Seronegative arthropathies: value of Dual-Energy CT for differential diagnosis

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Introduction:
Seronegative Oligo/Polyarthritis combines a set of diseases including gout as a possible differential diagnosis. The identification of monosodium urate crystals is the gold standard for the proof of gout. However, the puncture of small finger and toe joints maybe a challenge and is therefore often not applicable.

Methods:
A retrospective analysis of 49 patients was used to investigate the value of Dual energy-CT for differential diagnosis in patients with seronegative arthropathies. Puncture and analysis of the joint fluid was possible in 15 patients, whereas only CT without puncture could be performed in the remaining 34 patients.

Results:
In the first group of patients (n=15), where a crystal analysis was available, urate crystals could be indentified in 14 and Dual energy CT-investigation confirmed monosodium urate depositions in 11 of these patients. In 3 cases with positive urate crystal detection in joint fluid gout CT was negative. In one case pyrophosphate crystals were identified and no urate depositions in gout-CT could be detected. In the second group (n=34) joint puncture could not be performed as the affected joints were small finger and toe joints. 21 of these patients revealed urate depositions in Dual-energy CT. In these cases the diagnosis of gout was confirmed and appropriate therapy could be started. 17 out of these 21 patients had elevated uric acid levels.

Conclusion:
Dual energy -CT can be applied as a tool for diagnosing gout in patients with seronegative inflammatory arthropathy especially in the case of polyarticular joint involvement and no possibility of joint puncture.

References: