Audit of use of IV bisphosphonates in people living with HIV

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Background

- PLWH are at increased risk of osteoporosis/osteopenia/fragility fractures;
- Risk factors for osteoporosis and fragility fractures are older age, low body weight, low muscle mass, corticosteroid use, and hypogonadism, smoking and high alcohol intake;
- With the initiation of ART there is an overall decrease in bone mineral density (BMD) over the first 48 to 96 weeks; tenofovir disoproxil fumarate (TDF) and protease inhibitors (PIs) have been associated with a decrease in BMD;
- BHIVA guidelines recommend clinicians to perform a FRAX score in PLWH > 50 years, BMD in patients at increased risk of fracture, their vitamin D/parathyroid hormone status assessed, and their ARVs reviewed;
- IV bisphosphonate treatment is indicated for patients with FRAX score > 20%, who have had baseline renal function tests, and serum corrected calcium, vitamin D and phosphate levels measured. Its important that patients are aware that dietary calcium intake should be more than 700mg/day;
- It is known that administration of IV bisphosphonates is superior to switching TDF to TAF in PLWH;
- Zoledronic acid at 5 mg intravenously once yearly is approved for the treatment of osteoporosis in PLWH at increased risk of fracture, including those with a recent low trauma fracture;
- IV Bisphosphonate therapy has also been associated with jaw necrosis and atypical fracture in 0.01% of patients;
- However, a clear prescribing policy for use of IV bisphosphonates in the setting of HIV has not yet been established.

Methods

- Retrospective data collection was carried out on PLWH receiving IV bisphosphonate therapy on the Gazzard Day Unit at Chelsea & Westminster Hospital to evaluate safety outcomes and duration of treatment;
- Search included all patients who had received at least one dose of IV ibandronic or zoledronic acid between Jan 2015 and Dec 2017;
- Each patient’s notes were reviewed for: FRAX score documentation, BMD and reason for treatment initiation; ARVs at time of diagnosis of osteoporosis/ bisphosphonate initiation; vitamin D & calcium serum levels and renal function; ARV regimen changes; duration of IV bisphosphonate therapy; follow-up BMD; any adverse events secondary to IV bisphosphonate treatment.

Results

Overall Audit Results

Safety Parameters measured prior to IV bisphosphonate administration

<table>
<thead>
<tr>
<th>Safety Parameter</th>
<th>% Patients meeting safety parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renal function (CrCl &gt;60ml/min)</td>
<td>100%</td>
</tr>
<tr>
<td>Serum corrected calcium (2.20 - 2.60mmol/L)</td>
<td>100%</td>
</tr>
<tr>
<td>Serum phosphate (0.8 - 1.5mmol/L)</td>
<td>100%</td>
</tr>
</tbody>
</table>

No patients were found to have experienced adverse effects secondary to IV bisphosphonate therapy.

Patient Demographics at Baseline

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>% Patients</th>
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<tbody>
<tr>
<td>Sex</td>
<td>78.9% M ; 21.1% F</td>
</tr>
<tr>
<td>Age</td>
<td>17.7% &lt;50 ; 82.3% &gt;50</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>94.4% ; 5.6% detectable</td>
</tr>
<tr>
<td>Viral Load &lt;50</td>
<td>2.20%</td>
</tr>
<tr>
<td>FRAX score documentation</td>
<td>52.20%</td>
</tr>
<tr>
<td>BMD spine &lt; -2.5</td>
<td>11.10%</td>
</tr>
<tr>
<td>BMD femur &lt; -2.5</td>
<td>7.80%</td>
</tr>
<tr>
<td>BMD &lt;2.5 (spine &amp; femur)</td>
<td>2.60%</td>
</tr>
</tbody>
</table>

ARVs at time of Osteoporosis Diagnosis

Current ARVs

Calcium & Vitamin D supplementation

Conclusions

- PLWH are at higher risk of osteoporosis due to a combination of traditional risk factors, including lifestyle, and continuous antiretroviral treatment;
- There were no reported AE secondary to IV bisphosphonates in our patients;
- As a result of this audit and to ensure better management and monitoring of patient receiving IV bisphosphonates, a multidisciplinary approach was taken including the creation of a policy, forms, PILs and patient reminder cards (in accordance with NICE);
- Use of IV bisphosphonates in PLWH with be reaudited in 12 months to review strategies put into place.

Strategies to Improve Practice

Bisphosphonate Policy

Referral & Follow-up Forms

Patient Reminder Card

Patient Information Leaflet

References

1 BHIVA guidelines on the routine investigation and monitoring of HIV-1 positive adults. (2016).