Appropriate use of bone protective agents in hormone sensitive prostate cancer

Danielle Gundrum, PharmD, BCOP
David Gill, MD
Allison Snoke, PharmD, BCOP
Kelsey Brown, PharmD

INTRODUCTION:

- Bone protective agents (BPAs) treat metastatic castration resistant prostate cancer (mCRPC)
- **Zoledronic acid** and **denosumab** improve progression free survival (PFS), overall survival (OS), and rates of skeletal related adverse events (SREs) in men with mCRPC[1]
- Patients with metastatic hormone sensitive prostate cancer (mHSPC) may not have similar SRE or OS benefit, as observed in CALGB 90202/Alliance and STAMPEDE trials [2,3]
- Men with mHSPC and concomitant osteopenia or osteoporosis can receive BPA at reduced dosing intervals:
  - Zoledronic acid 5 mg every 12 months
  - Denosumab 60 mg every 6 months
- During COVID-19, infusion capacity was limited to reduce viral transmission and for COVID-19 treatment with monoclonal antibodies

OBJECTIVE:

- To identify the rate of inappropriate BPA use in mHSPC and quantify its effects in terms of unnecessary infusion visits and added cost

METHODS:

- Pharmacists reviewed the treatment indication for every patient receiving **zoledronic acid** or **denosumab** over a 1-year period
  - <u>For men with mHSPC and osteopenia/osteoporosis:</u>
    - **Zoledronic acid** 5 mg annually or **denosumab** 60 mg every 6 months was considered appropriate
  - <u>For men with mCRPC or hypercalcemia</u>:
    - **Zoledronic acid** 4 mg every 12 weeks was considered appropriate
- Medication costs were calculated using institutional data
- Infusion visits were calculated based on the drug administration schedule

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Inappropriate bone protective agent use leads to increases in unnecessary infusion clinic visits and medication-related costs

BPA As Prescribed	mHSPC and Low Bone Density	mHSPC and Normal Bone Density	Annual Reduction in Infusion Visits*
Zoledronic acid 4 mg every 12 weeks	4 patients	1 patient	16 visits (20→4)
Denosumab 120 mg every 4 weeks	8 patients	10 patients	226 visits (234→8)

*with BPA conversion to zoledronic acid 5 mg annually

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RESULTS:

- Data was collected from September 2020 to September 2021
- <u>For men with mHSPC:</u>
  - 5 patients received **zoledronic acid** 4 mg every 12 weeks
    - 4 patients met indication for **zoledronic acid** 5 mg annually
    - 1 patient did not meet an indication for BPA use
  - 18 patients received **denosumab** 120 mg every 4 weeks
    - 8 patients eligible for conversion to **zoledronic acid** 5 mg annually
    - 10 patients did not meet an indication for BPA use
- Switching patients to a more appropriate BPA dosing schedule is estimated to:
  - Reduce total infusion visits from 254 to 12
  - Increase cost savings of > **$165,000**

CONCLUSION:

- A total of 23 men at our single healthcare institution received off-guideline BPA medications
- Implementation of pharmacist oversight is associated with a reduction of 242 infusion visits per year and significant cost savings

DISCUSSION:

- Future directions include providing education for systemwide pharmacists and oncologists in the Intermountain Healthcare System on proper BPA use and dosing schedules and a systemwide analysis on impact of infusion visits and medication cost savings

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