

A Rare Case of Calcium Hydroxyapatite Deposition Disease Presenting in the Foot

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STATEMENT OF PURPOSE

Calcium hydroxyapatite is the most abundant form of calcium in human bone. Calcium Hydroxyapatite Deposition Disease (CHDD) is a crystal-induced arthropathy in which deposition of calcium hydroxyapatite (HA) crystals in the para-articular soft tissues results in tendinitis and bursitis. Larger joints including shoulders and knees are most commonly affected with only two documented lower extremity foot cases of Calcium Hydroxyapatite Deposition Disease occurring within the past 60 years.

LITERATURE REVIEW

Calcium Hydroxyapatite Deposition Disease is a well-recognized systemic disease of unknown etiology that is caused by para-articular and/or intra-articular deposition of HA crystals. This condition is known by a variety of names which include:

- Penitendinitis calcarea
- Hydroxyapatite rheumatism
- Hydroxyapatite deposition disease
- Calcific peniarthritis
- Calcific tendinitis.

It is believed HA crystal-induced arthritis occurs similar to urate arthropathy in gout and calcium pyrophosphate arthropathy in CPPD.

Gondos et al. made the observation that the frequency of involvement of a joint roughly paralleled its physiologic range of motion. In his series, calcifications about the shoulder occurred in 69% of all cases, followed by the hip, elbow, wrist, and knee. Rarely does CHDD appear in the foot and ankle.

There have been a handful of case reports of Calcium Hydroxyapatite Deposition Disease documented in the past 60 years affecting the first metatarsophalangeal joint. Treatment options has varied in each case. One of the first cases, by Gruneberg et al., used lidocaine and hydrocortisone injection. In one of the more recent studies, by Mines et al, treatment consisted of arthrocentesis and antibiotics concerning for septic arthritis and then NSAIDs. In both cases, follow up radiographs months after initial treatment showed disappearance of the soft tissue calcifications. The majority of the literature has been published in radiology and emergency medicine literature, There has been only two case report of forefoot calcific tendinosis reported in the foot and ankle orthopedic literature, and both involved the 1st MPJ. There has been no documented case in any literature affecting the lesser metatarsophalangeal points.



CASE STUDY

A 58 year-old female presented to clinic complaining of sudden onset pain with increased redness and swelling to the left 3rd metatarsophalangeal joint (MPJ) three days prior. Patient denied a history of trauma and reported a feeling of walking on a "lump" to the affected area. Originally, she presented to an urgent care where she was discharged upon recommendations of taking NSAIDs. She presented to clinic with an inability to bear weight and no resolution of symptoms.

DISCUSSION

When patients present with a red, hot, and swollen joint, a full history and physical examination should be performed.

Common differential diagnosis for these symptoms include:

- Capsulitis
- Septic arthritis
- Gout
- Pseudogout

As in other documented cases of Calcium Hydroxyapatite Deposition Disease, the diagnosis is one of exclusion and may be confirmed radiographically. X-rays revealed calcium deposition along the 3rd MPJ and an MRI confirmed calcific bursitis in keeping with calcium hydroxyapatite crystal deposition. The pathology report was read as "Fragments of fibrous tissue with focal dystrophic calcifications." The patient's medical history was significant for CAD, HLD and HTN and thus gout or pseudogout would not have been likely. In reviewing the past surgical history, she underwent a sleeve gastrectomy for weight loss in 2016 and was then placed on 1500 mg of Vitamin D with calcium citrate daily for approximately one year. The authors conclude that this may be the underlying etiology for symptoms. Calcium Hydroxyapatite Deposition Disease should be added to one's armamentarium when examining a red, hot, swollen joint with radiographic findings of calcification.