Disclosure of Interests: : Blanka Stiburkova: None declared, Katerina Pavelcova: None declared, Jana Bohata: None declared, Marketa Pavlikova: None declared, Tappei Takada: None declared, Yu Toyoda: None declared, Lenka Hasikova: None declared, Jakub Zavada Speakers bureau: Abbvie, UCB, Sanofi, Eli-Lilly, Novartis, Zentiva, Accord, Karel Pavelka Consultant of: Abbvie, MSD, BMS, Eis, Roche, UCB, Medac, Pfizer, Biogen, Speakers bureau: Abbvie, MSD, BMS, Eis, Roche, UCB, Medac, Pfizer, Biogen
DOI: 10.1136/annrheumdis-2020-eular.5629

THU0405 SERUM METABOLIC PROFILING ANALYSIS OF GOUT PATIENTS BASED ON UHPLC-Q-TOF/MS

T. W. Li¹, Y. Huang¹, Z. Zhong¹, Q. Huang¹. ¹Guangdong Second Provincial General Hospital, Department of Rheumatology and Immunology, Guangzhou, China

Background: Gout is a common kind of inflammatory arthritis with metabolic disorders. The detailed pathogenesis of gout remains largely unknown. Metabolomics has become an important tool in detecting the new pathogenesis and biomarkers. However, few studies have focused on the serum metabolic profiling of gout.

Objectives: The study aims to investigate the metabolic profiling of gout patients with ultra-performance liquid chromatograph quadrupole time-of-flight mass spectrometry (UPLC-Q-TOF-MS), and explore the potential pathological mechanisms and biomarkers.

Methods: Serum samples from 31 gout patients and 31 healthy controls were analyzed by UPLC-Q-TOF-MS. Principal components analysis (PCA), orthogonal partial least squares-discriminant analysis (OPLS-DA) and Hierarchical clustering analysis were performed to detect different compounds between the two groups. Receiver operating characteristic (ROC) curve analysis and pathway analysis of the different metabolites were conducted.

Results: A total of 9192 compounds were detected, of which 138 significantly different compounds were selected, according to the criteria of (Variable importance in projection (VIP)>3, $P<0.05$). Eventually, 96 reliable metabolites matched the HMDB database were confirmed. ROC curve results showed that the area under the curve (AUC) value of 4-hydroxytriazolam for gout was 0.933 (CI95%: 0.875-0.992), yielding a highest AUC value, with the sensitivity of 83.9% and specificity of 93.5%. The pathway analysis results indicated that the significantly different metabolites were mainly involved in "primary bile acid biosynthesis", "purine metabolism" and "glycerophospholipid metabolism".

Conclusion: The serum metabolic profiling in gout patients were significantly different from healthy subjects. 4-hydroxytriazolam was the potential biomarkers. Primary bile acid biosynthesis may be a novel metabolic pathway of gout.

Figure 1 A: Hierarchical clustering analysis of the significantly different compounds. B: Pathway analysis of the significantly different metabolites.

References:

- [1] Banoei MM, et al. Metabolomics and Biomarker Discovery in Traumatic Brain Injury. *J Neurotrauma*, 2018. 35(16): p. 1831-1848.

Disclosure of Interests: : None declared

DOI: 10.1136/annrheumdis-2020-eular.5963

THU0406 IDENTIFICATION OF INTRACELLULAR VACUOLES IN SYNOVIAL FLUID WITH CALCIUM PYROPHOSPHATE AND MONOSODIUM URATE CRYSTALS

M. L. Peral¹, I. Calabuig¹, A. Martín-Carratalá¹, M. Andrés¹, E. Pascual¹. ¹Hospital General Universitario de Alicante, Reumatología, Alicante, Spain

Background: Synovial fluid analysis using polarized microscopy is the gold standard for the diagnosis of crystal-related arthritis. In our experience, we have

noted that, when calcium pyrophosphate (CPP) crystals are observed, they sometimes appear within intracellular vacuoles. However, this phenomenon is not seen in those samples containing monosodium urate (MSU) crystals. This finding has been scantily reported in the literature, but may be useful in clinical practice to ensure accurate crystal identification.

Objectives: Our study aims to assess whether the presence of vacuoles contributes to identifying the type of crystal, and also to gauge the frequency of their presentation.

Methods: We conducted an observational study in a rheumatology unit between February and June of 2019. Synovial fluids containing CPP or MSU crystals, obtained in daily clinical practice, were consecutively included for analysis. Two observers simultaneously analyzed the presence of vacuoles by ordinary light and phase contrast microscopy in less than 24 hours after their extraction, using a microscope equipped with two viewing stations. The primary study variable was to determine whether CPP and MSU crystals are seen inside intracellular vacuoles, and to calculate the frequency of this finding for each type of crystal, estimating their 95% confidence interval (95% CI) and comparing rates using Fisher's exact test.

Results: Twenty-one samples were obtained. Data is given in the Table. MSU crystals were present in 7 (33.3%) and CPP crystals in 14 (66.6%). Interestingly, none of the MSU samples showed crystal-containing vacuoles (95% CI 0-35.4%). On the contrary, cytoplasmic vacuoles containing crystals were present in all of the CPP samples (95% CI 78.5-100%). The findings were confirmed by phase-contrast microscopy. Differences were statistically significant ($p<0.001$).

Table.

SAMPLES ACCORDING TO TYPE OF MICROCRYSTAL (n=21)	SAMPLES WITH VACUOLS (UNDER ORDINARY LIGHT)	SAMPLES WITH VACUOLS (UNDER PHASE CONTRAST)
CPP (14; 66.6%)	14 (100%) (95%CI 78.5-100%)	14 (100%) (95%CI 78.5-100%)
MSU (7; 33.3%)	0 (0%) (95%CI 0-35.4%)	0 (0%) (95%CI 0-35.4%)

Conclusion: The presence of vacuoles may be a useful and easy way to differentiate MSU and CPP crystals when performing synovial fluid microscopy in clinical practice, since it appears to be a distinctive feature in CPP crystal fluids.

References:

- [1] Kohn NN, Hughes RE, McCarty DJ Jr, Faires JS. The significance of calcium phosphate crystals in the synovial fluid of arthritic patients: the «pseudogout syndrome». II. Identification of crystals. *Ann Intern Med*. 1962 May;56:738-45.
- [2] Pascual E, Sivera F, Andrés M. Synovial Fluid Analysis for Crystals. *Curr Opin Rheumatol* 2011;23:161-169.
- [3] McCarty DJ, Koopman WJ. Arthritis and allied conditions: A textbook of rheumatology, volumen 1. Lea & Febiger. 1993.
- [4] Pascual E, Sivera F. Synovial fluid crystal Analysis. En Gout and other crystal arthropathies. Terkeltaub R ed. Elsevier; 2012: p.20-34.
- [5] Hwang HS, Yang CM, Park SJ, Kim HA. Monosodium Urate Crystal-Induced Chondrocyte Death via Autophagic Process. *Int J Mol Sci*. 2015 Dec 8;16(12):29265-77.

Image 1. Microscopy with ordinary light. Cells with cytoplasmic vacuoles are observed, as well as abundant intra and extracellular CPP crystals.