# CALCIFIC UREMIC ARTERIOLOPATHY

## [CALCIPHYLAXIS]

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## INTRODUCTION

- Characterized by painful skin lesions caused by cutaneous arteriolar calcification leading to tissue ischemia and infarction.
- Calcification of the medial layer of arterioles and small arteries.
- Calciphylaxis has a poor prognosis with 1-year mortality rates between 45% and 80%.
- Response to treatment is also poor infection the leading cause of death.
- Incidence of calciphylaxis in dialysis patients ranges from 0.04% to 4%.

#### **RISK FACTORS**

#### **Demographics**

Caucasian ethnicity

Female sex

#### **Comorbidities**

Kidney disease

Obesity

Diabetes mellitus

Hypoalbuminemia

Autoimmune conditions such as lupus,

rheumatoid arthritis, and antiphospholipid

antibody syndrome

Liver disease

Malignancy

Dialysis vintage

#### **Medications**

Warfarin, Corticosteroids,

Calcium-based phosphate binders,

Activated vitamin D

Iron therapy

#### Abnormalities of the Chronic Kidney Disease-Bone Mineral Disease Axis

Hyperphosphatemia

Hypercalcemia

Hyperparathyroidism

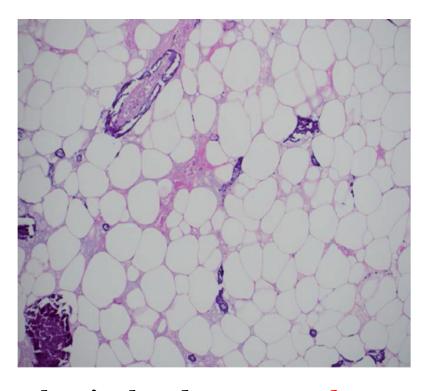
Adynamic bone disease

#### Hypercoagulable State

Tissue **trauma** resulting from subcutaneous injections such as insulin

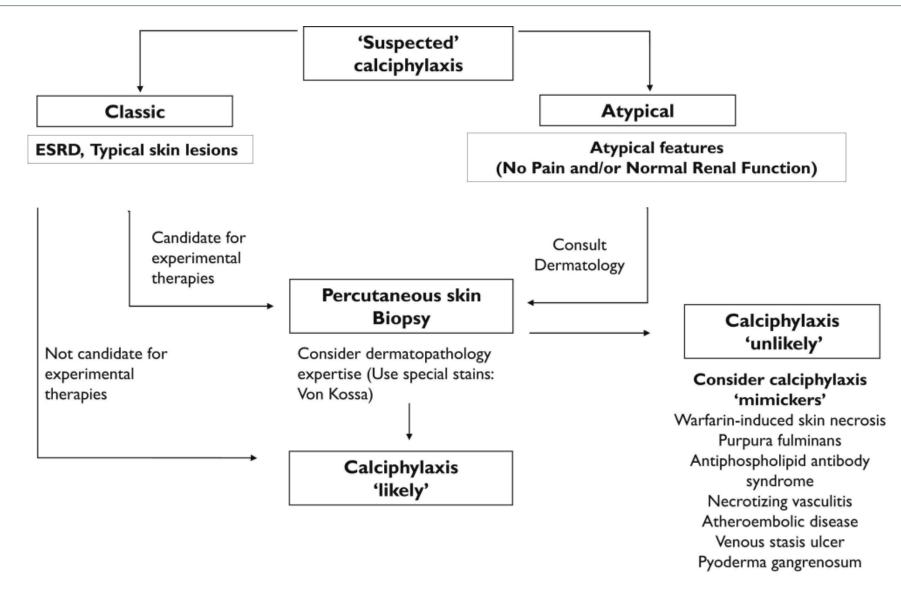


SKIN LESION



Intraluminal and extravascular calcification, intimal fibrosis of vessel walls, fat necrosis, and vascular thrombosis in subcutaneous tissue of a patient with calciphylaxis.

## CALCIPHYL AXIS



#### APPROACH TO CALCIPHYLAXIS

#### Multidisciplinary team Wound Care Plastic Surgery Nephrology Pain Management **Palliative Care** Dermatology Advanced wound Selective surgical Optimize dialysis **Establish primary** Combination analgesia Optimize end of life care care techniques debridement in mineral bone disease diagnosis/skin biopsy NSAIDs, neuropathic agents, Symptom management (biofilms) necrotic/infected wounds Primary team in non management opioids, regional anesthesia + pain, lack of sleep, appetite, Frequent dressing uremic patients biofeedback/relaxation pruritis Emotional/social/ Low calcium bath changes psychological support Intensify dialysis techniques Negative pressure regimen wound therapy Management Targeted therapeutic options Risk factor management 'Refractory' skin lesions or advanced lesions at baseline Consider "experimental/novel therapies" Switch warfarin to apixaban Sodium thiosulfate

Sodium thiosulfate Vitamin K SNF472

Hyperbaric oxygen therapy
Rheopheresis
Bisphosphonates
Endothelin receptor antagonists
Pentoxyphylline

Switch warfarin to apixaban
Rotate injection sites if daily injections
required (insulin)
Avoid local trauma and unnecessary
debridement
Avoid systemic antibiotics

#### MANAGEMENT OF CALCIPHYLAXIS

## **MANAGEMENT**

#### Sodium thiosulfate

- Route and dose -Intravenous (standard): 25 gm if weight > 60 kg; 12.5 gm if weight < 60 kg; infusion in the last hour of dialysis.</p>
- Subcutaneous (nonstandard): 0.25 to 0.75 gm (1 to 3 mL of 250 mg/mL); at the periphery and centre of the lesion.
- Duration of IV infusion: minimum of 2-3 months.
- Typical total duration of 6 months or until lesions completely heal.

#### Hperbaric oxygen

Delivery of 100% oxygen at 2.5 times the atmospheric pressure in a sealed chamber for 90 min [20–30 sessions].