International Journal of Research in Orthopaedics
Abidi SAR et al. Int J Res Orthop. 2024 Sep;10(5):1095-1097
http://www.ijoro.org

DOI: https://dx.doi.org/10.18203/issn.2455-4510.IntJResOrthop20242412

Case Report

Widespread skeletal brown tumor with rare elbow involvement and associated hydronephrosis in a case of primary hyperparathyroidism

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Received: 08 July 2024
Revised: 06 August 2024
Accepted: 13 August 2024

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ABSTRACT

We report a rare case of primary hyperparathyroidism in a 32-year-old female caused by a parathyroid adenoma. The patient initially complained of left elbow pain. Imaging revealed multiple skeletal brown tumors affecting unusual sites such as the elbow, as well as multifocal involvement of the vertebrae, sternum, radius, ulna, humerus, femurs, pelvic girdle, and scapulae. An abdominal ultrasound further revealed hydronephrosis and renal calculi in the right kidney. This case highlights the uncommon widespread skeletal distribution and involvement of atypical sites by brown tumors, along with the rare complication of hydronephrosis.

Keywords: Brown tumor, Primary hyperparathyroidism, Hydronephrosis, Elbow involvement

INTRODUCTION

Brown tumors are non-neoplastic lesions that can develop in any bone due to increased osteoclastic activity resulting from hyperparathyroidism. They typically affect bones such as the mandible, ribs, clavicles, and pelvic bones.[2,4] Involvement of multiple bones or uncommon sites like the elbow is rare.[1,5,6] Furthermore, the correlation between brown tumors and hydronephrosis is not well-established in the literature.[7]

CASE REPORT

A 32-year-old female presented with left elbow pain persisting for two months. Her medical history included two previous C-sections, without other significant comorbidities. Physical examination revealed tenderness over the left elbow.

Laboratory investigations showed elevated serum parathyroid hormone (PTH) levels of 1200 pg/mL (normal range: 15-65 pg/mL), alkaline phosphatase levels of 1200 U/L (normal range: 40-150 U/L), hypercalcemia with serum calcium levels of 11.9 mg/dL (normal range: 8.5-10.5 mg/dL), and hypophosphatemia with phosphorus levels of 1.4 mg/dL (normal range: 2.5-4.5 mg/dL), consistent with primary hyperparathyroidism.

Radiographic evaluation revealed a lucent lesion in the left elbow, suggestive of a brown tumor. Technetium-99m bone scintigraphy demonstrated multifocal skeletal involvement, including the vertebrae, sternum, radius, ulna, humerus, femurs, pelvic girdle, and scapulae. Abdominal ultrasound identified hydronephrosis and renal calculi in the right kidney.

Magnetic resonance imaging (MRI) of the left elbow and forearm confirmed multiple well-defined enhancing mass lesions involving the distal humerus, proximal ulna, and proximal radius, accompanied by cortical thinning, erosion, and marrow edema. The largest lesion in the proximal ulna measured 3.5×3.2×4.6 cm (AP×TS×CC).

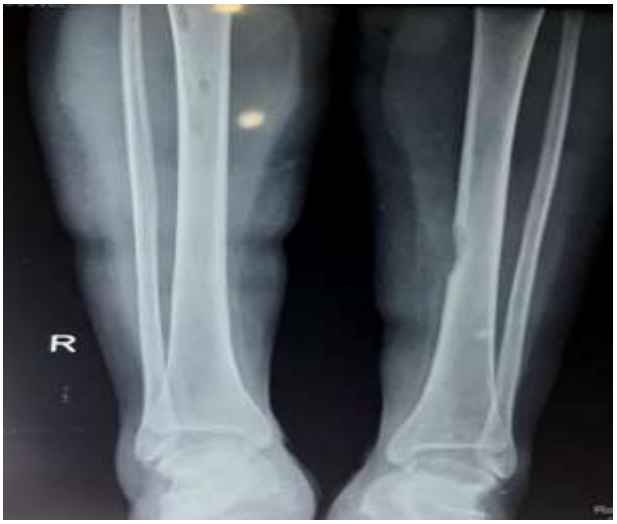

Figure 1: X-ray of lower limbs showing multiple brown tumors.

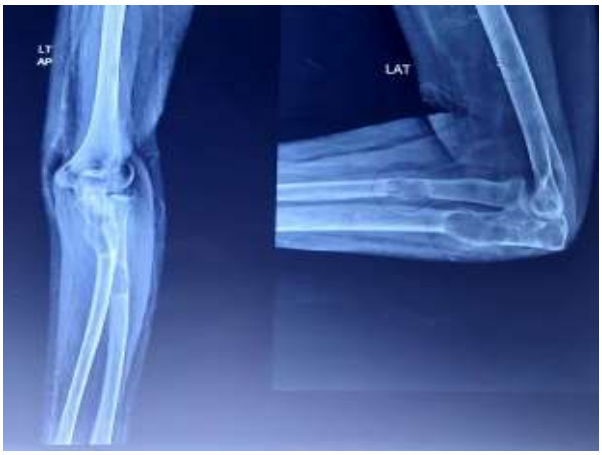

Figure 2: X-ray of elbow joint illustrating, multiple brown tumor.

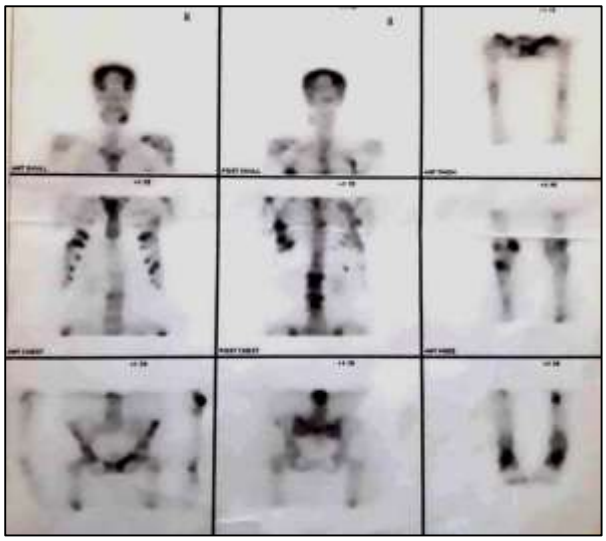

Figure 3: Bone scan showing extensive metastasis of brown tumor.

Management and outcome

The patient underwent surgical removal of the parathyroid adenoma, resulting in normalization of serum calcium and PTH levels. She was closely monitored for potential complications related to the widespread skeletal lesions and hydronephrosis. Follow-up imaging at 6 months demonstrated regression of the brown tumors, with no progression of hydronephrosis or renal impairment.

DISCUSSION

This case highlights an unusual presentation of primary hyperparathyroidism characterized by widespread skeletal involvement with multiple brown tumors, including rare sites like the elbow.[1,6] While brown tumors commonly manifest in the mandible, ribs, clavicles, and pelvic girdle, their multifocal distribution and occurrence in atypical locations such as the elbow are exceptional.[1,4,3]

Additionally, the association of brown tumors with hydronephrosis is a rarely reported complication.[4,7] In this instance, hydronephrosis likely resulted from obstructive uropathy due to renal calculi, which can arise secondary to hypercalciuria in hyperparathyroidism.[8,9] However, the possibility of the skeletal lesions exerting a mass effect on the urinary tract cannot be entirely ruled out.

Management of such cases typically involves addressing the underlying hyperparathyroidism, often through surgical removal of the parathyroid adenoma or hyperplastic glands. Close monitoring and potential interventions for complications related to the skeletal lesions or hydronephrosis may be necessary.[9-12]

CONCLUSION

This case highlights the rare and atypical manifestations of brown tumors in primary hyperparathyroidism, including widespread skeletal involvement, involvement of unusual sites like the elbow, and the potential association with hydronephrosis. Early recognition and appropriate management of such cases are crucial to prevent complications and improve patient outcomes.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Jagtap VS, Sarathi V, Lila AR, Bandgar T, Menon P, Shah NS. Brown tumor of the sternum: An unusual manifestation in a case of primary hyperparathyroidism. J Postgrad Med. 2011;57(2):149-52.
2. Mohammadi A, Mohebbi N, Roshanray L. Brown tumor: An uncommon manifestation of primary hyperparathyroidism. Casp J Intern Med. 2019;10(2):237-40.

3. Ullah E, Ahmad M, Ali SU, Redhu N. Primary hyperparathyroidism having multiple brown tumors mimicking malignancy. Indian J Nucl Med. 2012;27(2):114-7.
4. Reséndiz-Colosia JA, Rodríguez-Lozano AL, Flores-Díaz R, Baizabal-Olarte R, Lizárraga-Borges R, Gallegos-Cabriales EC. Maxillofacial brown tumor in chronic renal failure and secondary hyperparathyroidism. A case report. Gac Med Mex. 2008;144(2):165-9.
5. Jafari-Pozve N, Birang S, Torabinejad S, Eshghii S. Unusual manifestation of primary hyperparathyroidism with multiple brown tumors. Arch Iran Med. 2008;11(4):408-12.
6. Yamazaki H, Ota Y, Aoki T, Hosokawa R. Brown tumor of the maxilla and mandible in a patient with secondary hyperparathyroidism. J Oral Maxillofac Surg. 2003;61(10):1205-9.
7. Soundarya N, Sharada P, Prakash N, Pradeep G. Bilateral maxillary brown tumors in a patient with primary hyperparathyroidism: a case report and review of literature. J Oral Maxillofac Surg. 2011;69(8):e182-6.
8. Proença H, Castro Lopes J, Marques O, Fernandes G, Almeida R, Aguas F. Multifocal osteolytic lesions-a single clinical entity. BMJ Case Rep. 2013;2013:bcr2013009898.
9. Panagopoulos A, Tatani I, Kourea HP, Karanikolas M, Koukoulitsios G, Kalomiris K, Karayannopoulou G. Osteolytic lesions (brown tumors) of primary hyperparathyroidism misdiagnosed as multifocal skeletal metastases. Arch Osteoporos. 2018;13(1):122.
10. Fatma LB, Ezzahi H, Elbatoul A, Elkhanany A, Chbani L, Harroudi TE, Lamalmi N. Multifocal brown tumors revealing primary hyperparathyroidism: A case report. Radiol Case Rep. 2020;15(11):2263-8.
11. Ullah E, Mustafa M, Ahmad M, Akhter S, Mirza S, Mushtaq S, et al. Unusual presentation of primary hyperparathyroidism with multiple brown tumors masquerading as metastatic bone disease. Endocrinol Diabetes Metab Case Rep. 2019;2019:19-0087.
12. Vera L, Luciano PM, Mora M, Rua S, Dulín E, Roson M, et AL. Multifocal osteolytic lesions in primary hyperparathyroidism. J Clin Endocrinol Metab. 2013;98(10):3892-8.
13. Shetty AD, Namitha J, Shetty S. Bilateral maxillary and mandibular brown tumors in a patient with primary hyperparathyroidism. J Oral Maxillofac Pathol. 2018;22(1): S107-12.
14. Ullah E, Ahmad M, Ali SU, Naqvi AA, Abbas K, Khun S. Skeletal manifestations of primary hyperparathyroidism and the importance of bone scintigraphy for prompt management. Clin Nucl Med. 2014;39(9):759-62.

Cite this article as: Abidi SAR, Quadri A, Quadri A, Rasheed F. Widespread skeletal brown tumor with rare elbow involvement and associated hydronephrosis in a case of primary hyperparathyroidism. Int J Res Orthop 2024;10:1095-7.