Learning Objectives

- Calcific uremic arteriolopathy (CUA) is a calcification of vessels in the dermis and subcutaneous fat, leading to ischemia and tissue necrosis.
- CUA causes painful skin lesions that can mimic cellulitis in dialysis patients with elevated calcium-phosphate product and can result in high mortality.
- Clinicians in both outpatient and inpatient settings should be highly suspicious of painful skin lesions in these patients in order to make an early diagnosis and initiate treatment of CUA.

Case Presentation

- 71 yr old male with type 2 DM, Stage 5 CKD on hemodialysis, systolic CHF, and history of PE, previously on Coumadin presented to his PCP with painful erythema over his left thigh.
- He was diagnosed with cellulitis and treated with one dose of IM ceftriaxone and started on a course of keflex.
- He returned seven days later with extension of the erythema, warmth & tenderness, now doubled in size so he was admitted for management of cellulitis after failed outpatient treatment.
- He was afebrile and dermatologic exam was notable for a 7”X8” exquisitely tender, indurated plaque on an erythematous background over his left medial thigh.
- Labs showed no leukocytosis but were notable for an elevated phosphorous of 9.5 mg/dL, calcium of 9.4 mg/dL and PTH of 643 pg/mL.
- Lower extremity CT showed skin thickening and subcutaneous edema extending to the intermuscular fascia without subcutaneous emphysema or abscess.
- He was admitted with a diagnosis of cellulitis and was started on vancomycin and ceftriaxone.

Discussion

- Prevalence: ~1% of CKD patients and 4.1% dialysis patients.
- Risk factors: hyperphosphatemia, elevated Ca\(^2+\) X PO\(_4\)\(^2-\) product, calcium and vit D supplements, hypoalbuminemia, female gender, warfarin use, obesity\(^1\)
- Pathogenesis: vascular smooth muscle cells dedifferentiate into “osteoblast”-like cells that produce bone matrix proteins\(^2\)
- Lesions occur in vascular regions with thick adipose tissue like breast, abdomen and thighs. They are exquisitely painful and violaceous, forming plaques or nodules with skin mottling, then bullae and ulcers, progressing to gangrene and sepsis.
- Six month mortality ~ 33% in plaques but > 80 % ulcers\(^1\)
- Diagnosis is clinical, supported by bone scan. Tissue biopsy is diagnostic but risks increased lesions and secondary infection\(^1\)
- Management is supportive with intensified hemodialysis, aggressive wound care and sodium thiosulfate (based on success in case reports), duration usually 12 months
- Sodium thiosulfate may increase solubility of ca-phos deposits
- Prevention: goal Ca\(^2+\) X PO\(_4\)\(^2-\) product < 55 mg\(^2\)/dL, PO\(_4\) < 5.5 mg/dL, Ca\(^2+\) < 9.6 mg/dL\(^4\)

References


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