Top 5 tips: Crystal disorders

(CPPD, Calcium Pyrophosphate Dihydrate Crystal Deposition Disease
HADD, Calcium Hydroxyapatite Crystal Deposition Disease)

Arthritis Subcommittee

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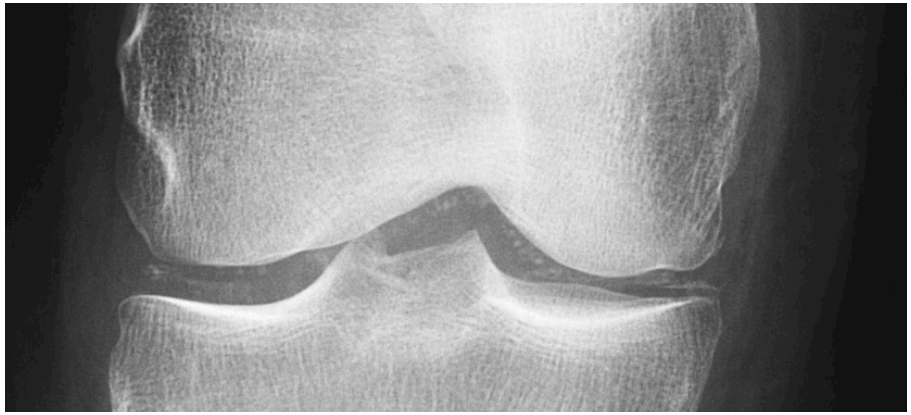
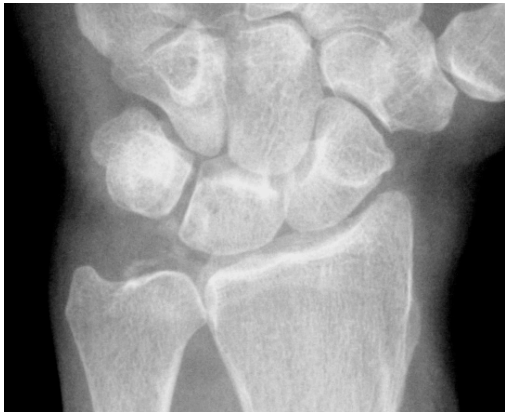
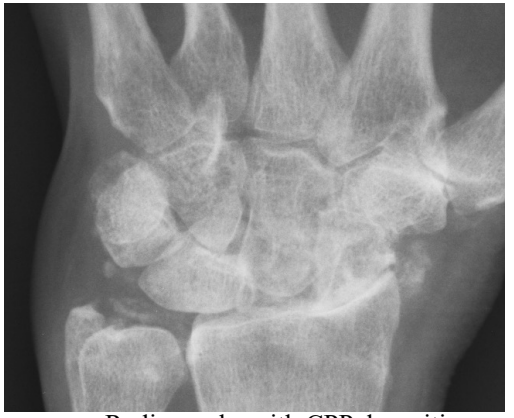
TIP #1

Radiographs with CPP depositions

Calcifications on radiographs: The prevalence increases with age. Using radiographic knee chondrocalcinosis as diagnostic criterion, it is uncommon below the age of 55 years and increases to 20-30% over the age of 80 years. Calcifications may become symptomatic in the elderly.

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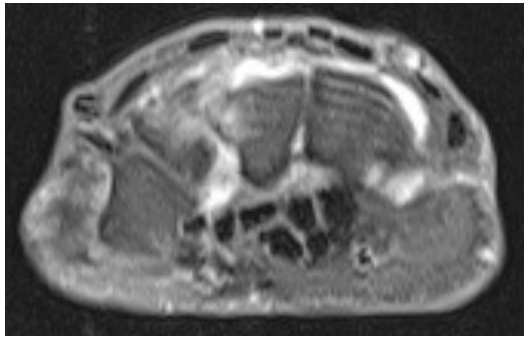
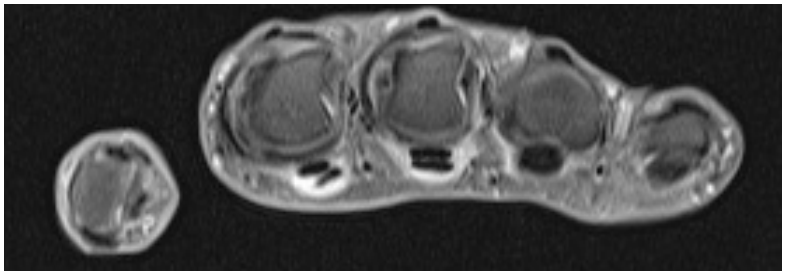
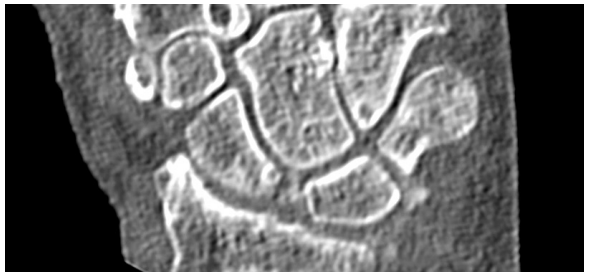
TIP #2







Chronic inflammation in pseudo-RA

Three to five different forms of CPPD manifestations are reported in the literature:

1: asymptomatic chondrocalcinosis
2: acute arthritis (pseudogout)
3: chronic arthritis (pseudo-RA)
4: chronic-destructive arthropathy (CPPD with OA)
5: tumoral CPPD (CPPD with tophi)

More than one form may be present at the same time, hampering the diagnostic process.

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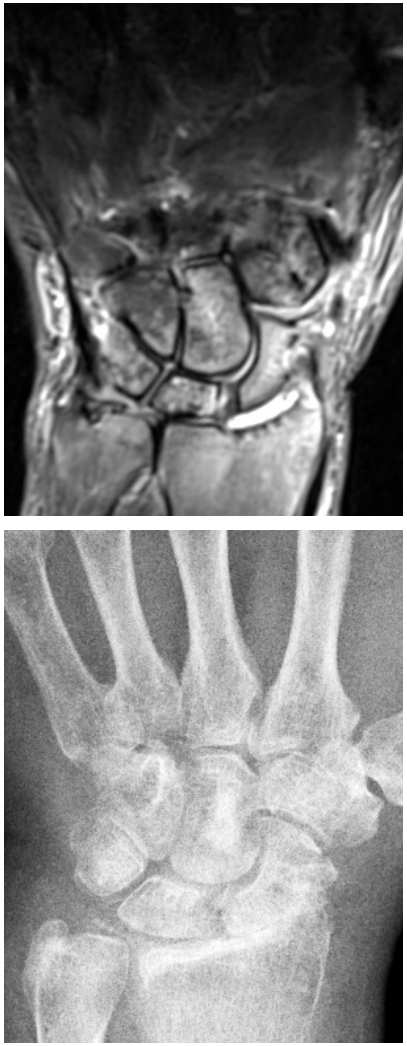
TIP #3

EULAR recommendations for the diagnosis of CPPD are based on:

- rapid development of inflammatory symptoms
- the location of arthritis (knee, shoulders, wrist)
- age of the patient (>65 years), imaging findings
- absence of another disease (eg, rheumatoid arthritis and septic arthritis).

This acute onset of CPP arthritis is self-limiting.



Acute wrist arthritis in an elderly patient with CPPD

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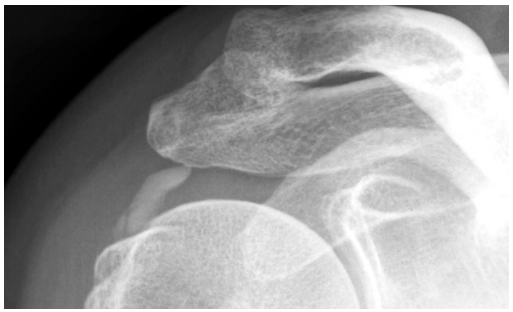
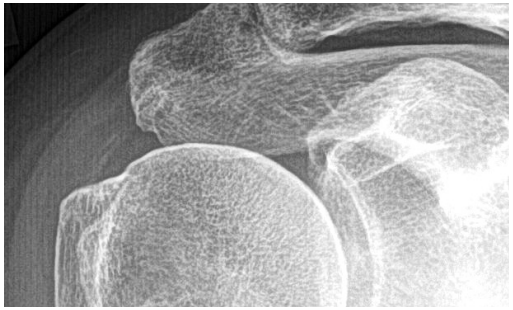
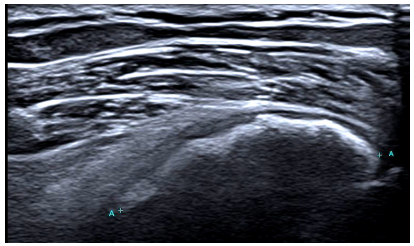
TIP #4

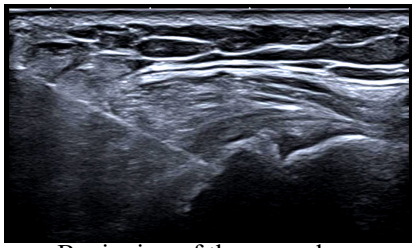


Before barbotage

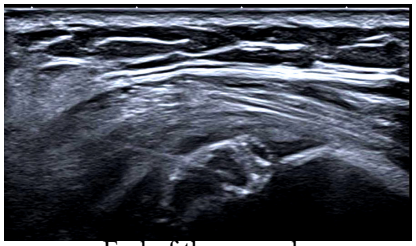


After barbotage





Beginning of the procedure



End of the procedure

- HADD is self-limiting, consider barbotage to accelerate its course.
- Barbotage is invasive, needs coordinating skills, and is time consuming but it is reported to accelerate the natural course of HADD in randomized controlled trials.
- Success-rates are lower in patients with long lasting disease.

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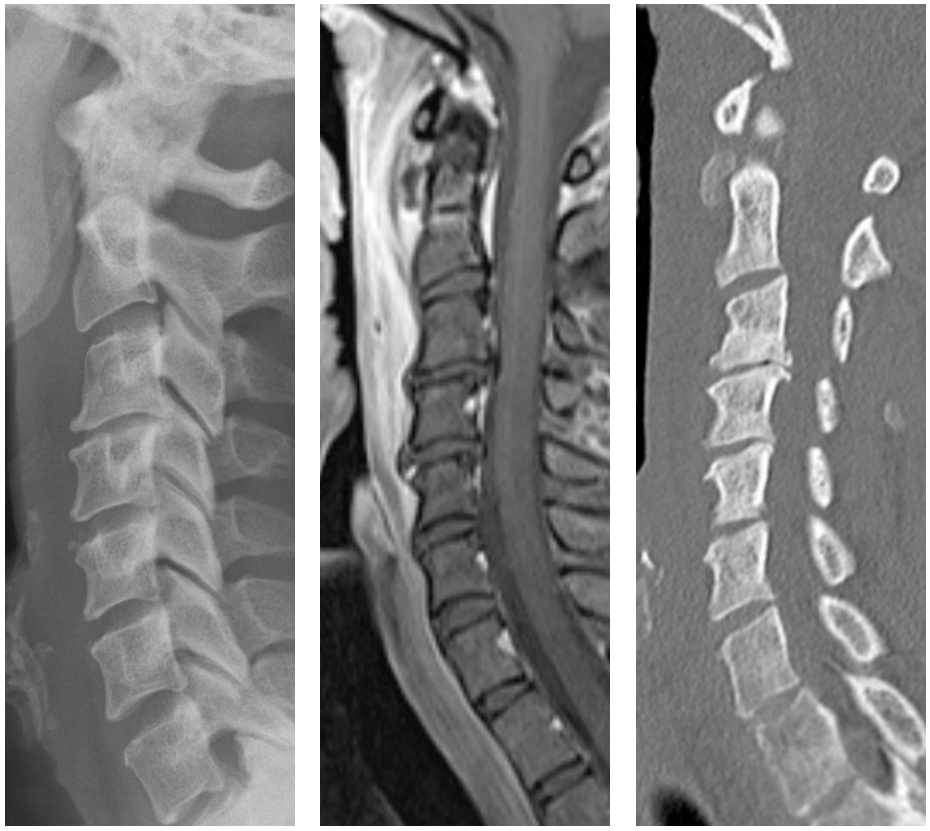
TIP #5

The resorption of HADD crystals may cause clinical symptoms.

In case of spontaneous resorption:

- in the rotator cuff a bursitis of the shoulder can occur;
- in the prevertebral longus colli muscle an acute tendinitis may occur and it should be differentiated from an infection, abscess.



Acute HADD of the longus colli muscle

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References

- Felson DT, Anderson JJ, Naimark A, et al. The prevalence of chondrocalcinosis in the elderly and its association with knee osteoarthritis: the Framingham Study. J Rheumatol 1989 ; 16 : 1241 – 5.

- Reijnierse M. Radiographic/MR Imaging Correlation of Paravertebral Ossifications in Ligaments and Bony Vertebral Outgrowths Anatomy, Early Detection, and Clinical Impact. Magn Reson Imaging Clin N Am 27 (2019) 641–659

- Tedeschi SK, Becce F, Pascart T et al. Imaging features of calcium pyrophosphate deposition (CPPD) disease: consensus definitions from an international multidisciplinary working group. Arthritis Care Res (Hoboken). 2022 Apr 19. Epub ahead of print. PMID: 35439343.

- Reijnierse M , Schwabl C, Klauser A. Imaging of Crystal disorders CPPD, HADD and gout: Pathophysiology, imaging and diagnosis. Radiol Clin N Am. 2022 60 (4):641-656.

- W. Zhang, M. Doherty, T. Bardin, et al.European League Against Rheumatism recommendations for calcium pyrophosphate deposition. Part I: terminology and diagnosis. Ann Rheum Dis, 70 (2011), pp. 563-570

- Zibis AH, Giannis D, Malizoset KN, et al. Acute calcific tendinitis of the longus colli muscle: case report and review of the literature. Eur Spine J 2013;22

- de Witte PB, Kolk A, Overes F, Nelissen RGHH, Reijnierse M. Rotator cuff calcific tendinitis: ultrasound-guided needling and lavage versus subacromial corticosteroids: five-year outcomes of a randomized controlled trial. Am J Sports Med. 2017 Dec;45(14):3305-331

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