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**Introduction & Objectives:** Radium-223 (six cycles of 55 kBq/kg, once a month for half a year) is approved in metastatic castration-resistant prostate cancer (mCRPC) with bone metastases and no visceral metastases. Recent recommendations suggests it should be used as a third line therapy in mCRPC, and not combined with other systemic therapies. However, the efficacy of radium 223 therapy in this setting among real life patients has not been previously reported. We aimed to report the efficacy of radium 223 therapy as a third line therapy, in a cohort of real life patients with metastatic castration-resistant prostate cancer (mCRPC) with bone metastases and no visceral metastases, that were previously treated with at least one line of chemotherapy (docetaxel and/or cabazitaxel) and at least one androgen receptor inhibitor (abiraterone and/or enzalutamide).

**Materials & Methods:** From a retrospective multicentre database of 210 patients with mCRPC treated with radium-223, we identified an unselected cohort of 67 patients with mCRPC and bone metastases and no visceral metastases, that were treated with radium-223 after previous treatment with chemotherapy (docetaxel and/or cabazitaxel) and an androgen receptor inhibitor (abiraterone and/or enzalutamide).

**Results:** Median age was 71. Of 67 patients treated, 72% (n=48) received all 5-6 radium-223 injections, and 28% (n=19) 1-4 injections. Median overall survival was 13 months. Patients completing 5-6 cycles of Ra-223 had a longer median overall survival of 19 months vs 11 months for patients getting 1-4 cycles. Patients with good ECOG performance status ( $\geq 2$  vs 0-1, OR 0.6,  $p=0.006$ ) were more likely to receive 5-6 than 1-4 injections. Among 48 patients completing 5-6 cycles, improvement of skeletal pain was noted in 60% (n=29). Imaging studies done after the six cycle revealed a stable bone disease in 92% (n=44) of these patients. Grade 3-4 treatment related toxicity leading to treatment discontinuation occurred in 10% (n=7), including bone marrow toxicity (7%, n=5) and vomiting (3%, n=2).

**Conclusions:** Patients with mCRPC may benefit from radium-223 as a third line therapy.