initial attack group). During the follow-up period, 51 gout flares developed (18 in the initial attack group). No significant seasonal variation in the follow-up flares was found.

Conclusion: In this prospective study, the most common season and month of gout attacks in Korea were spring and March, respectively. Alcohol was the most common provoking factor, particularly during summer. Diurnal temperature changes on the day of the attack and humidity changes from the day before the attack to the day of the attack were associated with gout attack in our cohort.

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THU0444 INCIDENCE OF ACUTE GOUT FLARE IN PATIENTS INITIATED ON INTRAVENOUS BUMETANIDE FOR ACUTE CONGESTIVE HEART FAILURE EXACERBATION

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Background: Heart failure is a prevalent and ever-increasing public health concern associated with significant morbidity, mortality, and financial burden. Therefore, identifying any factors that worsen the outcome of patients with heart failure is crucial to the nation's medical and financial health.

One of the major comorbidities associated with heart failure is gout. Gout is a clinical syndrome of joint inflammation resulting from the deposition of monosodium urate crystals, causing painful and swollen arthritis. Acute gout flares in the context of acute heart failure (AHF) exacerbations result in longer lengths of stay and form an independent risk factor for increased readmissions or death¹. The use of loop diuretics in treating patients with AHF exacerbations may cause new onset of gouty arthritis or recurrence of established gout by increasing serum uric acid levels. Uric acid alone is implicated as an independent predictor of mortality in patients with chronic heart failure².

Objectives: In this study, we aim to better characterize the incidence of acute gout flares in patients being treated with intravenous bumetanide for AHF exacerbations.

Methods: This single-center retrospective cohort study included adult patients within an urban tertiary-care center hospital between 5 August 2016 and 30 June 2018. Chart review was performed to identify 130 patients who were hospitalized for AHF exacerbations, received intravenous (IV) bumetanide, and developed an acute gout flare for a total of 176 cases (Figure 1).

Figure 1 Patient Selection

Patients were identified as having an acute gout flare if the primary treating physician(s) documented a clinical picture congruous with acute gout (e.g., onset of a painful, swollen, or erythematous joint) and administered conventional treatment for acute gout including non-steroidal anti-inflammatory agents (NSAIDs), steroids, colchicine, urate-lowering therapies, and/or intra-articular joint injection with symptomatic improvement.

Results: The annualized incidence of acute gout while receiving IV bumetanide for a heart failure exacerbation is 7.17%.

There was no statistical difference in age, gender, race, or BMI among patients who developed acute gout compared with those who did not develop acute gout while receiving IV bumetanide.

An acute gout flare that occurred during treatment of AHF with IV bumetanide increased hospital length of stay (LOS) by 3 days (mean LOS 15.2 days in those who had acute gout, mean LOS 11.6 days in those who did not [p-value 0.277]). Patients who received allopurinol during their hospitalization for AHF exacerbation had lower 30-day readmission rates for any cause (p-value 0.017, Table 4). There was no reduction in the 30-day readmission rate in patients who received colchicine without allopurinol during their hospitalization for AHF exacerbation. Those with a history of gout had higher readmission rates than those without a history of gout (p-value 0.007).

Conclusion: Gout is known to be a weighty contributor to patients' morbidity and mortality in heart failure, and the occurrence of acute gout flare in AHF exacerbations may be precipitated by the use of loop diuretics. We show that the use of IV bumetanide in patients hospitalized for AHF exacerbations is associated with a 7.17% yearly incidence of acute gout flares. Furthermore, patients with a history of gout were found to have higher readmission rates, and those who received allopurinol during their hospitalization had lower readmission rates.

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THU0445 PREVALENCE AND INFLUENCE OF DISEASE DURATION IN THE AMOUNT OF ARTICULAR AND PERIARTICULAR DEPOSITS OF MONOSODIUM URATE (MSU) CRYSTALS IN NON-TREATED GOUTY ARTHRITIS PATIENTS

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Background: Monosodium urate crystals deposition arthritis (Gout) is the most prevalent inflammatory arthropathy in our society. The use of musculoskeletal ultrasound (MSUS) is emerging as a diagnostic method of patients with gout, mainly in the past few years.

Objectives: Our objective is to establish the prevalence of articular and periarticular ultrasound lesions in patients with known or recent gout diagnosis without urate-lowering therapy (ULT) as well as to analyze the influence of disease duration on these findings.

Methods: Observational, cross-sectional and descriptive study, including patients with diagnosis of Gout (fulfilling the ACR / EULAR Classification Criteria 2015) between September and November 2019 in our Rheumatology service of a tertiary center. Demographic and clinical records were collected (table 1) and MSUS was performed on each patient systematically by two rheumatologists, exploring a total of 20 structures (8 tendons and 12 joints). Suggestive images of MSU crystals deposition were defined following the OMERACT 2015 ultrasound elementary lesions definitions. Deposits included lesions as tophus, hyperechoic aggregates (HA) and double contour (DC).

Table 1. Demographic and laboratory data

Features	Patients (n=38)	%
Sex	Men 34 Women 4	89.5 10.5
Age (years)	Mean ±SD 60±14.43	
Comorbidities	Arterial hypertension 18 Mellitus diabetes 4 Dyslipidemia 13 Smoking 7 Alcohol 14	47.4 10.5 34.2 18.4 36.8
BMI (Kg/m2)	Mean±SD 27.3±4.23	
Blood urate levels (mg/dL)	Mean±SD 8.2±1.74	
Blood creatinine levels (mg/dL)	Mean±SD 1.09±0.75	

Results: A total of 38 patients were included, 34 men (89.5%) and 4 women (10.5%). Twenty seven (71.1%) presented MSU crystals in synovial fluid samples, while rest of them (28.9%) met 2015 ACR / EULAR Classification Criteria for Gout. Disease duration (since onset of symptoms) was less than 6 months in 20 patients (52.6%) and longer than 6 months in 18 (47.36%). Thirty seven patients (97.36%) presented some type of MSU deposits on the explored areas. One hundred and thirty (17.10%), out of 760 explored locations, had MSU deposits. Patients with disease duration less than 6 months had 56 locations with deposits (43.07%), while those with a symptomatology longer than 6 months had 74 locations with deposits (56.92%). Left knee was the most frequent location of UMS deposits (78.95%). Out of the 145 MSUS images with elementary lesions due to MSU crystal deposits, 28 were tophi (19.31%), 33 HA (22.75) and 84 DC (57.93%). Out of the total images with deposits (DC, HA and tophi), DC in the left

knee was the most frequent (21.38%), followed by DC in right knee (17.24%) and DC in 1st MTP (10.24%).

Conclusion: Almost 100% of patients with recently diagnosed gout without ULT, presented on at least one of the scanned locations MSUS images suggestive by MSU crystals deposition. Most of MSU crystals deposits were on knees and 1st MTP. Patients with non-treated longer than 6 months of disease duration gout had a greater number of MSU crystals deposit locations detected by MSUS. The presence of tophi and HA was statistically higher in patients with disease duration longer than 6 months (table 2).

Table 2. MSU crystals median locations and MSUS images in both groups

	<6months (n,%)	>6months (n,%)	p value
Deposits locations	56 (43,07)	74 (56,92)	0,075 ¹
MSUS images with deposits -Tophi	8 (28,57) 0 (0-0)	20 (71,43) 0 (0-1)	0,018 ¹
Median, IR ( ) - HA Median, IR ( ) -	7 (21,21) 0 (0-0) 39	26 (78,79) 0 (0-1)	0,023 ¹
DC Median, IR ( )	(46,43) 0,5 (0-1)	45 (53,57) 0 (0-2)	0,853 ¹

¹Mann-Whitney U test comparing medians between both groups IR: interquartile range

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THU0446

SUCCESSFUL TREATMENT OF GOUT IS FREQUENT IN CLINICAL PRACTICE WHEN APPLYING A TREAT-TO-TARGET STRATEGY: RESULTS FROM THE NOR-GOUT STUDY

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Background: International EULAR and ACR recommendations support lifestyle changes, diet and urate lowering therapy (ULT) in gout. Treat-to-target ULT is often not performed, resulting in insufficient treatment of gout. We studied how many patients achieved the recommended treatment target of <360 µmol/l for serum urate (SUA) when a treat-to-target approach was applied in clinical practice, and which factors predicted reaching this target.

Objectives: We studied how many patients achieved the recommended treatment target of <360 µmol/l for serum urate (SUA) when a treat-to-target approach was applied in clinical practice, and which factors predicted reaching this target.

Methods: 211 patients with crystal proven gout were included into the prospective, observational NOR-Gout study if they recently had a gout flare as well as insufficiently treated serum urate SUA >360 µmol/l).

The intervention consisted of individual verbal information on lifestyle, including factors related to physical activity, diet and the importance of drug adherence. ULT (mainly allopurinol) was initiated and escalated monthly according to EULAR recommendations. Patients were during the first year seen by physician and nurse every three months with additional visits after month 1 and month 2, with further visits monthly as necessary until the treatment target of SUA <360 µmol/l (or <300 if tophi) was met.

Baseline age was 53.6 (SD 12.2) years, disease duration 7.8 years (SD 7.6), BMI 28.8 (SD 4.5) kg/m², 95.3% were males. Baseline SUA was 500 (77) µmol/l and 16.6% had subcutaneous tophi. Assessments included questions on frequency of alcohol use, and application of the self-efficacy scales for symptoms (SES, range 10-100) as well as the beliefs in medicines questionnaire (BMQ), which included a scale for general overuse of medicines (range 4-16).

186/211 (88.2%) patients completed the visit for the primary SUA endpoint at 12 months.

Results: SUA continuously declined over 12 months and the frequency of responders increased (table 1):

Table 1. Responders and SUA levels during the treat-to-target intervention

Month	Month 0	1	2	3	6	9	12	
% n Responders	0	21.3	43/202	48.7	69.3	86.7	81.9	85.5
SUA<360	0/211		94/193	131/189	151/187	136/166	159/186	
SUA µmol/l (mean, SD)	500 (78)	413 (77)	371 (64)	341 (61)	327 (59)	316 (56)	311 (49)	

At 12 months 87.6% (163/186) of patients used allopurinol and 13.4% (23/186) febuxostat with mean daily doses of 289 mg (range 100-900) and 59 (20-120) mg, respectively.

Reaching the treatment target of SUA after 12 months was bivariate related to work status, alcohol use, and beliefs in general overuse of medicines. In multivariable analyses in the final model also adjusted for baseline SUA, several variables predicted reaching the SUA target of <360 µmol/l: age (per 10 years) (OR 1.5; 95% CI 1.06 – 1.96, p=0.026), alcohol use no more than monthly vs. at least weekly (OR 6.9, 95% CI 1.90 – 25.2, p=0.003), self-efficacy for symptoms (per 10 units) (OR 1.31; 95% CI 1.00 – 1.63; p=0.05), and low belief that medicines are generally overused (per decreasing unit) (OR 1.30; 1.04 – 1.62, p=0.019).

Conclusion: Most patients (85.5%) with recent gout flare und increased SUA reached the target SUA after 12 months. A good treatment result was predicted by increasing age,

less frequent alcohol use, when patients believed they could cope with symptoms and when they did not believe that drugs are generally overused.

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THU0447

HOME-MONITORING GOUT FLARES WITH A SMARTPHONE APP – RESULTS OF A FEASIBILITY STUDY

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Background: Gout flares are considered a key clinical and research outcome in gout. Early treatment of gout flares increases patient well-being and warrants timely notification of the treating clinician.

Objectives: To test the feasibility of a smartphone app to home-monitor gout flares real-time for both patients with a suspicion of and established gout.

Methods: Thirty patients were recruited during their visit at the outpatient rheumatology clinic. Inclusion criteria were age ≥ 18 years, smartphone possession, established gout (crystal proven) or a clinical suspicion of gout and at least one flare reported in the last three months.

A straight-forward query app was used to incorporate an adapted version of the 2017 four-criteria gout flare definition.[1] For 90 consecutive days the app asked patients to report their current pain score on an 11-points scale as screening question. Scoring pain below 4 terminated the query, otherwise the app posed the remaining criteria: does the patient experience warm and/or swollen joints and are symptoms regarded as a gout flare. Responses were transmitted in real-time to the dashboard and the clinician was alerted via email if predefined conditions were met. End of study evaluation consisted of the number of generated alerts, duration of (possible) flares and actions taken. Patient feasibility was assessed by measuring app attrition and using a questionnaire based on the Technology Acceptance Model. [2] All constructs were analysed using descriptive statistics.

Results: All 30 recruited patients finished the trial. Three minor, resolvable technical issues were reported. Seventeen participants never missed a question. In total 110 responses (4.1%) were missed with three participants responsible for