



Case Report

Fracture neck of femur or osteomalacia in masquerade: A rare case report

Sachin Joshi¹, Ekaansh Karir^{1*}

¹Dept. of Orthopaedics, Government Medical College, Kota, Rajasthan, India



ARTICLE INFO

Article history:

Received 15-07-2024

Accepted 22-08-2024

Available online 14-09-2024

Keywords:

Osteomalacia

Femur neck fracture

Loosers zone

Vitamin D

ABSTRACT

Case: A 21 year old female presented with pain in right hip following a fall two weeks ago, patient was misdiagnosed by various orthopedicians as fracture neck of femur and was recommended surgery. Metabolic work was done for this patient and she was diagnosed as a case of osteomalacia. Patient was started on appropriate supplementation and weight bearing delayed. Two months following treatment, patient has radiographic as well as clinical healing. *Conclusion :* Osteomalacia is the bony manifestation of altered vitamin D, calcium, and phosphorus metabolism in an adult. Osteomalacia may present in several forms, including a rare form of suspected fracture following trivial trauma. Orthopaedic surgeons should be fully aware of this condition and be able to rule out metabolic disorders such as osteomalacia before posting patient for unnecessary surgery.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

Introduction

Osteomalacia is the bony manifestation of altered vitamin D, calcium, and phosphorus metabolism in an adult.¹ Vitamin D deficiency accounts for the most common nutritional deficiency among children and adults.² Osteomalacia describes a disorder of “bone softening” in adults that is usually due to prolonged deficiency of vitamin D.³ This results in abnormal osteoid mineralization.⁴ There are multiple causes of osteomalacia, but, regardless of the cause of the abnormal metabolism, adults have similar long bone and trunk deformities.⁵ Osteomalacia is a metabolic bone disease characterized by impaired mineralization of bone matrix.⁶ Bone creation occurs by the deposition of hydroxyapatite crystals on the osteoid matrix.⁷ Most common casues of this disease include: decreased Vitamin D production, decreased Vitamin D absorption, altered Vitamin D metabolism, hypophosphatemia, hypocalcemia and medications.⁸ Because vitamin D deficiency has

become less common in the United States, osteomalacia is not often considered as differential diagnoses in patients who have extremity pain or deformity, however, in developing countries such as India, Vitamin D deficiency is a major concern as majority of the population has moderate to severe deficiencies of Vitamin D.⁹ In processes that decrease the amount of vitamin D or its bioproducts, normal serum calcium will be maintained by mobilizing calcium from the bones.¹⁰ Specifically, PTH will be secreted by the parathyroid glands in response to hypocalcemia from vitamin D deficiency and will attempt to bring the body back to normal serum calcium levels.¹¹ Bones are the primary target to recruit calcium, and by extracting calcium from the bones, osteomalacia will ensue.

Therefore, adults with processes that disrupt vitamin D metabolism and its production are at risk for eventually developing osteomalacia and its clinical manifestations. When treating patients with osteomalacia, the orthopaedist always must be concerned about the effect treatment may have on impaired calcium homeostasis.¹² Before surgery, management of the metabolic defect with

* Corresponding author.

E-mail address: ekarir@gmail.com (E. Karir).

vitamin D, phosphorus, and calcium or other appropriate measures should be done for several months. If the disease is not controlled metabolically, the deformity is likely to recur after corrective osteotomy.¹³

Case Report

The patient was informed that her case would be published in a medical journal and informed consent was taken from her.

History

The patient is a 21-year old girl with complains of pain in right hip following a self-fall while playing two weeks ago. The pain was sudden in onset, gradually progressive in nature, only mildly relieved on medications, with no diurnal variation. She had no associated fever, myalgia, generalized malaise or paresthesias.

The patient presented to our orthopaedic OPD after seeing multiple doctors and was diagnosed as a Closed Fracture Neck of Femur Right and was advised admission and surgery for the same. Her parents, however, wanted another opinion before going for surgery and hence, came to us.

Past history

The Patient has no other known systemic diseases and has no history of significant illnesses in the past.

Personal history

The patient is conscious and oriented to time, place and person. She is a college-going student pursuing her graduation. She is thinly built and averagely nourished. She is a vegetarian, does not smoke or consume alcohol, is not into sports and spends most of her time in the college or home. She is not active sexually and does not have any gynaecological complains. Her bowel and bladder movements are normal and her sleep schedule is adequate.

Medication history

The patient is not currently on any medications except for NSAIDs since the past 2 weeks for her pain. She has no history of significant medications previously.

Menstrual history

The patient is on Day 14 of her current cycle, her cycles are regular and of 28-29 days with no significant complains.

Examination

1. *Straight leg raising test:* Passive - Bilateral 90 degrees and not painful.

2. *Straight leg raising test:* Active - Left 90 degrees not painful, Right 90 degrees with mild pain.
3. *Pelvic compression test:* Mild pain.
4. *Dorsalis pedis artery:* Bilateral palpable and equal.
5. *Posterior tibial artery:* Bilateral palpable and equal.
6. *Local examination:* No local rise of temperature, mild to moderate tenderness elicited on anterior aspect of hip. No obvious swelling or deformity seen.
7. *Investigations:* A plain X-ray was done initially.



Figure 1:

X-rays were initially suggestive of a fracture, so NCCT pelvis was done. A NCCT lumbo sacral spine was also done to rule out spine injuries.



Figure 2:

X-rays and CT along with the clinical history and examination were not suggestive towards a fracture.

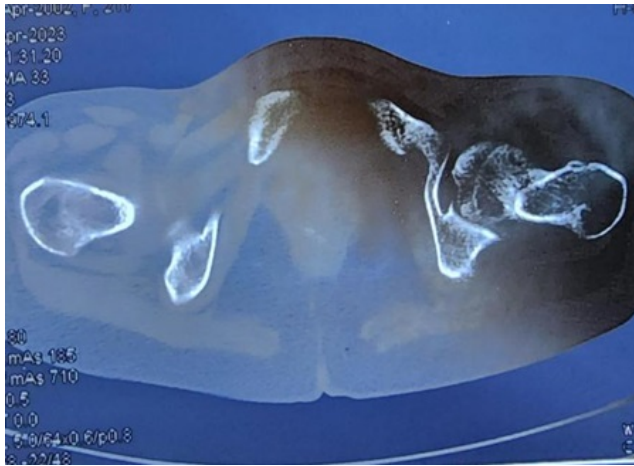


Figure 3:

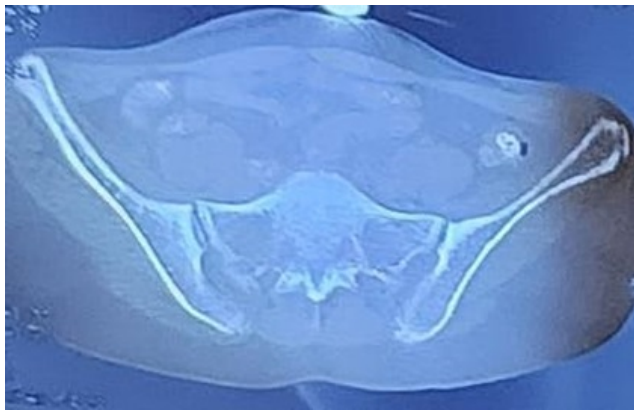


Figure 4:

Hence, metabolic workup was done for the patient.

Metabolic workup along with radiographic investigations confirmed that this patient was a case of Osteomalacia and the X-rays were actually suggestive of metaphyseal “Looser’s Zones”. Decreased Vitamin D, decreased calcium and normal to increased ALP were all confirmative of the diagnosis of osteomalacia.

Treatment

The patient was restricted weight bearing for initial 4 weeks and then started on partial weight bearing for another 2 weeks. Patient was treated with Tab Methylcobalamin 1500 ug OD, Tab Calcium 500 mg OD, Vitamin D 60,000 Units PO once a week, Tab Paracetamol 500 mg SOS and Tab Pantoprazole 40 mg OD.

Patient was instructed to take diet accordingly and follow ups were done at 1, 2, 4, and 6 weeks.



Figure 5:



Figure 6:



Figure 7:

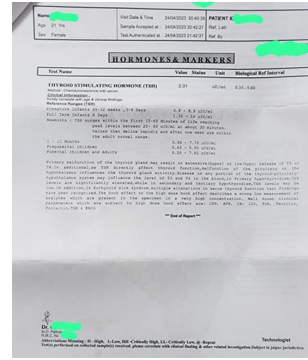


Figure 10:

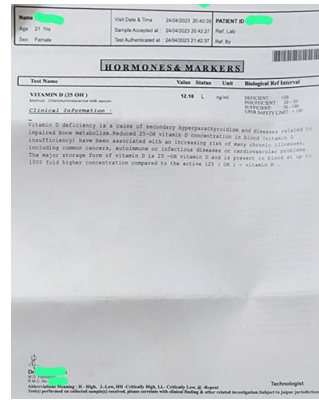


Figure 11:

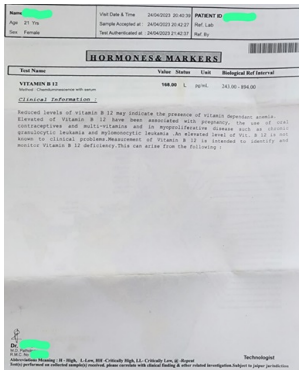


Figure 8:

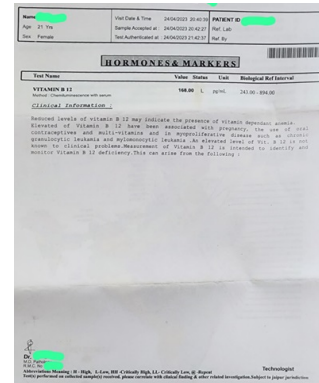


Figure 12:

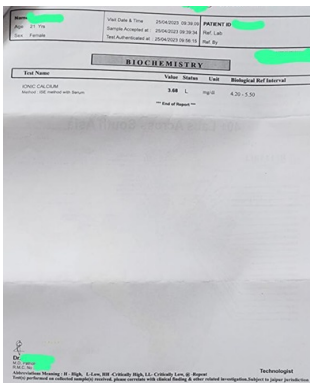


Figure 9:

Results

At 6 weeks, patient had no complains of pain in the hip joint and no limping. X-rays done showed complete radiographic healing of the looser zones.

Discussion

Osteomalacia is a metabolic bone disorder which is very prevalent in a developing country like India and is often overlooked and underdiagnosed by many orthopedicians.

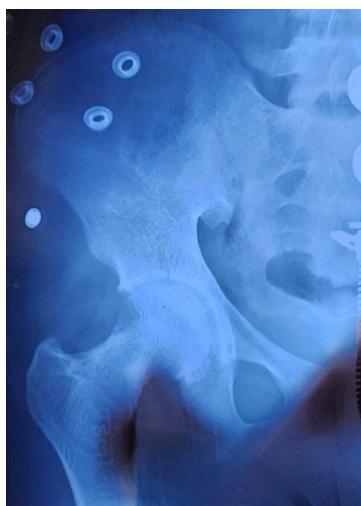


Figure 13:

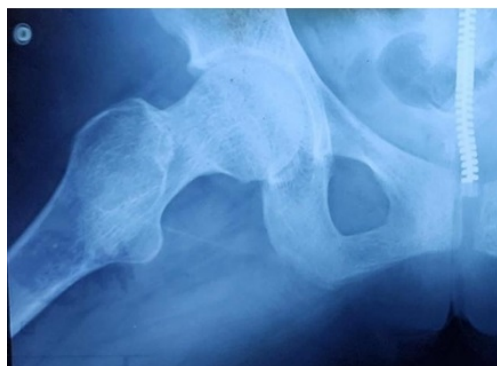


Figure 14:

Reasons are varied, the vagueness of symptoms, the loss to follow up in many patients, the lack of proper education and knowledge both among the doctors and the general masses altogether provide a gross problem of mismanagement of this disease. Many surgeons would have thought of this as a neck of femur fracture and operated on the patient and would have had substandard results with no patient satisfaction whatsoever. Having a diagnosis of Osteomalacia in mind, especially in the female population, can lead to correction of such potentially hazardous misdiagnosis. The patient eventually needed just medical management and healing was visible within 6 weeks. As a healthcare provider, it is our duty to make sure to keep such underdiagnosed conditions on the back of our mind to be able to make such diagnosis and be able to treat patients correctly. Simple supplementation with Vitamin D and Calcium can provide miraculous results in such patients with low cost and no surgeries and hence should always be diagnosed correctly and treatment started on time.

Conclusion

Our case report aims to conclude that one should not jump to fracture treatment just by looking at the radiograph and should instead find the etiology first. Such cases are often misdiagnosed and operated upon, leading to significant distress, physically, emotionally and financially to patients. Proper knowledge of differentials and simple pharmacological treatment can give miraculous results and save unwanted surgeries in such patients with osteomalacia.

Conflict of Interest

None.

Data Availability

All investigations have been published along with the article taking care not to expose the patient's privacy in any way.

References

1. Dipaolo CP, Bible JE, Biswas D, Dipaola M, Grauer JN, Rehtine GR. Survey of spine surgeons on attitudes regarding osteoporosis and osteomalacia screening and treatment for fractures, fusion surgery, and pseudoarthrosis. *Spine J.* 2009;9(7):537–44.
2. Doppelt SH. Vitamin D, rickets, and osteomalacia. *Orthop Clin North Am.* 1984;15(4):671–86.
3. Mankin HJ. Rickets, osteomalacia, and renal osteodystrophy. Part I. *J Bone Joint Surg.* 1974;56:101–28.
4. Mankin H. Rickets, osteomalacia, and renal osteodystrophy. Part II. *J Bone Joint Surg Am.* 1974;56(2):352–86.
5. Lund B, Sørensen OH, Lund B, Melsen F, Mosekilde L. Vitamin D metabolism and osteomalacia in patients with fractures of the proximal femur. *Acta Orthop Scand.* 1982;53(2):251–4.
6. Rokan Z, Kealey WD. Osteomalacia: A forgotten cause of fractures in the elderly. *BMJ Case Rep.* 2015;2015:bcr2014207184.
7. Emini-Sadiku M, Morina-Kuqi N. Concealing clothing leading to severe vitamin D deficiency, osteomalacia and muscle weakness. *Open Access Maced J Med Sci.* 2019;7(13):2146–49.
8. Gou M, Ma Z. Osteomalacia, renal Fanconi syndrome, and bone tumor. *J Int Med Res.* 2018;46(8):3487–90.
9. Liu S, Zhou X, Song A, Huo Z, Wang Y, Xia W, et al. Successful treatment of tumor-induced osteomalacia causing by phosphaturic mesenchymal tumor of the foot. *Med (Baltimore).* 2019;98(27):e16296.
10. Rigante M, Loperfido A, Paludetti G. Oncogenic osteomalacia with elevated fibroblast growth factor 23: A rare case of paranasal sinus tumor onset. *Cureus.* 2019;11(6):e4919.
11. Uday S, Högl W. Nutritional rickets and osteomalacia in the twenty-first century: Revised concepts, public health, and prevention strategies. *Curr Osteoporos Rep.* 2017;15(4):293–302.
12. Allen SC, Raut S. Biochemical recovery time scales in elderly patients with osteomalacia. *J R Soc Med.* 2004;97(11):527–30.
13. Motosuneya T, Asazuma T, Yasuoka H, Tsuji T, Fujikawa K. Severe kyphoscoliosis associated with osteomalacia. *Spine J.* 2006;6(5):587–90.

Author biography

Sachin Joshi, Professor and Unit Head

Ekaansh Karir, Junior Resident

Cite this article: Joshi S, Karir E. Fracture neck of femur or osteomalacia in masquerade: A rare case report. *IP J Surg Allied Sci* 2024;6(3):94-99.