GAVIN PUBLISHERS

OPEN ACCESS

Journal of Orthopedic Research and Therapy

Martin NB, et al. J Orthop Res Ther 6: 1185.

DOI: 10.29011/2575-8241.001185

Brief Report

Atypical Femur Fracture: Premonitory Data

Natalia Bravo Martin[1], Moises Alonso Gregorio[2], Rosa Arboiro Pinel[3], Manuel Díaz Curiel[3*]

[1]Department of Internal Medicine, Hospital La Luz, Madrid, Spain

[2]Department of Urgency, Hospital Ramón y Cajal, Madrid, Spain

[3]Department of Internal Medicine, Metabolic Bone Diseases Unit, Hospital Fundación Jiménez Díaz, Madrid, Spain

[*]**Corresponding author:** Manuel Diaz Curiel, Department of Internal Medicine, Metabolic Bone Diseases Unit, Hospital Fundación Jiménez Díaz, Madrid, Spain

Citation: Martin NB, Gregorio MA, Pinel RA, Curiel M by Bravo N, Alonso M, Arboiro R, Diaz-Curiel M. (2021) Atypical Femur Fracture: Premonitory Data. J Orthop Res Ther 6: 1185. DOI: 10.29011/2575-8241.001185

Received Date: 11 February, 2021; **Accepted Date:** 16 February, 2021; **Published Date**: 19 February, 2021

Background

Bisphosphonates (BPN) have shown a clear evidence for reducing the incidence of fractures in post-menopausal women with osteoporosis [1], but it has been observed that its use for years is not exempt from complications. Continued administration of BPN may cause a paradoxical effect like osteonecrosis of the mandible, frequently after a dental surgery. An interest has emerged about the association between the use of BPN and Atypical Femur Fractures (AFF); a type of fracture that occurs below the great trocanter atraumatic or after a minimal trauma, with a rate of 3.2-50 cases per 10,000 person-years. The physiopathology of these fractures is unknown but they may be due to the prolonged half-life of BPN and their effect on fracture remodeling (microdamage accumulation, alternations to the normal pattern of collagen cross-linking,reduced vascularity, antiagiogenic effects, etc), which disturbs the mineralization process with the consequent affectation of bone quality [2]. There are some risk factors like sex (women), race (Asian), femoral geometry (varus alignment, smaller canal and larger offset) and continuous treatment with BPN for years [3].

Some comorbid conditions (e.g., vitamin-D deficiency, rheumatoid arthritis, cancer disease, hypophosphatasia) and use of pharmaceutical agents (e.g., s, glucocorticoids, proton pump inhibitors) add more information about which kind of patient has higher risk to suffer from complications of the treatment of BPN [4]. After 5 years of treatment with BPN, the risk of AFF increases significantly and decreases after cessation; Therefore, it´s important to evaluate patients in treatment with BPN for a long period of time in order to avoid possible adverse effects. Patients with AFF may discontinue BP therapy once the diagnosis of AFFs is established and PTH is the treatment more recommended [5]. Cortical thickening and periosteal reaction of lateral cortex could be premonitory data of AFF, which could help us to remove a treatment with BPN and avoid these types of fractures.

Discussion

Nowadays there is no concrete indication for the duration of BPN treatment. Nevertheless, for long periods of treatments, we recommend annual re-evaluation considering fracture history, newly diagnosed disorders, bone turnover markers and BMD determination [2,5]. Appearance of prodromal symptoms like pain in the thighs and radiographic features such as cortical thickening could be considered premonitory factors of an atypical fracture, so we should consider the continuation of treatment with BPN [2]. Tejwani and Peck published that anterior-posterior and lateral radiographs are reliable for distinguishing between femoral fractures related to bisphosphonates use and those not related to such use [6]. The decision to reintroduce or withdraw the treatment should be individualized. AFF has also been reported after treatment with others antiresorptives such as Denosumab [7-9].

Conclusion

Bisphosphonates are an effective treatment for patients with osteoporosis, but their use is associated with a rare condition: Atypical femur fractures, with an unclear pathogenesis. This type of complication is uncommon and if we consider predictive factors such as cortical thickening, a large number of them could be avoided. In short, physicians and patients should know the possibility of AFF in order to assess the risk-benefit of continuing/withdrawing treatment with bisphosphonates.

References

1. Pazianas M, Kim S, Yuen T, et al. (2015) Quiestioning the association between bisphosphonates and atypical femoral fractures. Ann N Y Acad Sci 1335: 1-9.
2. Gun-Il Im, et al. (2015) Pathogenesis, management and prevention of atypical femoral fractures. J Bone Metab 22: 1-8.
3. Rizzoli R, Reginster J-Y, Boonen S, et al. (2011) Adverse reactions and drug-drug interactions in the management of women with postmenopausal osteoporosis. Calcif Tissue Int 89: 91-104.
4. Shane E, Burr D, Ebeling PR, et al. (2010) Atypical subtrochanteric and diaphyseal femoral fractures: report of a task force of the American Society for Bone and Mineral Research. J Bone Miner Res 25: 2267-2294.
5. Nianye Zheng, Ning Tang, and Ling Qin (2016) Atypical femoral fractures and current management J Orthop Translat 7: 7-22.
6. Takemoto RC, McLaurin TM, Tejwani N, et al. (2014) Evolution of atypical femur fractures and the association with bisphosphonates. Bull Hosp Jt Dis 72: 104-109.
7. Aspenberg P (2014) Denosumab and atypical femoral fractures. Acta Orthop 85: 1-1.
8. Díaz Curiel M, Bravo Martín N, Arboiro Pinel RM (2017) Atypical femur fractures and cortical thickening in osteoporotic patients treated with bisphosphonates. J Osteop Phys Act 5: 201.
9. Lenart BA, et al. (2008) Atypical Fractures of the Femoral Diaphysis in Postmenopausal Women Taking Alendronate. N Engl J Med 358: 12.