussion

12/32 (37.5%) were on steroids on admission, and had been on steroids for > three months on initial assessment and had greater than three months to live. 4 of these 12 patient patients (4/32, 12.5%) had > six months to live and were on steroids on first assessment, and 2/12 of these had been on >3 month course of steroids
20/32 (62%) patients who were initially assessed by palliative care team should have been considered for bone protection therapy prior to referral. This infers that bone protection is likely not being considered by other medical teams initially treating patients with corticosteroids.

45% of patients were not suitable for consideration for bone protection treatment. This leaves 55% which could have potentially been considered for bone protection therapy by the palliative team following initial assessment:

33% on steroids on assessment, had been on steroid for >3/12 AND prognosis of > 3/12 – this is the group most likely to have benefitted from consideration of bone protection

11% on steroids on assessment, but < 3/12 course and prognosis of > 3/12 – this group potentially would have benefitted from bone protection if steroid course continued for > 3/12.

11% not on steroids on assessment – this included one patient (2.75%) who had been on steroids for >3/12 prior to admission, and lived for a further 15 weeks, and another patient who had been on course of steroids for < 3/12 prior to admission and lived for 16 weeks – both of these patients (5.5%) were later commenced on steroids

Conclusions

Based on this findings of this audit, bone protection should be considered for patients on corticosteroids for > 3/12 with a projected prognosis for >3/12, and by all teams involved in patient care if commencing or continuing corticosteroid therapy.

Delivery of education session based on this finding has taken place, and re-audit is planned for 2017 to close the cycle.

The guidelines used in this audit clearly state that they are general recommendations only, and patients should be assessed on an individual basis. This is especially true for patients in the palliative context, as special consideration should be given to medication burden, cost, appropriateness of commencing new medication, prognosis and benefits versus risk. The issue of difficulty in accurate prognostication also needs to be considered, and it must be noted that the prognosis noted in this audit is accurate as it is retrospective.

Contact

Dr. Jennifer Brennock
Specialist Registrar in Palliative Medicine
Our Lady of Lourdes Hospital
Drogheda
Ireland
Email: jennifer.brennock@gmail.com

References

- American College of Rheumatology 2010 Recommendations for the Prevention and Treatment of Glucocorticoid-Induced Osteoporosis¹