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Positive Quality Intervention: Radium Ra 223 Dichloride (Xofigo®) Management

Description: This document will cover Radium Ra 223 Dichloride (Xofigo®) and management technique to optimize patient care.

Background: Radium Ra 223 dichloride is a targeted radiopharmaceutical which is selectively drawn to areas of high bone turnover such as active bone metastases.[1,4] The active moiety radium-223 forms complexes with hydroxyapatite, an essential component of the inorganic bone matrix. Alpha particles emitted by radium-223 lead to high levels of double-stranded DNA breaks in tumor cells, osteoblasts, and osteoclasts to effectively treat active areas of tumor growth within the bone. Damage to surrounding tissue is mitigated by the small alpha particle range emitted from radium-223 (< 100 µm).[1] Radium-223 is the first α-emitter approved by the FDA and is indicated for the treatment of patients with castration-resistant prostate cancer (CRPC), symptomatic bone metastases, and no known visceral metastatic disease.[1,3] More than 90% of patients with metastatic resistant prostate cancer have radiologic evidence of bone metastases.[4] The randomized (2:1), phase III ALSYMPCA trial compared radium-223 versus placebo in 921 patients with CRPC with active, symptomatic bone metastases with a primary endpoint of overall survival (OS). Inclusion criteria also allowed for lymphadenopathy of up to 3 cm. Median OS was 14.9 months in the radium-223 group and 11.3 months in the placebo group (hazard ratio, 0.70; 95% CI, 0.58 to 0.83; P<0.001). This improvement in OS was seen in patients with and without prior treatment with docetaxel.[4]

PQI Process:[1]

- The dose regimen of Xofigo® is 55 kBq (1.49 microcurie) per kg body weight, given at 4-week intervals for 6 injections
    - Xofigo® comes as a premeasured, patient ready dose from the manufacturer
        - Calculation formula available in the package insert for reference
    - No adjustment needed for hepatic insufficiency or mild/moderate renal impairment
    - Supplied in single-dose vials containing 6 mL of clear, colorless solution at a concentration of 1,100 kBq/mL (30 microcurie/mL) with a total radioactivity of 6,600 kBq/vial (178 microcurie/vial) at the reference date
    - Store at room temperature, below 40° C (104° F)
- Administration
    - Flush the intravenous access line or cannula with isotonic saline before and after injection
    - Do not dilute or mix with any solutions
    - Administer by slow intravenous injection over 1 minute
    - Discard any unused portion per state and local regulations

Patient-Centered Activities:[1]

- Counsel patients on side effects and to report signs of bleeding or infection
- Educate patients on the importance of monitoring and advise patients to be compliant with all follow up monitoring appointments
- Inform patients to speak with their healthcare provider about any other medications they are currently taking for prostate cancer
    - Xofigo® had increased bone fractures when used in combination with abiraterone acetate and prednisone/prednisolone

- Advise patients to stay well hydrated and to monitor oral intake, fluid status, and urine output while being treated with Xofigo® and instruct patients to report signs of dehydration, hypovolemia, urinary retention, or renal failure/insufficiency
- Inform patients that there are no restrictions regarding personal contact with other people after receiving Xofigo®; follow good hygiene practices while receiving Xofigo® and for at least 1 week after the last injection in order to minimize radiation exposure from bodily fluids to household members and caregivers
    - Men should use condoms and make sure female partners who may become pregnant use birth control (contraception) during treatment and for 6 months after completing treatment
    - Whenever possible, patients should use a toilet and the toilet should be flushed several times with the lid closed after each use
    - Clothing soiled with patient fecal matter or urine should be washed promptly and separately from other clothing
    - Caregivers should use universal precautions for patient care such as gloves and barrier gowns when handling bodily fluids to avoid contamination
- Patient Assistance: NCODA Financial Assistance Tool

Supplemental Information:
Xofigo® (an α particle-emitting pharmaceutical) should be received, used and administered ONLY by authorized persons in designated clinical settings. The receipt, storage, use, transfer and disposal of Xofigo® are subject to the regulations and/or appropriate licenses of the competent official organization.

References:

1. HIGHLIGHTS OF PRESCRIBING INFORMATION (xofigo-us.com).
2. Patient Counseling Support | Xofigo® (Radium Ra 223 Dichloride) (xofigohcp.com)**.**
3. Dekempeneer Y, Keyaerts M, Krasniqi A, Puttemans J, Muyldermans S, Lahoutte T, D'huyvetter M and Devoogdt N; Targeted alpha therapy using short-lived alpha-particles and the promise of nanobodies as targeting vehicle. Expert Opin Biol Ther; 2016 Aug 2; 16(8): 1035-1047.
4. Parker C, Nilsson S, Heinrich D; Alpha emitter radium-223 and survival in metastatic prostate cancer. N Engl J Med; 2013; 269(3):213-223.