Methods: Patients with clinical diagnosis of gout, a first outpatient visit between January 2010 and March 2018 and a follow-up of at least 6 months were included in a retrospective cohort study, conducted in two rheumatology centres in the Netherlands. From this cohort patients with DM starting ULT were selected. Patients with metformin use were compared to patients using other or no antidiabetic medication (control group). Metformin use was defined as use $\geq 80\%$ of the time during the first six months after initiation of ULT. To evaluate the anti-inflammatory effect, the differences in incidence density (ID) of gout flares in the first six months after starting ULT was measured and analysed using Poisson regression. To evaluate the SUA lowering effect, the difference in baseline SUA, proportion of patients reaching target serum uric acid (SUA < 0.36 mmol/l) at six months follow up, and ULT dosage at time of reaching this target were analysed. All analyses included correction for confounding.

Results: Of 2108 gout patients, 309 patients who started ULT also had DM, with 155 in the metformin group and 154 in the control group (table 1). ID of flares was 2.8 and 3.3 per patient year in the control and metformin group respectively, resulting in an incidence rate ratio of 0.93 (95% CI 0.75 – 1.15). SUA levels at baseline were similar, between the two groups (Table 1, $p=0.31$). At six months 46.1% and 57.4% reached target SUA in the control and metformin group respectively, odds ratio of 1.30 (95%CI 0.80 – 2.08). No difference was found in allopurinol dose at time of reaching target SUA between the groups (1.14 mg, 95% CI -38.89 – 41.19).

Table 1. Baseline patient, disease and treatment characteristics

	Metformin (n = 155)	Control (n = 154)
Age (years)	70.9 (+/- 13.3)*	75.3 (+/- 14.5)*
Males, n (%)	72.9	64.3
BMI (kg/m ²)	30.1 (+/- 5.8)**	30.5 (+/- 6.6)**
Comorbidities		
Hypertension (%)	65.8	64.3
Hypercholesterolemia (%)	20.0	18.2
Serum uric acid baseline (mmol/L)	0.53 (+/- 0.14)	0.54 (+/- 0.13)
Renal function, eGFR (ml/min/1.73m ²)	60.0 (+/- 21.0)*	50.0 (+/- 34.0)*
Co-medication		
Diuretics (%)	67.7	60.4
Insulin (%)	19.4	23.4
Tophi (%)	34.2	33.8
Erosive gout (%)	17.4	18.2
Type of ULT (%) allopurinol	98.1	98.7
Start dose allopurinol (mg/day)	108 (+/- 49.4)	105 (+/- 54.5)

* = significant difference between 2 groups, $p < 0.05$

** = $> 50\%$ of data is missing

Conclusion: In contrast to a previous report¹, in this study in patients with DM and gout and starting ULT, metformin does not have a clinically relevant added anti-inflammatory or urate lowering effect.

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THU0413

KEY ROLE OF THE CLINICAL NURSE SPECIALIST IN PATIENTS WITH GOUT: RESULTS OF A QUALITY-OF-CARE SURVEY

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Background: Gout is the most common nontraumatic arthritis. With a prevalence in Spain of 2.4% and an increasing incidence, many gout patients are treated in Rheumatology. Different comorbidities complicate the management of this disease that not only attacks joints, but also induces kidney damage and accelerated atherosclerosis. This, together with a poor adherence to urate-lowering therapies and a suboptimal management, justifies its relevant morbidity and mortality, with high socioeconomic impact. Some studies suggest enhancing the role of the Clinical Nurse Specialist (CNS) in the care of gout to combat therapeutic failure

Objectives: To determine the factors that affect the perceived quality and satisfaction of gout patients treated in Rheumatology with CNS support and identify areas for improvement

Methods: In 2018, we implemented the following nurse-supported visit protocol - 1st (rheumatologist and nurse; face-to-face): clinical history, joint examination, vital signs, anthropometrics, start of treatment, comorbidities management, health promotion

- 2nd (nurse; telephone, after analytical results): 1 month after 1st visit. Targeted questions (adherence, side effects, attacks, blood pressure, lifestyle habits) and therapeutic adjustment

- 3rd (rheumatologist and nurse; face-to-face): at 3-6 months. Targeted questions, joint examination, vital signs, anthropometrics, therapeutic adjustment, health promotion

- 4th (rheumatologist and nurse; face-to-face): at 12 months. Targeted questions, examination, therapeutic adjustment, health promotion. Subsequently, semi-annual/annual appointments in Rheumatology or Primary Care, according to patient complexity and gout control

We applied a treat-to-target strategy (serum uric acid $< 5\text{-}6\text{ mg/dl}$), facilitating patient access to us in case of attack, side effects or doubts. We conducted a cross-sectional observational study with demographic data and questions about care aspects included in a survey. We invite to respond anonymously and voluntarily to patients with a follow-up of ≥ 6 months

Results: 44 surveys were obtained between August 2019 and January 2020. 95% male, 55% with an age range of 46-60 years; 41% > 60 years. 68% considered the referral time to our Department reasonable; excessively long for 14%. All respondents were satisfied with the face-to-face nurse-supported consultation, and 93% considered the telephone CNS consultation to be good. 57% were not able to remember the name of the CNS, compared to 27% who did not know the rheumatologist name. 91% considered that the time to solve doubts and for explanations was enough. 46% considered the availability of CNS/rheumatologist as good, and 37% as excellent. The global satisfaction was good in 48% and excellent in 43%

Conclusion: We found a high global satisfaction in gout patients followed in our Department. They valued very positively the role of CNS in the face-to-face and telephone consultations, as well as the staff availability, their dedication to answer questions and offer explanations. We must remember our names to patients and optimize referral to our Department. Exploring patients' opinions is essential. It improves communication, adherence and attention offered, and allows to provide them a better experience in their relationship with the Department

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THU0414

ORDINARY LIGHT MICROSCOPY IS ABLE TO IDENTIFY MOST CRYSTAL-CONTAINING SYNOVIAL FLUIDS

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Background: Optical microscopy remains the gold standard for the diagnosis of crystal arthropathies. The complete protocol consists of three phases. In the first stage, microscopy with simple light provides information on the morphology of the crystal. The second stage, polarized light, allows detecting the intensity of the birefringence. Finally, with the first-order red compensator, the type of elongation is detected, positive for calcium pyrophosphate (CPP) crystals and negative for

monosodium urate (MSU) crystals. Finally, with the obtained data, the presence and type of crystals is concluded.

Objectives: Analyze the validity and agreement of each stage of microscopy regarding the conclusion, emphasizing ordinary light microscopy.

Methods: Fifty consecutive samples of synovial fluid obtained in routine clinical practice were independently analyzed under the compensated polarized microscope by 5 observers blinded to clinical data (250 observations in total). Each observer recorded the presence and type of crystals at each stage and reached a conclusion after gathering all the information. To estimate the diagnostic yield of each microscope stage, sensitivity, specificity and positive and negative predictive values, as well as the accuracy (number of correct observations/number of total observations), were calculated; also, the total weighted kappa was used to assess the degree of agreement with the complete protocol.

Results: Main results of the study are shown in Table 1. Regarding diagnostic yield, ordinary light microscopy showed excellent sensitivity, specificity and predictive values, similar to the results noted with simple and compensated polarized microscopy.

Table 1. In parentheses, 95% confidence intervals.

	Accuracy	Sensitivity	Specificity	Positive predictive value	Negative predictive value	Kappa
Ordinary light	96.8% (93.8-98.4)	97.2% (93.1-98.9)	96.2% (90.7-98.5)	97.2% (93.1-98.9)	96.2% (90.7-98.5)	0.954 (0.919-0.989)
Simple polarized light	92.0% (88.0-94.8)	84.1% (76.8-89.5)	100% (97.0-100)	100% (96.5-100)	86.1% (79.5-90.8)	0.874 (0.821-0.927)
Compensated polarized light	97.6% (94.9-98.9)	95.5% (89.8-98.0)	99.3% (96.1-99.9)	99.1% (94.8-99.8)	96.5% (92.1-98.5)	0.962 (0.933-0.992)

Diagnoses established by ordinary light microscopy matched conclusions (accuracy) in 242/250 (96.8%) observations. Discrepant cases were crystals missed under ordinary light in 4 cases (3 MSU, 1 CPP), and 4 samples with CPP crystals initially seen but later concluded their absence. Interestingly, lowest accuracy was seen with simple polarization; CPP crystals were not detected in 20 out of 93 observations with CPP (21.5%). The accuracy of compensated polarized light was similar to ordinary light. On 5 occasions no crystals were seen but finally they were present (1 MSU, 4 CPP); on the contrary, CPP was registered in one observation but the conclusion indicated no crystals.

Regarding agreement with the complete protocol, the kappa with simple light is 0.954, similar to compensated polarized light (0.962), while simple polarized light showed the lowest agreement (0.874).

Conclusion: Ordinary light microscopy is enough to correctly reach the majority of diagnoses, with a very high degree of agreement with the complete protocol. Results were comparable to using a compensated polarized microscopy. Thus, if a microscope with polarizer and first-order compensator was not available, using ordinary light would be enough on most occasions. Polarized light microscopy better identifies MSU crystals, but over 20% of CPP crystals were missed at this stage, reinforcing the value of the ordinary light microscopy.

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THU0415

MELTING OF TOPHI WITH LOCAL STEROIDS IN CHRONIC TOPHACEOUS GOUT: AN OBSERVATIONAL STUDY

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Background: Chronic tophaceous gout is usually difficult to treat with urate lowering therapy (ULT) [1]. Faster resolution of tophi has been seen with use of pegloticase [2], but this drug is costly and not widely available. Local steroid use is recommended in acute gouty arthritis but its role in reduction of tophi has not been studied. This study was aimed to see the effect of local steroids in tophi resolution.

Objectives: To study the change in size of gouty tophi with local steroid injection compared to conventional treatment.

Methods: Four crystal proven chronic tophaceous gout patients with multiple tophi were screened and enrolled in the study after taking informed consent. Total 12 tophi in 4 patients were imaged by using Dual Energy Computed Scan (DECT) for their size and volume. All 4 patients were treated with ULT as per recommended dose to achieve target serum uric acid (SUA) level. Six tophi were treated with local steroids injection (methylprednisolone acetate) at two months

interval till complete resolution of tophi. Dose of steroid varied from 10mg to 40mg depending upon tophi size but subsequent repeat doses were same in each tophi. Six tophi not treated with local steroid served as internal control in the same patients. All 4 patients were followed up regularly in out-patient department to monitor treatment response and local side effects if any.

Results: All 4 patients achieved target SUA (<356 µmol/L) at three months of follow up. Six tophi which were treated with local steroids injection clinically had marked reduction in size at 7-12 months of follow up [Table-1], while other 6 tophi which served as internal control had no clinically significant change in size and volume of tophi. DECT was repeated in the same settings to confirm the clinical findings. DECT revealed near complete resolution of 5 tophi [Image-1], and 50% reduction in size of one tophi. Six tophi which were not treated with local steroid had no significant reduction in size in DECT as well. Only side effect noted was skin discoloration in 5 out of 6 injected sites, none of the tophi had infection.

Conclusion: Interestingly this is the first such study to document the use of local steroid in tophi. Thus intralesional steroids can be alternative to pegloticase or surgery where faster dissolution of tophi is required. This observation needs to be explored in large number of patients to calculate the total dose requirement of steroid as per volume and urate burden of tophi. Possible explanation of melting tophi with steroids is breaking down outer fibrous layer of tophi by local steroids which might be acting as barrier in dissolution of urate crystals with ULT.

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Table 1.

	Age/sex	Total Tophi	Treated Tophi	Outcome of treated tophi	Internal control tophi	Duration in months
Case 1	22/M	2	1	Near complete resolution	No Change	7
Case 2	45/F	1	1	Complete resolution	NA	8
Case 3	58/M	5	2	Near complete resolution	No change	12
Case 4	24/M	4	2	Completely resolved=1, 50% size reduction=1	No change	12

Figure 1 a: DECT of Rt foot shows urate crystal deposition at 1st MTP joint and 5th toe. Figure 1b: DECT after 7 months of steroid injection in Rt 1st MTP joint tophi shows almost complete resolution but no change in 5th toe tophi (served as internal control).

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