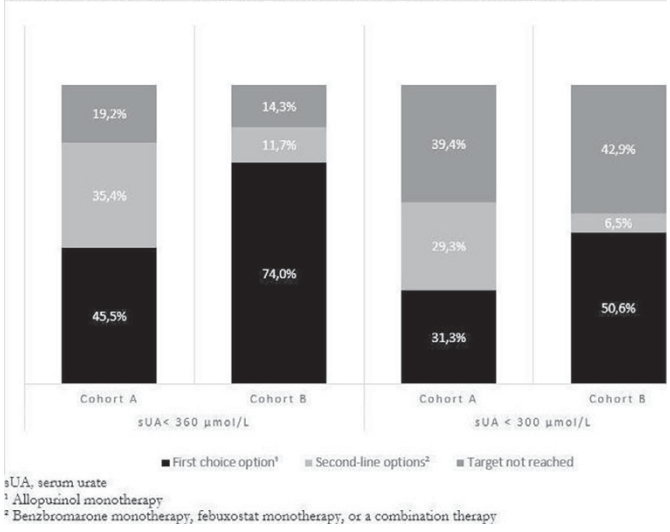
monotherapy failure. Outcome parameters were defined to reflect the EULAR recommendations concerning ULT [3].
Results: A total of 177 patients were included in the study; 99 in cohort A and 78 in cohort B. The majority (N=146, 82.5%) of the included patients from both cohorts were able to meet the predefined sUA target of <360 μmol/L. In addition, more than half (N=104, 58.8%) of the patients reached the stringent sUA target of <300 μmol/L. The proportion of patients reaching sUA targets did not differ significantly (p=0.51) between the cohorts, with 80.8% (n=80) of the patients in cohort A reaching the primary sUA target, compared to 85.7% (n=66) in cohort B (Figure 1). In total, patients following treatment with first-line allopurinol, second-line monotherapy options or second-line combination therapy, 102/124 (82.3%), 25/31 (80.6%) and 19/21 (90.5%) respectively, reached the primary sUA target.

Figure 1: Proportion of patients reaching the EULAR recommended sUA targets in cohort A (n=99) and cohort B (n=77), applying different ULT targeted treatment approaches



sUA, serum urate
¹ Allopurinol monotherapy
² Benzbromarone monotherapy, febuxostat monotherapy, or a combination therapy

Conclusions: This chart review provides a proof-of-concept of the treat-to-target approach in gout patients when a targeted approach with ULT is applied. However, our study also shows that not all patients may reach targets using currently available treatment options. Prospective, pragmatic randomized studies to investigate differences between specific treatment regimes in gout patients, together with costs, safety and patient-reported outcome measures are needed.
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THU0419 RISK OF TOTAL HIP AND KNEE REPLACEMENT IN GOUT PATIENTS PRIOR TO AND FOLLOWING DIAGNOSIS: A NATIONAL POPULATION STUDY IN TAIWAN

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Background: Total joint replacement (TJR) is a major surgical procedure aiming to replace damaged natural joints with artificial prosthesis to restore function and alleviate pain. Total knee replacement (TKR) and total hip replacement (THR) are two common replacement procedures, mainly as a result of osteoarthritis, rheumatoid arthritis, trauma, fracture and infection. Whether gout associates with a greater risk of TJR independent of these primary risk factors is controversial, despite tophaceous or chronic deforming gouty arthritis may lead to joint destruction and subsequent TJR
Objectives: We carried out a case control study using the National Health Insurance (NHI) database with full coverage of the general population of Taiwan to investigate the burden of TJR in gout patients at diagnosis compared to matched controls. We further followed incident gout patients and their matched controls after diagnosis to compare their subsequent risk for TJR.
Methods: The Taiwan National Health Insurance database was used to identify 74,729 new diagnosis gout patients in 2005. These were matched 1:1 to 74,729 controls by birth year and sex with people who did not have gout diagnosis or urate-lowering treatment prescription. Odds ratios (ORs) of total hip or knee replacement (THR or TJR) at diagnosis and hazards ratios (HRs) after diagnosis were estimated adjusted for gender, age at diagnosis, comorbidities, co-medications, place of residence, income and occupation.
Results: Gout was associated with adjusted ORs (95% CIs) of 0.87 (0.54 to 1.40), 1.01 (0.57 to 1.79), 0.93 (0.64 to 1.35) for the THR, TKR and TJR at diagnosis, respectively. The incidence rate of THR or TKR in the patients with gout was 1.60 and 1.76 (per 1,000 person-years) which was higher than matched controls (0.99 and 0.98, respectively). Gout was also associated with an adjusted HR (95% CI) of 1.41 (1.19 to 1.68), 1.37 (1.16 to 1.61) and 1.37 (1.22 to 1.56) for developing THR, TKR and TJR.
Conclusions: Compared to matched controls people with gout did not have an increased risk of TJR at diagnosis but the risk increased substantially after diagnosis. Whether adequate urate-lowering treatment reduces the risk requires further study.
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THU0420 IMPROVED SURVIVAL OF POST-MYOCARDIAL INFARCTION PATIENTS TREATED WITH ZOFENOPRIL COMBINED WITH XANTINE OXIDASE INHIBITORS AS COMPARED TO PLACEBO OR OTHER ACE-I

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Background: Oxidative stress is increased in hyperuricemic patients with acute myocardial infarction (AMI). In these patients, use of sulfhydrylACE-inhibitors (ACEIs), such as zofenopril or captopril, and xanthine oxidase inhibitors (XOIs), may potentially result in an enhanced antioxidant effect and improved survival. However, the benefit of such combination in post-myocardial infarction has never been verified.
Objectives: To test the usefulness of the combination therapy Zofenopril + XOI in improving survival free from MACE in post-AMI patients
Methods: We re-analyzed the data of the four SMILE (Survival of Myocardial Infarction Long-term Evaluation) studies by grouping patients according to the type of ACEIs and the use of XOIs. 165 (31.4%) of the 525 patients were treated with XOIs (79 under zofenopril and 86 under placebo, lisinopril or ramipril), whereas 360 were not (192 zofenopril and 168 placebo or other ACEIs). In these four groups, we separately estimated the 1-year combined risk of major cardiovascular events (MACE, death or hospitalization for cardiovascular causes).
Results: MACE occurred in 10.1% of patients receiving zofenopril + XOIs, in 18.6% receiving placebo or other ACEIs + XOIs, in 13.5% receiving zofenopril without XOIs and in 22.0% receiving placebo or other ACEIs, but no XOIs (p=0.034 across groups). Rate of survival free from MACE was significantly larger in patients treated with zofenopril and XOIs than with other ACEIs with no XOIs [hazard ratio: 2.29 (1.06, 4.91), p=0.034]. A non-significant trend for superiority of zofenopril + XOIs combination was observed vs. zofenopril alone [1.19 (0.54, 2.64), p=0.669] or vs. placebo or other ACEIs combined with XOIs [1.82 (0.78, 4.26), p=0.169].
Conclusions: Our retrospective analysis suggests an improved survival free from MACE in post-AMI patients treated with a combination of an ACEI and urate lowering drug with antioxidant activity.
Disclosure of Interest: None declared
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THU0421 FEMALE PRIMARY GOUT HAD ITS UNIQUE ULTRASOUND FEATURES

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Background: Primary gout is a metabolic disease occurred in male and post-menopause female in most cases. Though the ultrasound features of gout had been discovered for several years, no reports illuminated whether there would be difference presentations between different genders in the joints.
Objectives: We employed ultrasound instead of dual-energy CT to explore more refined pathological manifestations of primary gout in different genders.
Methods: All cases were confirmed as gout fulfilling 1997 ACR classification criteria. All cases excluded secondary gout induced by drug, tumor, hypertension, diabetes mellitus, renal failure. Ultrasound was performed during chronic stage of gout but not at acute attack. The process was done by 2 observers blinded to

each other, blood tests. Final diagnosis was determined by the third US expert if the 2 observers got the different conclusion. Bilateral toes, dorsal feet, ankle, knee, wrist, fingers, elbow, and shoulder were detected to find 6 features of gout suggested by OMERCT: tophus, "snow storm"-like effusion, cloudy synovium in grey scale, double-contour sign, bone erosion and Power Doppler (PD) signal. Each above positive presentations in each above range would get 1 point and the sum scores would be ranged from 0 to 84. Serum uric acid (UA) was recorded too.

Results: 1) 23 female and 139 male were recruited in the program. The female-male ratio was 1:6. Mean age and disease duration of the female subjects were elder than male ones (female:male=57.2±14.1: 44.7±14.7 years old) with longer disease duration to confim the diagnosis (female:male = 10.9:1.2 months). The average serum UA level in female was lower than male group (female:male = 413.8±162.1umol/L, 515.5±156.9umol/L, sig$<$0.05).

2) The intra-observer reliability from 20% samples random seclection showed an overall agreement of 80%, 92%, 96%, 87%, 80%, 73% for tophus, "snow storm"-like effusion, cloudy synovium in grey scale, positive double-contour sign, bone erosion and PD signal with kappa value of 0.78, 0. 92, 0.95, 0.86, 0.79, 0.72, respectively.

3) The difference showed female gout had higher frequency of tophus, bone erosion and lower frequency of effusion while the other indexes were equal:topus scores (female:male=87%:,74.1%), cloudy synovium grey scale scores (female:male=65.2%:62.6%), effusion scores (female:male=17.4%,31.7%), bone erosion scores (female:male=30.4%,16.5%), power dopplar scores (female:male=34.8%,41%), positive double-contour signs (60.9%:59.9%. The top 2 affected ranges were ankle (female:male=69.6%:55.3%), knee (female:mlae=60.9%:54.0%). Furthermore, female gout had more frequently occurred not in the less typical ranges such as fingers (female:male=34.7%:19.4%), elbow (8.7%:2.7%), which might be the cause for delayed diagnosis.

Conclusions: Though the level of serum UA was lower, Female gout had its unique ultrasound features with more tophus, bone erosion and less effusion compared to male gout. The less typical ranges were recommended for US examinations.

Disclosure of Interest: None declared

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THU0422 SEL-212: ENHANCED SERUM URIC ACID CONTROL IN HYPERURICEMIC PATIENTS THROUGH SELECTIVE MITIGATION OF ANTI-DRUG ANTIBODIES AGAINST PEGSITICASE

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Background: Recent EULAR recommendations for refractory gout treatment with pegylated uricase (pegloticase) acknowledge the risk of allergic reactions related to the development of anti-drug antibodies (ADAs) [1]. ADAs also affect the efficacy of treatment [2]. As a novel approach to treatment, we demonstrated that co-administration of pegsiticase (another pegylated uricase) and a synthetic vaccine particle encapsulating rapamycin (SVP-R) showed improved control of serum uric acid (sUA) in uricase-deficient mice by inducing antigen-specific immune tolerance to pegsiticase [3]. Here we describe the impact of SEL-212, a combination product of SVP-R and pegsiticase, on ADA formation and sUA levels in hyperuricemic patients in a Phase 1 open-label multicenter clinical trial.

Objectives: To assess the initial safety and impact on sUA levels and ADA formation of SEL-212, which is designed to be the first non-immunogenic uricase therapy for refractory gout.

Methods: Cohorts of hyperuricemic (sUA $\geq$6 mg/dL) patients consented to a single dose of 0.4 mg/kg pegsiticase alone, SVP-R alone (0.03–0.5-mg/kg), or 0.4 mg/kg pegsiticase co-administered with SVP-R (0.03–0.3-mg/kg; SEL-212). ADAs and sUA were assessed at baseline and 7, 14, 21, and 30 days after dosing.

Results: Sixty-three patients were enrolled with a median age of 49.4 years. Mean baseline sUA was 7.4±1.3 mg/dL. Patients dosed with pegsiticase alone showed an immediate drop in sUA, which returned to baseline levels by 14–21 days in 4 of 5 subjects, correlating with the induction of ADA titers $>$1000. Patients treated with SVP-R alone showed no meaningful change in sUA.

In contrast, patients treated with SEL-212 showed a dose-dependent inhibition of anti-uricase ADAs and corresponding decrease in sUA levels through at least day 30 after a single injection. Seven of 10 patients treated with SEL-212 at a SVP-R dose of 0.1 mg/kg showed no detectable sUA at day 30, and all 10 subjects dosed with SEL-212 at SVP-R doses of 0.15 or 0.3 mg/kg showed sustained control of sUA through at least day 30. There was a strong correlation between maintenance of low uric acid levels at day 30 and with low or no ADA titers.

SEL-212 was generally well tolerated at effective dose levels. One SAE (grade 2 rash) was observed in the lowest of the three effective dose levels (0.1 mg/kg SVP-R). A second SAE was determined by the investigator to be not related to study drug. All SAEs fully resolved. No SAEs were observed with SEL-212 at the higher effective dose levels of SVP-R (0.15 or 0.3 mg/kg). The maximum tolerated dose was defined at 0.3 mg/kg.

Conclusions: Data suggest that a single dose of SEL-212 in hyperuricemic patients can tolerably, therapeutically and durably control sUA for $\geq$30 days, correlating with inhibition of ADAs. These results supported monthly dosing in an ongoing Phase 2 multi-dose study in symptomatic gout patients and the potential use of SVP-R to mitigate ADAs for other immunogenic biologics.

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Disclosure of Interest: E. Sands Employee of: CMO for Selecta Biosciences, A. Kivitz: None declared, L. Johnston Employee of: COO for Selecta Biosciences, T. K. Kishimoto Employee of: CSO for Selecta Biosciences

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THU0423 THE RELATIONSHIP BETWEEN CLINICAL DISEASE ACTIVITY, SYMPTOM DURATION AND ULTRASONOGRAPHIC CHANGES IN GOUT

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Background: Ultrasonography (US) has recently been validated and used as an objective diagnostic tool for urate deposition also joint damage and was proposed as an outcome measure in gout [1–2].

Objectives: Our aim was to investigate the relationship between clinical gout activity and load of US changes.

Methods: Sixty monosodium-urate-crystal-confirmed gout patients (52 men) and 36 healthy normouricemic controls were prospectively included in one centre. The relationship between clinical symptoms and US gout-related changes investigating 36 joints and 4 tendons (m. triceps and patellar) was evaluated using Spearman's correlation.

Results: The total number of intraarticular T, periarticular T, total T, total DC, and total E found per patient on ultrasound ranged from 0–26, 0–4, 0–30, 0–29, and 0–18, accordingly.The number of acute attacks per year/per life had a significant positive correlation with the total number of intraarticular T (rs=0.518/0.652; p$<$0.0001), total number of intraarticular and periarticular T (rs=0.552/0.699; p$<$0.0001), the total number of DC (rs=0.374/0.551; p$<$0.01), the total number of erosions (rs=0.374/0.542; p$<$0.01), and the total tophus area (rs=0.420/0.549; p$<$0.01) measured on US per patient. Strong, positive correlation was observed between the number of subcutaneous tophi and total US tophus area (rs=0.628), total number of DC (rs=0.612) and erosions (rs=0.526), found per patient on US, all p$<$0.0001. Disease duration significantly positively correlated with the load of US T, E and DC (p$<$0.0001) in the investigated sites. There was no correlation between CRP and US, also no correlation between the uric acid concentration and US changes: total number of T (rs=0.193, p=0.139), DC (rs=0.179, p=0.170) or E (rs=0.063, p=0.634) found per patient. The tophus area measured in two first metatarsophalangeal joints (MTP) positively correlated with subcutaneous tophus count (rs=0,404; p=0,001), the US intraarticular T count (rs =0,732; p$<$0,0001) total US DC count (rs =0,477; p$<$0,0001) total intraarticular tophus area (rs =0,829; p$<$0,0001)and total tophus area other than first MTP joints (rs =0,603; p$<$0.0001).

Conclusions: Ultrasonographic gout -related changes strongly positively correlate between each other and with subjective also objective signs of disease activity, increasing with disease duration in gout. The size of tophi inside the first metatarsophalangeal joints could be representative of the total body urate load and could be chosen as an outcome measure for the longitudinal gout studies.

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THU0424 GOUT AT THE SPINE: A RETROSPECTIVE STUDY WITH DUAL-ENERGY COMPUTED TOMOGRAPHY

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Background: Gout is due to monosodium urate (MSU) crystal deposition after chronic hyperuricemia. Although MSU crystal deposition can occur in every joint and peri-articular structure, spine involvement is scarcely reported. Dual energy computed tomography (DECT) is a performant tool to assess urate deposits, especially in deep structures such as intervertebral discs and apophyseal joints.

Objectives: to describe spinal DECT features of urate monosodium deposits compared to peripheral joint DECT.

Methods: Patient with gout diagnosis (MSU crystal identification by polarized microscopy or fulfilling "Nijmegen's criteria" (1)) who had undergone DECT were included from November 2012 to June 2016. Images were analyzed by