International Pathology Day 2025

The Royal College of Pathologists
Pathology: the science behind the cure

DIAGNEXIA

#IPD2025

From uncertainty to Clarity through histopathology ;An extraordinary presentation of a Parathyroid Adenoma in a 14-year-old girl.

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1. Introduction

Parathyroid adenoma is the major case of primary hyperparathyroidism, but incidence is low under the age of 19 years. Pathological fractures is a rare presentation of primary hyperparathyroidism in this age group [1] .

2 .Case Report

- A 14-year-old previously healthy girl , developed a progressive hip pain for 2 weeks followed by a sudden limp after a fall.
- x-ray/ clinical impression - osteosarcoma of L/femur.
- CT scan- generalized osteopenia with a comminuted fracture of the left neck of femur. (Fig 01)
- MRI was concluded as Chronic osteomyelitis .
- Amidst the diagnostic dilemma,multiple biopsies from fracture site and proximal femur was taken.
- Intra-operative findings – soft & fragile L/femoral Head and neck, which made the further surgical management impossible.

3 . Microscopy of femoral neck

- Irregular disorganized trabeculae of woven bone with conspicuous osteoblastic rimming in a fibro-vascular stroma. (Fig. 02).
- Osteoclastic giant cells were focally seen .
- No evidence of significant chronic inflammatory cell Infiltration.
- No atypical cells suggestive of a malignancy. .

4.Where was the pathology ?

- With the histomorphology, a possibility of a defective bone mineralization was raised. – the turning point !
- serum bone profile showed elevated serum calcium & Alkaline Phosphates levels & low 25-hydroxy vitamin D levels.
- Her serum parathyroid hormone – 975.0 (10.4-66.5) pg/mL.
- Her CECT/ Sestamibi scans showed a parathyroid adenoma.
- Excision of the parathyroid adenoma was done .

5.Macroscopy of the parathyroid adenoma

- Well circumscribed firm lesion with smooth outer surface. Cut surfaces were homogenously pale tan-whitish.

6. Microscopy of parathyroid adenoma

- A well circumscribed encapsulated lesion composed of a monotonous populations of chief cells arranged In nests ,sheets, and trabeculate.
- Thin, delicate fibrous septae & scattered capillaries are also seen within the lesion. (Fig.03)
- No significant nuclear atypia, mitoses or necrosis.
- No capsular or vascular invasion.

7. Discussion

- Patient improved following the excision of parathyroid adenoma and id awaiting a total hip replacement .
- In a pediatric patient with pathological fractures, primary hyperparathyroidism following a parathyroid adenoma, which can have syndromic associations must be considered[2].

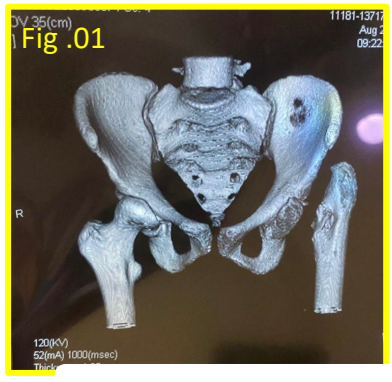
Fig .01

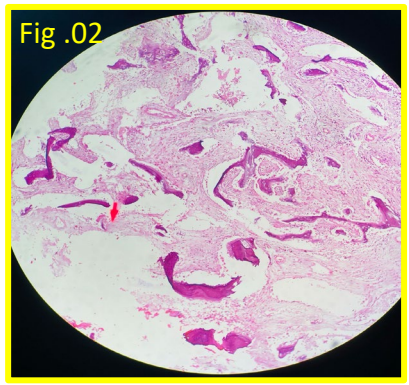
Fig .02

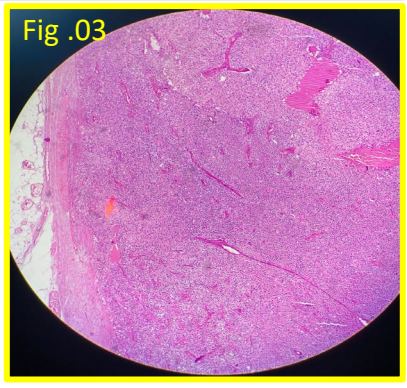
Fig .03

Key words- femur, fracture, parathyroid adenoma.

8. References

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