Background: Over the recent years, soluble urokinase plasminogen activator receptor (suPAR) has been described as a valuable indicator of the activation state of the immune system. Our previous work supported that suPAR might be a useful biomarker for identifying systemic lupus erythematosus (SLE) patients with active disease. Urokinase plasminogen activator receptor (uPAR) expression is also induced in podocytes during renal diseases such as focal segmental glomerulosclerosis (FSGS). In addition, levels of suPAR were found to be elevated in paediatric and adult patients with FSGS. Current noninvasive laboratory and clinical measures of lupus nephritis (LN) activity are not sensitive or specific enough to reliably measure the course of LN. Improved, noninvasive biomarkers are needed to accurately detect LN activity.

Objectives: To evaluate suPAR in urine as a potential biomarker of renal system-specific disease activity in SLE.

Methods: A prospective follow-up study was designed. 14 SLE patients with newly diagnosed LN and 31 healthy individuals were enrolled in this study. LN was the leading symptom of all SLE patients. Further organ involvements including arthritis, leucopenia, serositis, fever and rash also occurred at the time of LN diagnosis. 12 out of 14 LN were confirmed by renal biopsy. Urine samples were taken before the initiation of LN induction therapy, and monthly thereafter (6 to 11 times). Global and renal disease activity were defined using the SLE Disease Activity Index 2000 (SLEDAI-2K) and the SLEDAI-2K renal domain score. suPAR concentrations in the urine were measured with the suPARnostic Flex ELISA assay. Non-parametric testing was used for statistical analysis, including the Kruskal-Wallis test and the Mann-Whitney U test.

Results: All urine suPAR levels were elevated in SLE patients with active LN compared with patients with resolved LN and healthy controls (21.75 vs 4.93 and 5.09 ng/mL, respectively, p < 0.0001). suPAR levels were found to be elevated before than after the initiation of LN induction therapy in patients before resolution of active LN (29.46 vs 21.07 ng/mL, p = 0.0122). Prospective follow-up measurements also suggested that urine suPAR levels raised again in patients with a relapse of LN according to SLEDAI-2K renal domain score (n=3; 5.45 vs 15.19 ng/mL, p = 0.0127).

Conclusions: Urine suPAR is a promising LN activity biomarker, given its isolated elevation in active urine in active LN and pronounced decrease with LN improvement. It may potentially become a more convenient alternative to renal biopsy, the current gold standard of LN activity monitoring.

Acknowledgements: Attila Balog was supported by the János Bolyai Scholarship. This work was supported by the GINOP-2.3.2–15–2016–003 research fund.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.2283