

Gout and Pseudogout Crystal Presence and Association with Culture Positive Native and Prosthetic Joints

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INTRODUCTION

- Diagnosis of crystal arthropathy and septic arthritis (SA) or prosthetic joint infection (PJI) involves aspiration and aspirate analysis
- SA and PJI require surgical intervention, while crystal arthropathy involves much less morbid treatment
- The aim of this study was to determine rates of culture positivity in native knees and prosthetic joints without crystal arthropathy, with monosodium urate (MSU) crystals, and with calcium pyrophosphate (CPPD) crystals to assess the relationship between crystal presence and infection

METHOD

- 59,301 knee aspiration samples with available crystal and culture analysis were divided into native knee and prosthetic knee samples
- These two were subdivided into three cohorts: no crystals, MSU crystals, and CPPD crystals seen on analysis
- The rates of culture positivity were compared between each cohort for native knees and for prosthetic knees

RESULTS

- Within the native knee group, CPPD+ samples had a higher culture positive rates than MSU+ samples (7.1% vs. 1.8%, $p < 0.01$)
- In the prosthetic knee group, CPPD+ had higher culture positive rates than crystal negative (27.8% vs. 12.1%, $p < 0.01$) and MSU+ samples (27.8% vs. 17.6%, $p < 0.01$)
- MSU+ samples had higher culture positivity rates than crystal negative samples (17.6% vs. 12.1%, $p < 0.01$)

CONCLUSION

- Crystal arthropathy does not reliably exclude the possibility of concomitant infection, whether in the setting of native knee septic arthritis or prosthetic joint infection
- The presence of any crystals, particularly CPPD, appears to confer a higher risk of prosthetic joint infection

Crystal Status	Culture Positive	Culture Negative	Total
Native Knee			
No Crystals	503 (7.4%)	6,336 (92.6%)	6,839
MSU	12 (1.8%)	658 (98.2%)	670
CPPD	80 (7.1%)	1,042 (92.9%)	1,122
Total	595 (6.9%)	8,036 (93.1%)	8,631
Prosthetic Knee			
No Crystals	5,864 (12.1%)	42,767 (87.9%)	48,631
MSU	78 (17.6%)	366 (82.4%)	444
CPPD	443 (27.8%)	1,152 (72.2%)	1,595
Total	6,385 (12.6%)	44,285 (87.4%)	50,670