

Investigating XLH: Daria's case†

Case overview

Daria is a 35-year-old female patient who is suspected to have an undiagnosed phosphate-wasting condition. She presents with the following:¹⁻⁴

- 2 femoral pseudofractures
 - Mild bowing in her legs
 - Notable pain in both knees
 - Walking is progressively more challenging (described as “slow” and “tedious”), especially up and down stairs
 - Often feels aching in the knees, and has also experienced sharp pains
 - Pain and stiffness in the hips
 - Describes frequent “flare-ups” that restrict her from bending over to put on her socks and shoes; she often requires her husband to help her
 - Tinnitus in left ear and mild hearing loss
- You also note the following:
- She recently had a baby (8 months old)
 - She is short in stature (152 cm standing height, ~5ft)⁵

Patient history

- No family history of metabolic bone disease
- Experienced joint pain as a child but noticed significant worsening during her 30s⁴
- Started noticing tinnitus in her early 20s²
- Fractured right foot at age 23²
- Started noticing hearing loss in her early 30s^{2,6}
- Root canal surgery at age 33²

Laboratory test results

Test (reference range) ^{1,7‡}	Results ^{1,8,9}
Serum phosphorus (2.5–4.5 mg/dL)	2.1 mg/dL
TmP/GFR (2.4–4.45 mg/dL)	1.9 mg/dL
1,25(OH) ₂ D (18–78 pg/mL)	42 pg/mL
25(OH)D (20–50 ng/mL)	44 ng/mL
ALP (35–104 U/L)	167 U/L
PTH (15–65 pg/mL)	86 pg/mL

1,25(OH)₂D=1,25-dihydroxyvitamin D; 25(OH)D=25-hydroxyvitamin D; ALP=alkaline phosphatase; PTH=parathyroid hormone; TmP/GFR=tubular maximum reabsorption of phosphate corrected for glomerular filtration rate; XLH=X-linked hypophosphatemia.

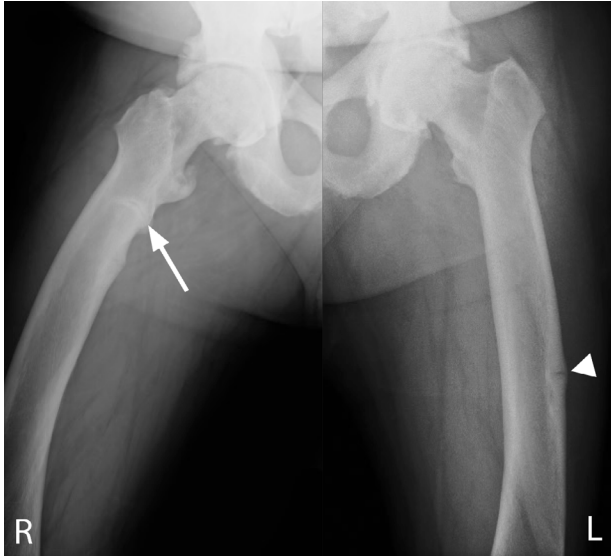
† Fictitious patient. May not be representative of all patients.

‡ Reference ranges may vary based on assay and instrument used. Reference ranges provided by the laboratory conducting the test should be used to ensure accuracy.



Radiographic evaluation

X-ray 1: Legs



Pseudofractures in the subtrochanteric right femur (arrow) and mid-left femoral diaphysis (arrow head); healing stress fracture present in left femoral neck medial cortex; enthesophytes at the hips

X-ray 2: Knees/legs



Bilateral bowing of femurs, tibiae, and fibulae; bilateral narrowing of joint space compartment

Recommendation from the XLH Guidelines

“In adults, the diagnosis of XLH should be considered in the presence or history of lower limb deformities, and/or clinical and/or radiological signs of osteomalacia (including pseudofractures, early osteoarthritis and enthesopathies) in the context of serum levels of phosphate below the age-related reference range associated with renal phosphate wasting (grade B, moderate recommendation)” — Haffner *et al.*, 2019.⁸



Would you consider referring Daria to an endocrinologist to help confirm a diagnosis of XLH?



Visit [XLHLinkHCP.ca](https://www.xlhlhlinkhcp.ca) for more information and resources about XLH!

XLH=X-linked hypophosphatemia.

References: **1.** Ruppe MD. X-linked hypophosphatemia. In: Adam MP, Everman DB, Mirzaa GM, *et al.*, eds. GeneReviews®. Seattle (WA): University of Washington, Seattle; February 9, 2012. Updated April 13, 2017. **2.** Skrinar A, *et al.* *J Endocr Soc.* 2019;3(7):1321-1334. **3.** Theodore-Oklotka C, *et al.* *Value Health.* 2018;21(8):973-983. **4.** Lo SH, *et al.* *Qual Life Res.* 2020;29(7):1883-1893. **5.** DeCorte J, *et al.* *JBMR Plus.* 2022;6(2):e1058. **6.** Bosman A, *et al.* *Calcif Tissue Int.* 2024;114(3):255-266. **7.** Dahir K, *et al.* *J Endocr Soc.* 2021;5(9):bvab099. doi:10.1210/jendso/bvab099. **8.** Haffner D, *et al.* *Nat Rev Nephrol.* 2019;15(7):435-455. **9.** Dahir K, *et al.* *J Endocr Soc.* 2020;4(12):bvaa151.