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Case Report

A CASE REEPORT ON ZOLEDRONIC ACID INDUCED GAIT ABNORMALITY IN PATIENT WITH PROSTATE CANCER WITH SECONDARY BONE METASTASIS.

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Abstract:

Introduction: Perennial zoledronic acid infusions can lead to nitrogen-based bisphosphonate- related structural change in legs, leads bow leg bone deformities. ZOL's high affinity for the hydroxyapatite crystals found in bones through a high turnover process slows down bone remodelling ,on prolong use of perennial zoledronic increase the brittleness of bone reduced capacity to heal skeletal microfractures .This drug is internalised by osteoclasts, which speeds up the occurrence of apoptosis, and affects the metabolism and activity of osteoclast cells during the process of bone resorption.

Case presentation: A 60-year-old male patient diagnosed with Stage IIA Prostate cancer with bone metastasis who is currently on Zoledronic acid Infusion and complains of unsteady gait due to terrible pain in both legs and with swollen knee joints. The gait abnormalities are prominent in lower limbs.

Conclusion: Long-term use of zoledronate perennial infusions has been interrelated with bow leg deformities due to Over suppression of Bone Turnover which further associated to cause frozen bone is particularly common in patients with bone metastasis.

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INTRODUCTION:

As per the current recommendations bisphosphonates are choice of drugs for leukaemia's, Malignancy related hypercalcemia, resorptive osteoclast-mediated bone loss, osteitis deformans of the bones, Skeletal metastasis. Bisphosphonates are the major class for the treatment of the conditions with an imbalance between osteoblast-mediated bone production and osteoclast-mediated bone resorption.^[1] Nitrogen is present in the bisphosphonate zoledronic acid (ZOL), which aids in preventing osteoclasts from destroying bone. Zoledronic acid is more effective than other bisphosphonates at preventing 1,25-dihydroxyvitamin D, which boosts calcium levels. ZOL's high affinity for the hydroxyapatite crystals found in bones through a high turnover process slows down bone remodelling. This drug is internalised by osteoclasts, which speeds up the occurrence of apoptosis, and affects the metabolism and activity of osteoclast cells during the process of bone resorption.^[2]

The case in this report recommends that perennial zoledronic acid infusions can lead to nitrogen-based bisphosphonate-related structural change in legs, leads bow leg bone deformities.

CASE DESCRIPTION:

FIG : 1

A 60-year-old male patient was admitted in male radiotherapy ward at a tertiary care hospital. He currently complains of being unable to walk and unable to stand due to gait abnormalities and with terrible pain in both legs alone with Knee swelling since December, 2022. The structural abnormalities are seen in both lower limbs. Patient had history of Prostate cancer stage IIA since 2016 and underwent Bilateral Inguinal orchidectomy in 2016. Patient with history of Secondary bone metastasis to spine and kept on palliative chemo since 2021. Patient started with Zoledronic acid infusion 4mg IV since November 2021 on monthly basis. No history of smoking and alcoholism.

Currently he visited hospital for the 14th cycle of Zoledronic acid. Upon physical examination, found excruciating discomfort in both legs with spasms, unable to stand or walk without help, swelling knee. Patient gait was abnormal and with support of walking Aid. Physician diagnosed patient with abnormal gait due to zoledronic acid prolonged continuation. As the patient at a stage of Palliative care the infusion being continued on the basis of risk benefit analysis where that drug have to be continued to patient with supportive treatments of supplemental calcium, and oral steroid of Tab. Prednisolone 5mg BD been prescribed for a week in order to reduce swelling.



FIG :2



FIG :3

DISCUSSION:

The long-term condition known as "frozen bone" is characterised by a severe downregulation of bone remodelling, a significantly reduced capacity to heal skeletal microfractures, and an increase in skeletal brittleness. Excessive bone turnover inhibition caused by bisphosphonates may result in this condition called bow leg bone deformities^[3]

Bow leg bone deformities may be caused by the persistent usage of Zoledronic acid in which amounted to nearly 14 cycles over the course of one year and two months. After receiving the diagnosis-related treatment, the patient was discharged.

CONCLUSION:

In cancer patients with advanced stages, zoledronic acid (a nitrogen-based bisphosphonate) is frequently used to treat the main threat of bone metastases. Although Zoledronic acid (a nitrogen-based bisphosphonate) is well tolerated and has few side effects, long-term use has been connected to which bow leg deformities due to Over suppression of Bone Turnover called frozen bone is particularly common in patients with bone metastases.

Patient counselling: The patient was informed of the adverse effects of zoledronic acid and was advised .

SUMMARY:

Zoledronic acid have been reported to cause bow leg deformities due to over suppression of bone which is considered as a rare side effect, Even though the majority of patients with metastasized bone cancer require Zoledronic acid for an effective outcome, stopping the drug will help to alleviate leg pains ,discomfort during walking .

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