****

**Fig. S1.** Forest plot of multivariate logistic regression showing possible risk factors for gout patients with CKD.

**Table S1.** The assignment of ultrasound score

|  |  |
| --- | --- |
| Variable | Score |
| Knee joint |  |
| Tophus | 5 |
| Synovial fluid | 2 |
| Ankle joint  |  |
| Tophus | 3 |
| Bone erosion | 7 |
| Synovial fluid | 2 |
| Hypertrophy | 5 |
| First MTP joint |  |
| Double contour sign | 2 |
| Tophus | 9 |
| Bone erosion | 4 |
| Hypretrophy | 3 |

**Table S2.** Anatomical distribution of MSUS findings in patients with and without CKD

|  |  |  |  |
| --- | --- | --- | --- |
| Anatomical site and findings | Gout-CKD (n=89) | Gout+CKD (n=87) | *P* value |
| Knee joint, n (%) |  |  |  |
| Double contour sign | 56(62.9) | 57(65.5) | 0.719 |
| Synovial fluid | 49(55.1) | 47(54.0) | 0.891 |
| hypertrophy | 10(11.2) | 20(23.0) | 0.038 |
| Tophus | 21(23.6) | 26(29.9) | 0.346 |
| Bone erosion | 9(10.1) | 9(10.3) | 0.959 |
| Ankle joint, n (%)  |  |  |  |
| Double contour sign | 47(52.8) | 54(62.1) | 0.214 |
| Synovial fluid | 34(38.2) | 33(37.9) | 0.97 |
| hypertrophy | 10(11.2) | 28(32.2) | 0.001 |
| Tophus | 27(30.3) | 24(27.6) | 0.688 |
| Bone erosion | 18(20.2) | 15(17.2) | 0.612 |
| First MTP joint, n (%) |  |  |  |
| Double contour sign | 58(65.2) | 67(77.0) | 0.083 |
| Synovial fluid | 30(33.7) | 24(27.6) | 0.379 |
| hypertrophy | 34(38.2) | 39(45.3) | 0.338 |
| Tophus | 32(36.0) | 47(59.5) | 0.016 |
| Bone erosion | 39(43.8) | 49(56.3) | 0.097 |

Values are expressed as n (%).

Abbreviation: CKD: chronic kidney disease; DCs: double contour sign; MTP: metatarsophalangeal

**Table S3.** Comparison of baseline characteristics between patients with and without tophi

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Tophi (n=76) | Non-tophi (n=35) | *P* value |
| Clinical and demographic data |  |  |  |
| Males, n (%) | 74(97.4) | 33(94.3) | 0.589\*\* |
| Age, years | 53.3±13.9 | 44.6±15.7 | 0.004 |
| ≥65, n (%) | 17(22.4) | 4(11.4) | 0.268 |
| BMI, kg/m2  | 27.3±3.3 | 28.0±3.0 | 0.286 |
| ≥25, n (%) | 59(77.6) | 29(82.9) | 0.705 |
| Classification criteria score | 15.8±2.7 | 12.2±1.9 | <0.001 |
| Duration of gout, years | 7.0(3.0, 10.0) | 5.0(2.0, 6.5) | 0.008\* |
| Episode in the last year | 6.5(4.0, 9.0) | 3.0(2.0, 4.0) | <0.001\* |
| Gout family history, n (%) | 12(15.8) | 9(25.7) | 0.327 |
| Hypertension, n (%) | 43(56.6) | 13(37.1) | 0.057 |
| SBP, mmHg | 131.9±14.2 | 127.5±9.8 | 0.191 |
| DBP, mmHg | 79.9±10.0 | 81.4±7.8 | 0.542 |
| ACEI/ARB, n (%) | 28(36.8) | 9(25.7) | 0.248 |
| Calcium channel blockers, n (%) | 16(21.1) | 6(11.4) | 0.631 |
| β-adrenergic antagonists, n (%) | 2(2.6) | 1(2.9) | 1\*\* |
| Urate lowering agents, n (%) |  |  | 0.163\*\* |
| allopurinol | 1 (1.3)  | 3 (8.6)  |  |
| febuxostat | 70(92.1)  | 29 (82.9)  |  |
| benzbromarone | 5(6.6)  | 3 (8.6)  |  |
| Anodyne treatment |  |  |  |
| Colchicine, n (%) | 30(39.5) | 8(22.9) | 0.134 |
| NSAID, n (%) | 18(23.7) | 4(11.4) | 0.212 |
| Glucocorticoids, n (%) | 0(0.0) | 1(2.9) | 0.315\*\* |
| Laboratory results |  |  |  |
| Fasting blood glucose, mmol/L | 5.23±0.57 | 5.32±0.56 | 0.524 |
| Glycosylated hemoglobin, % | 5.74±0.53 | 5.72±0.33 | 0.848 |
| Serum creatine, μmol/L | 105.8±35.3 | 86.0±11.1 | 0.002 |
| Serum BUN, mmol/L | 6.59±2.66 | 5.06±1.59 | 0.002 |
| Serum uric acid, μmol/L | 481.7±140.8 | 455.5±111.1 | 0.334 |
| Cystatin C, mg/L | 1.24±0.41 | 0.94±0.27 | <0.001 |
| Estimated GFR, ml/min/1.73m2 | 77.5±27.5 | 95.1±19.4 | 0.001 |
| Dyslipidemia, n (%) | 52(73.2) | 23(76.7) | 0.912 |
| Albumin, g/L | 44.9±3.8 | 46.5±4.3 | 0.067 |
| ALT, U/L | 30.4±20.6 | 38.9±27.6 | 0.077 |
| AST, U/L | 22.8±9.9 | 27.3±12.2 | 0.042 |
| Urine protein, positive (%) | 8(11.3) | 1(3.1) | 0.268\*\* |
| Urinary protein quantitation, g/24h | 0.06(0.033, 0.16) | 0.05(0.03, 0.07) | 0.052\* |
| UACR, mg/g | 13.35(8.80, 25.71) | 13.19(6.36, 22.95) | 0.743\* |
| Erythrocyte, \*10^12/L | 4.68±1.02 | 5.07±0.64 | 0.078 |
| Haemoglobin, g/L | 140.5±19.7 | 148.4±15.0 | 0.059 |
| ESR, mm/h | 23.0(6.5, 34.5) | 13.0(3.5, 32.0) | 0.507\* |
| CRP, mg/L | 2.95(1.08, 7.42) | 7.86(2.34, 45.80) | 0.068\* |

Values are expressed as mean ± standard deviation, median (IQR) or n (%).

\*Mann–Whitney U test

\*\*Fisher’s exact test

Abbreviation: ACEI: angiotensin-converting enzyme inhibitor; ALT: alanine aminotransferase; ARB: angiotensin receptor blockers; AST: aspartate aminotransferase; BMI: body Mass Index; BUN: blood urea nitrogen; CKD: chronic kidney disease; CRP: C-reactive protein; ESR: erythrocyte sedimentation rate; DBP: diastolic blood pressure; GFR: glomerular filtration; IQR: inter quartile range; NSAID: nonsteroidal anti-inflammatory drug; SBP: systolic blood pressure; UACR: urine albumin creatine ratio

**Table S4.** Association between the existence of tophi and renal function decline

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Exposure | Unadjusted OR (95%CI) | *P* value | Adjusted OR (95%CI) | *P* value |
| Existence of tophi | 3.60 (1.402-9.241) | 0.008 | 3.56 (1.382-9.176) | 0.009 |

Abbreviation: CI: confidence interval; DCs: double contour sign