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POS1143 GOUT AND JOINT REPLACEMENTS IN THE US

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Background: Irreversible joint damage in gout has been linked to a possible increase in knee and hip joint replacements¹. In addition, the strong association between gout and osteoarthritis^{2,3} could also lead to an increased risk of joint replacements in patients with gout. Population-based data from the UK and Taiwan have shown hazard rates of 1.14 and 1.16 respectively for knee replacements in patients with gout compared to age and gender matched controls¹. However, there is little national data in the US on clinical and economic burden of joint replacements in patients with gout.

Objectives: To evaluate total or partial hip and knee joint replacements in patients with gout in the US and to estimate their economic impact

Methods: The Nationwide Inpatient Sample (NIS) is a stratified random sample of all US community hospitals. It is the only US national hospital database with information on all patients, regardless of payer, including persons covered by Medicare, Medicaid, private insurance, and the uninsured. Detailed information including clinical and nonclinical data elements on each hospital stay including International Classification of Diseases (ICD)10 diagnosis and procedure codes, age, gender, length of stay, payer, charges, comorbidities etc. is available. We examined hospitalizations in patients with gout with hip and knee joint replacements in NIS 2018, the most recent year of data.

Results: In 2018, there were 914,510 hospitalizations with primary or secondary diagnosis of gout in the US. Of these 43,615 were for joint replacement surgeries (knee (24,840) and hip (18,755)). Patients with knee replacement were on an average 68.5 years old (95% confidence intervals 68.2 years -68.8 years). Patients with hip replacement were slightly older (mean age 70.3 years, 95% confidence intervals 69.8 years -70.7 years). Unlike general population statistics, men formed a majority of these joint replacements (68% for the knee and 72% for the hip). The average charge per hospitalization was \$69,279 and \$72,944 for knee and hip replacement respectively. The total annual national cost estimate was \$3.09 billion, with government insurances (Medicare and Medicaid) responsible for 67% of knee replacement and 70% of hip replacement costs.

Conclusion: Joint replacements in gout patients have a large clinical and economic burden in the US. This calls for an increased awareness and management of associated hip and knee arthritis in patients with gout.

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POS1144 SERUM URIC ACID TO CREATININE RATIO IS ASSOCIATED WITH URINARY URIC ACID EXCRETION IN PATIENTS WITH GOUT

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Background: Underexcretion of uric acid is the dominant mechanism leading to hyperuricemia [1] and the 24-hour urinary uric acid excretion is an important measurement. However, it is inconvenient due to accurate timing and complete collection of the specimen.

Objectives: The aim of this study was to investigate the relationship between serum uric acid to creatinine ratio (sUACR) and 24-hour urinary uric acid excretion in gout patients.

Methods: A total of 110 gout patients fulfilling 2015 ACR/EULAR classification criteria from Guangdong Second Provincial General Hospital from January 2019

to January 2021 were retrospectively enrolled in this study. Patients were divided into underexcretion group (<3600 µmol/24h) and non-underexcretion group (≥3600 µmol/24h). The correlation between sUACR and 24-hour urinary uric acid excretion was analyzed by the Pearson's correlations analysis. Receiver operation characteristic (ROC) curves were performed to assess the utility of sUACR for discriminating between underexcretion group and non-underexcretion group. Furthermore, the risk factors of uric acid underexcretion were evaluated using binary logistic regression analysis.

Results: sUACR in the underexcretion group was significantly lower than the non-underexcretion group (p=0.0001). Besides, sUACR was positively correlated with 24-hour urinary uric acid excretion (r=0.4833, p<0.0001). Furthermore, ROC suggested that the area under the curve (AUC) of sUACR was 0.728, which was higher than that of serum uric acid and creatinine. The optimal cutoff point of sUACR was 5.2312, with a sensitivity and specificity of 71.9% and 67.9%. Logistic analysis results revealed that decreased sUACR (<5.2312) was an independent risk factor of underexcretion of uric acid (OR =5.510, 95% CI: 1.952-15.550, P=0.001).

Conclusion: sUACR is lower in gout patients with underexcretion of uric acid and may serve as a useful and convenient marker of assessing underexcretion of uric acid in gout patients.

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Figure 1. A. Comparison of serum uric acid to creatinine ratio between underexcretion group and non-underexcretion group. B. Correlation between serum uric acid to creatinine ratio and 24h uric acid excretion.

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POS1145 PREVALENCE OF CHONDROCALCINOSIS IN PATIENTS WITH INFLAMMATORY RHEUMATIC DISEASES – FREQUENTLY FOUND IN PATIENTS WITH RHEUMATOID ARTHRITIS AND VICE VERSA

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Background: Calcium pyrophosphate deposition disease (CPPD), also known as pseudogout, is a prominent member of the crystal deposition diseases much like gout where urate crystals are the pathogens. CPPD is differentiated from chondrocalcinosis, a radiographic finding showing joint calcification, which may or may not be relevant for the clinical picture of patients (1).

Objectives: To determine the prevalence of chondrocalcinosis in different inflammatory rheumatic diseases.

Methods: In a retrospective cross-sectional study design we reviewed the records of not established new patients presenting to our center between 1.1.2016 and 31.12.2018. Based on the availability of radiographs of hands and feet, 514 patients were identified including 181 patients with CPPD, 273 with rheumatoid arthritis (RA), 143 seropositive (52.4%) and 130 seronegative, 30 with gout and 30 with polymyalgia rheumatica (PMR). Radiographs of hands and feet were available from all patients, of the knee in 376 cases. All images were read by two experienced readers with no access to clinical data.

Results: Almost all patients had a short disease duration of < 1 year. In patients diagnosed with CPPD all radiographs showed chondrocalcinosis (93%) at some location, mostly in the hands. This was different in seronegative (36.5%) and seropositive (30.3%) RA. Chondrocalcinosis was found less frequently also in gout (18.8%) and PMR (12.5%). More data are shown in the Table 1. Radiographic chondrocalcinosis was present in more than one joint in 36.6% patients with CPPD, in 11.9% in seropositive and in 17.3% in seronegative RA. Patients with CPPD were older and had acute attacks more often than RA patients. While RA patients were more frequently on methotrexate (MTX), patients with CPPD were more often on colchicine.

Table 1. Radiographic and clinical features of the examined patients

	CPPD N=181	Seropositive RA N=142	Seronegative RA N=129	Gout N=30	PMR N=30
% women	77,8	76,2	75,3	28,1	44,1
Mean age (years)	73,8± 9,8	58,8± 13,0	58,9± 14,7	56,6± 14,7	65,7± 8,9
Symptom duration (years)	0,3±0,7	0,4± 0,7	0,4± 0,9	1,0±3,0	0,4±1,7
Chondrocalcinosis (radiography, %)	93,0	35,7	34,6	12,5	11,8
Erosions (radiography, %)	50,8	42,9	32,1	50	8,8
Clinical involvement of hands (%)	83,2	76,2	72,8	25	50
Clinical involvement of feet (%)	24,3	33,3	32,1	62,5	11,8
Clinical involvement of knee (%)	42,7	39,3	42	59,4	32,4
Symmetric arthritis (%)	64,6	67,9	74	65,6	44,1
Acute attacks, sudden onset (%)	60,5	40,5	40,7	65,6	38,2
Both diagnoses RA and CPPD in record (%)	27,6	29,7	32,1	6,25	14,7
Therapy with MTX or another csDMARD (%)	13,0	52,4	42,0	3,1	23,5
Therapy with Hydroxychloroquine (%)	7,0	4,8	7,4	0	0
Therapy with Colchicine (%)	43,8	9,5	9,9	75	5,9

Conclusion: There were a lot of similarities but also some important differences between patients with CPPD and RA with no major differences between seropositive and seronegative RA. Of interest, radiographic chondrocalcinosis was seen in more than a third of RA patients. Importantly, clinical symmetry of arthritis and involvement of hands did not differentiate between CPPD and RA, mainly the acuteness of attacks did. Co-occurrence of both diseases was frequently observed. There was no major difference between seropositive and seronegative RA.

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POS1146 NONCODING RNA CONTRIBUTE TO PATHOGENESIS IN PRIMARY GOUTY ARTHRITIS

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Background: Gout is an arthritic disease caused by the deposition of monosodium urate crystal (MSU) in the joints, which can lead to acute inflammation and damage adjacent tissue [1]. Over the past decade, noncoding RNAs (ncRNAs) have been shown to have crucial importance in health and disease [2,3]. However, studies evaluating the function of ncRNAs in gout are scarce, and current knowledge of the role of ncRNAs in gout is still limited.

Objectives: To assess the contribution of noncoding RNAs to gout and the clinical importance of these genes in primary gouty arthritis (GA).

Methods: The mRNA expression levels of noncoding RNAs (LINC00173, LINC00963, LINC01330 and miRNA-182-5p) were measured in peripheral blood mononuclear cells (PBMCs) from 60 gout patients (including 30 acute gout patients, 30 intercritical gout patients) and 40 healthy subjects. The relationship between noncoding RNA expression levels and laboratory features was analyzed in GA patients.

Results: The expression levels of LINC00173, LINC00963 and miRNA-182-5p were much lower in the AG and IG group than in the HC groups ($p < 0.05$), and no significant difference was detected between AG and IG groups ($P > 0.05$). The expression levels of LINC01330 were much lower in the AG group than in the IG and HC groups ($p < 0.05$), and no significant difference was detected between AG and IG groups ($P > 0.05$). In GA patients, the levels of noncoding RNAs mRNA correlated with laboratory inflammatory and metabolic indexes.

Conclusion: Altered noncoding RNAs expression suggests that noncoding RNAs is involved in the pathogenesis of GA and participates in regulating inflammation and metabolism.

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Figure 1. Relative Expression of noncoding RNAs in the PBMCs of Patients.

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POS1147 COSTS AND FACTORS AFFECTING HEALTH SERVICE UTILISATION IN PATIENTS WITH GOUT: A LONGITUDINAL, POPULATION-LEVEL LINKED DATA STUDY IN WESTERN AUSTRALIA

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Background: Evidence suggests that gout is associated with high health care costs and that many inpatient admissions are preventable (1). Understanding the driver of health care costs will allow more targeted intervention.

Objectives: To examine factors associated with high health service utilisation and cost in patients admitted to hospital with gout, using whole-population linked hospital, WA cancer registration, Emergency Department (ED) and death data (2).

Methods: The study included patients (18 to 84 years) who had been admitted to hospital with a primary or co-diagnosis of gout for the first time between 1 Jan 02 and 31 Dec 09. Hospital costs were calculated per patient using DRG codes and ED costs were calculated from URG codes. Costs are presented in Australian dollars. Follow-up was completed at five years post their initial gout hospitalisation, at death, or at the 31st of December 2014. Both univariable and multivariable analysis was conducted for each patient characteristic. Independent variables were assessed for collinearity. Collinearity was assumed present where the correlation co-efficient was greater than 0.7.

Results: 4,379 individuals were included. In the following five years, there was 22,222 ED attendances (median cost, \$1826 per patient (IQR: \$433 - \$4,414)), and 58,920 hospital admissions, (median cost, \$25,009 per patient (IQR: \$6,844 - \$60,535)). 4,059 (18.3%) ED attendances and 3,834 (6.5%) hospital admissions were potentially preventable. Gout was not a major driver of events, with 341 (1.5%) ED attendances and 620 (1.1%) hospital admissions coded with a primary diagnosis of gout. In the univariable analysis (Table 1), Aboriginality and smoking were associated with an increased number of both ED attendances and hospital admissions. Increased socio-economic status was associated with a reduction in ED attendances, however, this was not reflected in hospital admissions.

Conclusion: Patients admitted to hospital with gout are highly likely to be re-admitted or attend ED in the following 5 years. Many of these contacts are preventable, but are usually driven by comorbidities rather than gout.

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