AMSER Case of the Month August 2026

54-year-old male with ESRD and enlarging left clavicular-region mass

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Patient Presentation

- HPI:
  54-year-old male with history of ESRD on intermittent hemodialysis, secondary hyperparathyroidism, and HFrEF, who initially presented from dialysis after a fall with supraventricular tachycardia. He reported several weeks of worsening fatigue and functional decline, unintentional 30-lb weight loss over 2 months, and increasing painless fullness in the left neck-shoulder region.
- Vitals:
  T 97.7, HR 160, BP 123/77, RR 21, SpO2 97% on RA
- Physical Exam:
  Large protruding, nontender fullness in the left clavicular region. Lungs clear to auscultation bilaterally.

Pertinent Labs

Lab	Value
BUN	74 mg/dL
Cr	6.26 mg/dL
Calcium	7.0 mg/dL
Ionized calcium	0.78 mmol/L
Phosphorus	9.2 mg/dL
PTH	1131 pg/mL
Albumin	1.9 g/dL
Alkaline phosphatase	121 U/L
CRP	16.7 mg/dL
ESR	54 mm/hr

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant: 2 **Nonsuperficial (deep) soft tissue mass. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
Radiography area of interest	Usually Appropriate	Varies
US area of interest	May Be Appropriate	O
CT area of interest with IV contrast	May Be Appropriate	Varies
CT area of interest without and with IV contrast	May Be Appropriate	Varies
CT area of interest without IV contrast	May Be Appropriate	Varies
US area of interest with IV contrast	Usually Not Appropriate	O
Image-guided biopsy area of interest	Usually Not Appropriate	Varies
Image-guided fine needle aspiration area of interest	Usually Not Appropriate	Varies
MRI area of interest without and with IV contrast	Usually Not Appropriate	O
MRI area of interest without IV contrast	Usually Not Appropriate	O
FDG-PET/CT area of interest	Usually Not Appropriate	☢☢☢☢

This imaging modality was ordered by the ER physician

CT Neck and CT Chest with IV contrast were obtained concurrently during the initial workup of the left clavicular-region mass, given concern for deep chest wall/thoracic involvement or malignancy.

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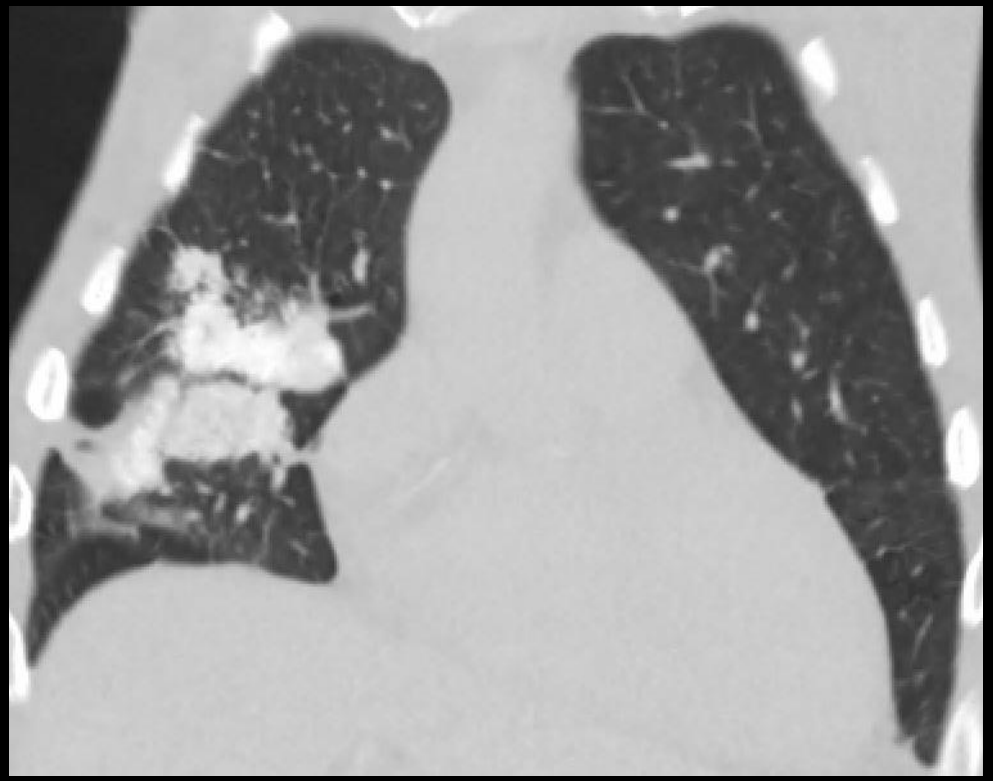
Findings (unlabeled)

Coronal

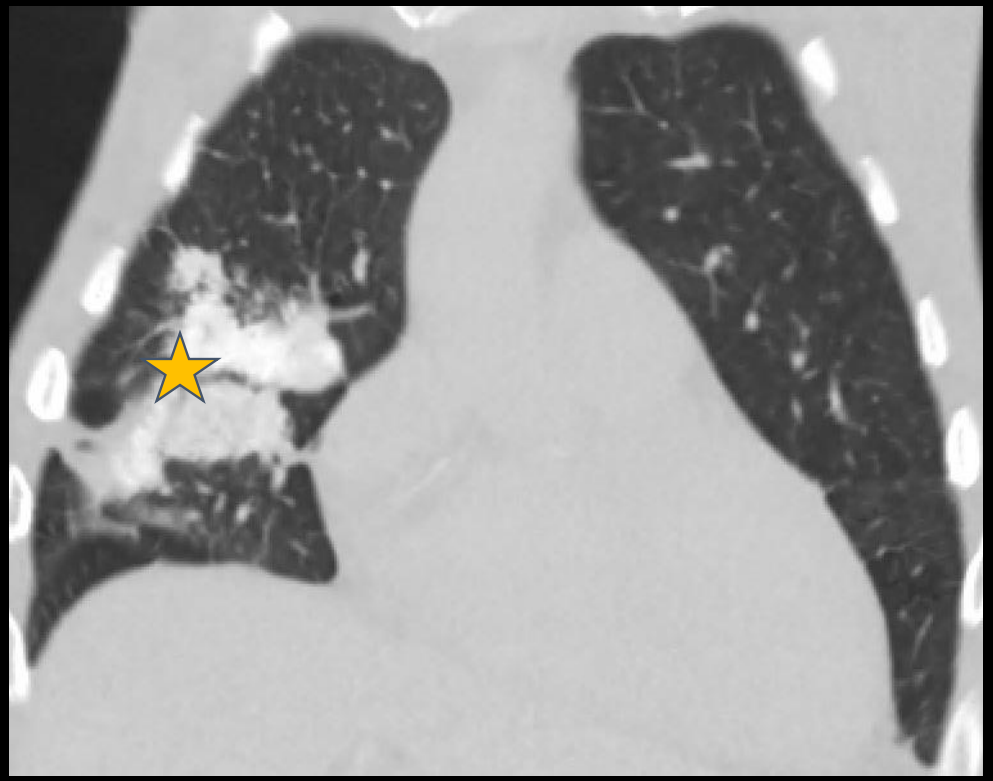


Axial

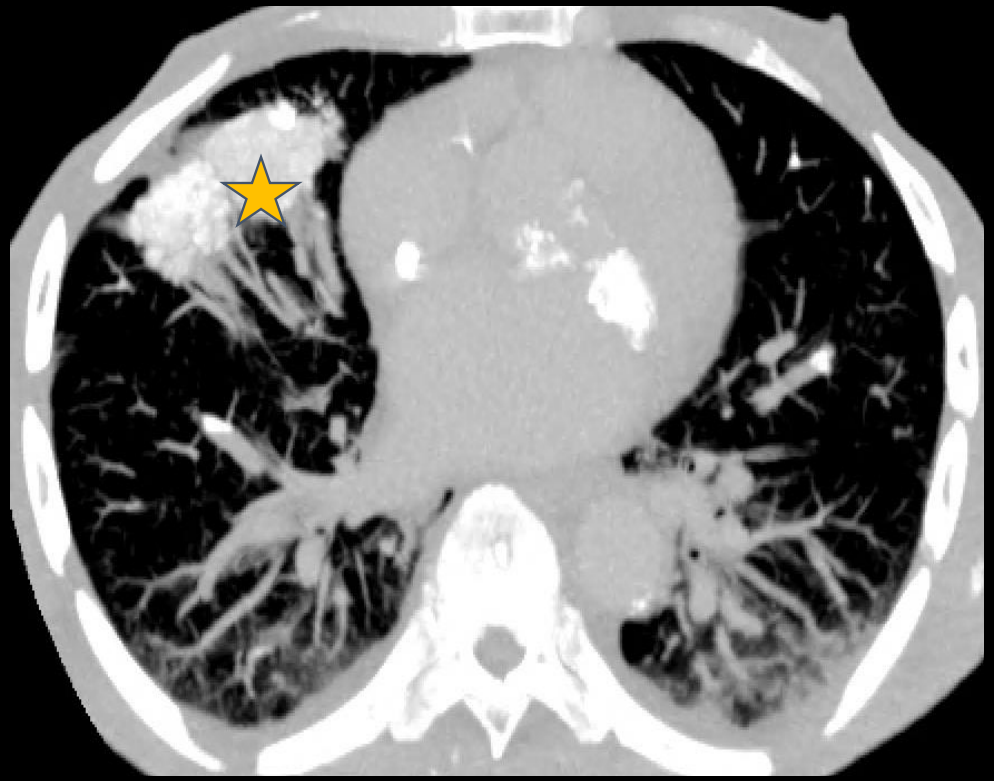
CT Chest with IV Contrast

Findings (labeled)

Coronal



Axial

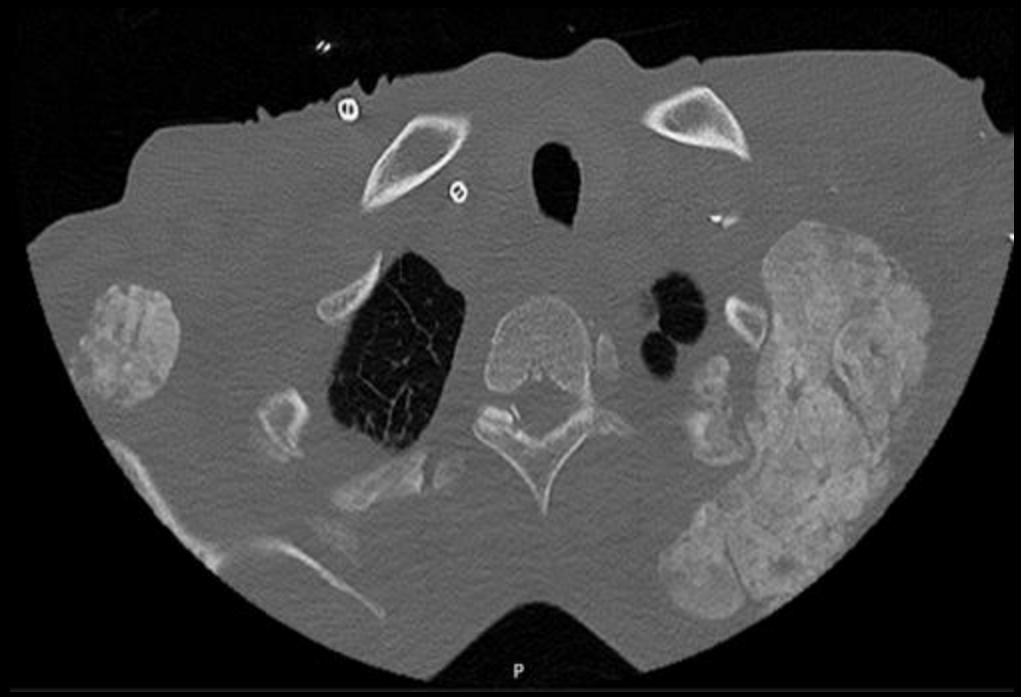


Multiple foci of lung parenchymal calcifications, largest in the middle lobe.

Additional CT findings included emphysema, mild bronchial wall thickening, pulmonary edema, and small bilateral pleural effusions.

Findings (unlabeled)

Axial



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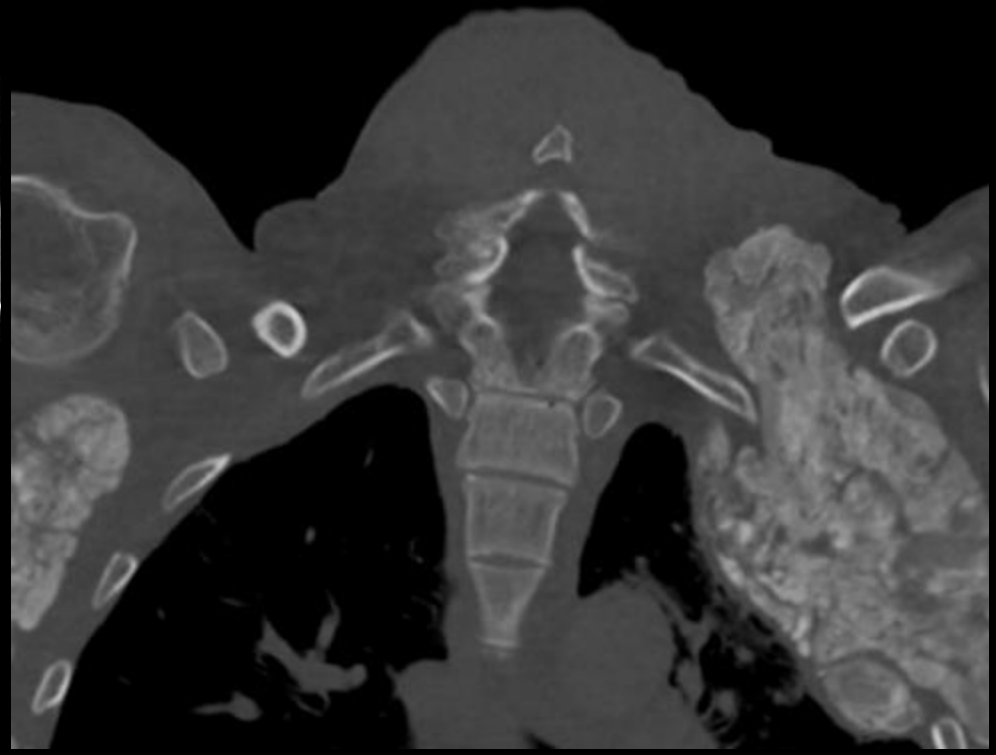
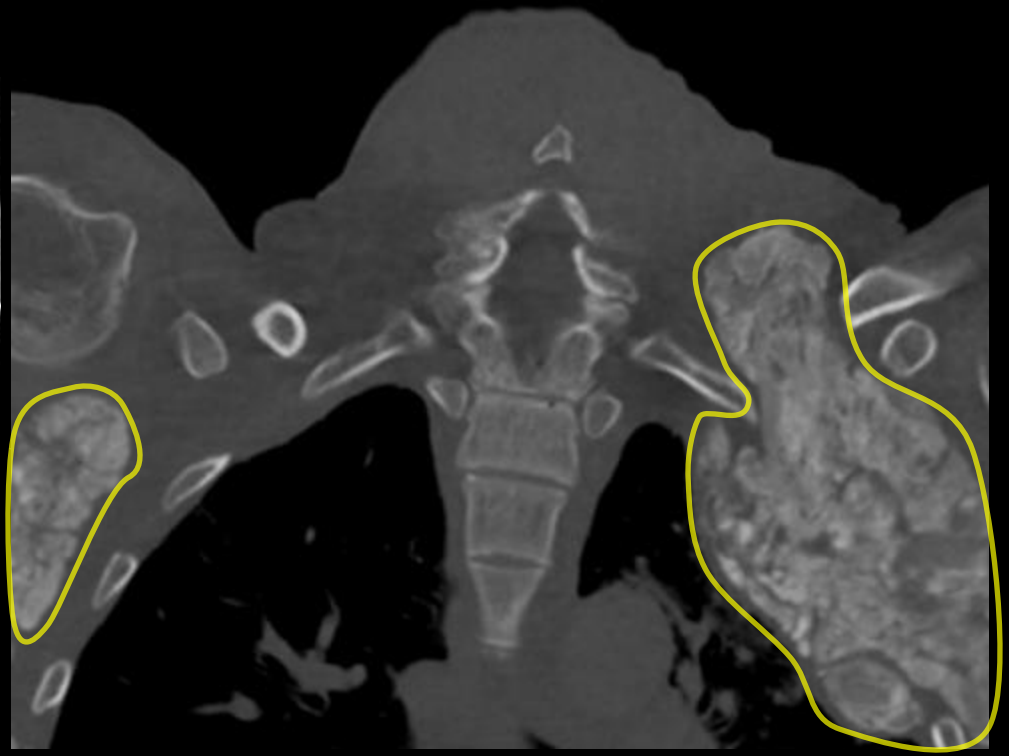


CT Neck with IV Contrast

Findings (labeled)

Axial

Coronal



Large metastatic calcifications most pronounced in the left subscapular region protruding into the intercostal space and to a lesser extent right subdeltoid region.

Final Clinical Dx:

Uremic tumoral calcinosis / calcinosis of chronic renal failure with metastatic pulmonary calcification

Case Discussion

Definition & Nomenclature[1–4]

- **Calcinosis of chronic renal failure** is a secondary form of calcinosis and should not be confused with primary tumoral calcinosis.
- Primary tumoral calcinosis is a rare hereditary metabolic dysfunction of phosphate regulation presenting in the first 2 decades of life primarily in patients of African descent, typically without visceral organ involvement.
- Periarticular calcinosis in dialysis patients is often referred to clinically as **secondary or uremic tumoral calcinosis**, although terminology is debated.
- Imaging may be indistinguishable from primary tumoral calcinosis, so diagnosis relies on clinical and biochemical context.
- This patient's advanced age, ESRD on hemodialysis, hyperphosphatemia, markedly elevated PTH, and involvement of the lungs support **calcinosis of chronic renal failure with metastatic pulmonary calcification.**

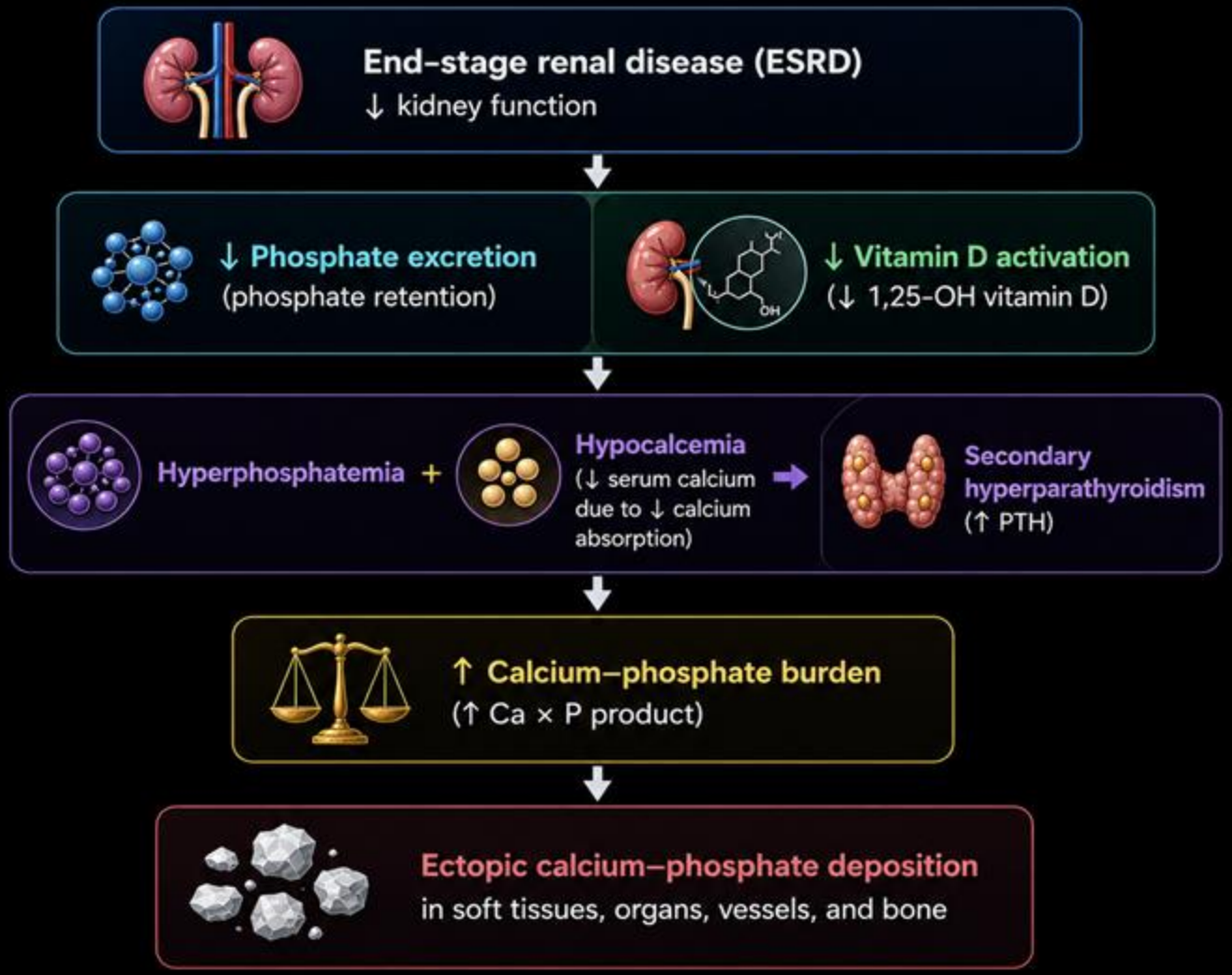
Case Discussion

Epidemiology & Systemic Involvement[2,4–7]

- Massive periarticular soft tissue calcifications are an uncommon complication of hemodialysis, reported in approximately **0.5-1.2%** of patients.
- Calcinosis of chronic renal failure most often occurs near large joints, including the shoulders, hips, knees, and elbows.
- **Metastatic pulmonary calcification (MPC)** represents calcium deposition in otherwise normal lung parenchyma due to abnormal calcium metabolism.
- Chronic renal failure is the most common cause of metastatic pulmonary calcification, and CT is more sensitive than chest radiography for detection.
- MPC is often asymptomatic and underdiagnosed. Autopsy studies report thoracic involvement in **60-80%** of chronic renal failure patients, but it is rarely diagnosed antemortem.

Case Discussion

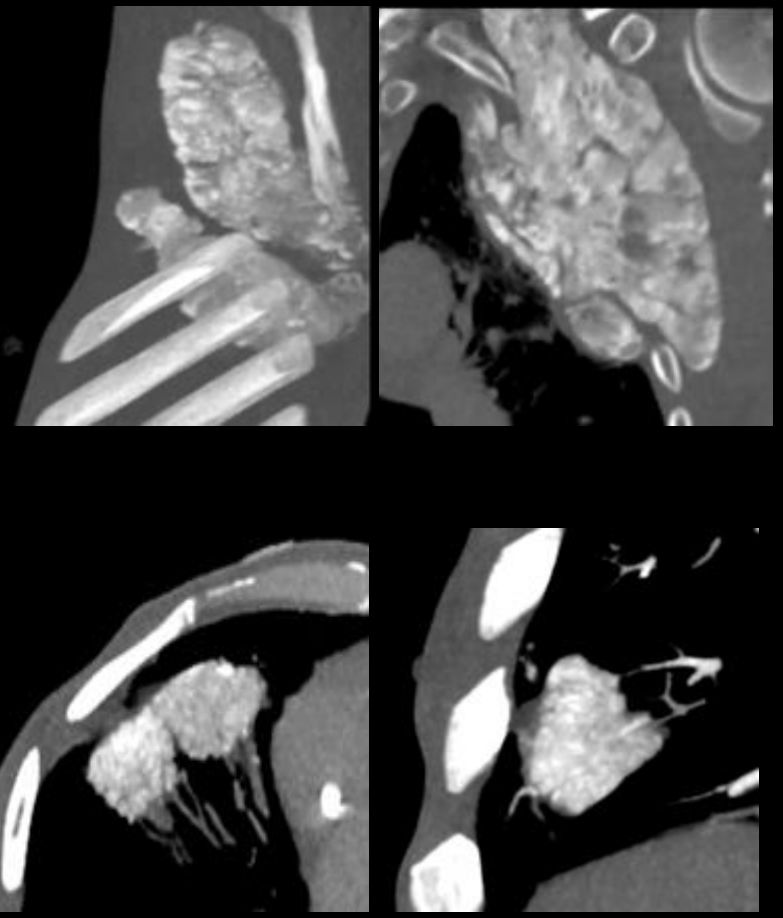
Pathophysiology



Case Discussion

Imaging Hallmarks[2-7]

- Calcinosis of chronic renal failure:
  - Bulky, amorphous, multilobulated periarticular soft tissue calcifications.
  - Often “cloud-like” and located near large joints.
  - CT delineates extent and may show cystic areas or calcium-fluid levels.
  - Adjacent osseous remodeling/erosion can occur from mass effect or repeated microtrauma.
- Metastatic pulmonary calcification:
  - CT may show high-attenuation pulmonary nodules, ground-glass nodules, reticular opacities, or dense calcified consolidation.
  - Often upper-lobe predominant, but atypical focal or lower-lobe patterns can occur.



Case Discussion

Management[3,4,8]

- Treatment focuses on correcting the underlying CKD-mineral bone disorder and reducing calcium-phosphate burden.
- Medical management includes dietary phosphate restriction, phosphate binders, dialysis optimization, calcimimetics, and vitamin D analogs.
- Refractory or symptomatic cases may require parathyroidectomy or targeted surgical intervention.
- Case-specific interventions:
  - Intermittent hemodialysis and ultrafiltration.
  - Pharmacotherapy: Cinacalcet, PhosLo, Calcium carbonate, and Calcitriol.
  - Strict monitoring of calcium-phosphate balance and PTH response.

References:

1. Gaillard F, Sandhyala A. Tumoural calcinosis. Radiopaedia.org. Published May 2, 2008. Updated May 16, 2026. Accessed June 2, 2026. doi:10.53347/rID-2226
2. Sakhy Y. Calcinosis of chronic renal failure. Radiopaedia.org. Published January 1, 2022. Updated May 30, 2025. Accessed June 3, 2026. https://doi.org/10.53347/rID-96115
3. Fathi I, Sakr M. Review of tumoral calcinosis: A rare clinico-pathological entity. World J Clin Cases. 2014;2(9):409-414. doi:10.12998/wjcc.v2.i9.409
4. Olsen KM, Chew FS. Tumoral calcinosis: pearls, polemics, and alternative possibilities. Radiographics. 2006;26(3). doi:10.1148/rg.263055099
5. Douami A, Labied M, Mountassir C, Lembarki G, Sabiri M, Lezar S. Pulmonary calcinosis in renal failure. Radiol Case Rep. 2025;20(12):5968-5973. Published 2025 Sep 15. doi:10.1016/j.radcr.2025.08.019
6. Weerakkody Y. Metastatic pulmonary calcification. Radiopaedia.org. Published January 18, 2013. Updated July 3, 2022. Accessed June 2, 2026. https://doi.org/10.53347/rID-21366
7. Patil C, Lavanya P, Mangalagiri N, Bommanagari D, Gupta P. Pulmonary Metastatic Calcifications Secondary to Chronic Renal Failure. Cureus. 2025;17(5):e84862. Published 2025 May 26. doi:10.7759/cureus.84862
8. Kidney Disease: Improving Global Outcomes (KDIGO) CKD-MBD Update Work Group. KDIGO 2017 Clinical Practice Guideline Update for the Diagnosis, Evaluation, Prevention, and Treatment of Chronic Kidney Disease-Mineral and Bone Disorder (CKD-MBD). Kidney Int Suppl (2011). 2017;7(1):1-59. doi:10.1016/j.kisu.2017.04.001

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