20A163

Rheumatologist vs Pathology Department: correlation of crystal identification in synovial fluid

Abuelmagd Abdalla[1], Jonathan Leech[2], Mohammad Khalid[1], Geraldine McCarthy[1]
[1] Rheumatology Dept. Mater Misericordiae University Hospital, Dublin
[2] Cellular Pathology Dept. Mater Misericordiae University Hospital, Dublin

Introduction

Crystal arthritis is the commonest inflammatory arthritis in adults[1]. Diagnosis relies mostly on the correct identification of crystals under red-compensated polarized microscopy with assessment of birefringence[2]. This is done routinely in our department when opportunity arises. Failure to appropriately identify crystals may result in lengthy hospitalizations, complications, avoidable repeated urgent visits, and unnecessary cost[3].

Objective

To examine the agreement between rheumatology vs. pathology–based microscopy for crystal analysis. There is currently no standardized pathway for joint fluid crystal analysis in our institution.

Methods

A prospective study at Mater Hospital was started in Dec 2019. Local IRB ethical approval was obtained. When clinically indicated, synovial fluids samples were obtained from acutely inflamed joints suspicious for crystal arthritis.

Fresh samples found to contain crystals (MSU or CPP) by rheumatology (consultant rheumatologist/ trained registrar + cross checking), were also immediately sent to the pathology laboratory for analysis.

Results

33 samples have been analysed to date (table.1). 13 samples of MSU crystals and 20 CPP crystals (table.2). Both rheumatology and pathology agreed on all but only one MSU sample. The pathologist identified CPP crystals only on 2/20 samples. The fluid analysis was carried out within the same working day by rheumatologist vs. median of 2.3 working days for the result by the pathologist.

Table.1 patient's characteristics

	Pseudogout (n=20)	**Gout (n=13)**
Age, median	81.5	68
Male, %	55	62
Site, Knee %	95	84.6
radiographic Chondrocalcinosis, %	85	—

Discussion

The study showed a high agreement between rheumatologists and pathologists on identification of MSU crystals (92%) but very poor agreement on CPP crystals (only 10%). A quality improvement project is currently underway to address this issue as many samples are not sent to rheumatology for analysis.

Table.2 crystals samples by rheumatology vs pathology

	CPPD +	**MSU +**
Total	20	13
Rheumatology	20	13
Pathology	2	12

Conclusion

Crystal analysis in many secondary and tertiary sites is routinely performed via cellular pathology lab. Appropriate crystals identification is a key step to differentiate septic arthritis specially in acute setting and out of hours. Each site needs to ensure the best functioning pathway to avoid unnecessary hospitalization, interventions (IV antimicrobial, wash-out) and cost.

1. Kuo CF, Grainge MJ, Mallen C, Zhang W, Doherty M. Rising burden of gout in the UK but continuing suboptimal management: A nationwide population study. Ann Rheum Dis. 2015 Apr 1;74(4):661–7.
2. Pascual E, Sivera F, Andrés M. Synovial fluid analysis for crystals. Curr Opin Rheumatol. 2011 Feb;23(2):1.
3. Radcliffe K, Pattrick M, Doherty M. Complications resulting from misdiagnosing pseudogout as sepsis. Br Med J (Clin Res Ed) . 1986 Aug 16;293(6544):440–1.