UTILITY OF REPEAT KIDNEY BIOPSY IN LUPUS NEPHRITIS PATIENTS: A SINGLE CENTRE EXPERIENCE
Alexandra Vornicu1,2, Bogdan Obrisca 1,2, Alexandru Procop 3, Vlad Herlea3, George Terinte-Balcan 4, Mihaela Gherghiceanu 4, Nicu Caceaune5 and Gener Ismail 1,2
1Fundeni Clinical Institute, Department of Nephrology, București, Romania, 2Carol Davila University of Medicine and Pharmacy, Department of Nephrology, București, Romania, 3Fundeni Clinical Institute, Department of Pathology, Bucharest, Romania, 4“Victor Babes” National Institute of Pathology, Ultrastructural Pathology, Bucharest, Romania and 5Fundeni Clinical Institute, Department of Internal Medicine, Bucharest, Romania

Background and Aims: Given the accumulating evidence of discrepancies between the clinical features and histological lesions in lupus nephritis patients, there is an increasing need for a histology-guided approach in order to optimise the management of these patients.

Method: 13 adult patients with a diagnosis of systemic lupus erythematosus and biopsy-proven lupus nephritis, followed up in the Nephrology Department of Fundeni Clinical Institute in Bucharest, Romania, from 2015 to 2022, which had undergone a repeat per-protocol biopsy at 6 months were included in this retrospective, single-centre study. The objectives of the study were to determine the evolution of the clinical and histological parameters at first and at 6-months repeat-biopsy, their possible associations and their relationship with the primary efficacy renal response (PERR) at 12 months. The National Institutes of Health activity index (AI) and chronicity index (CI) scores were assessed in all biopsies. PERR was defined as proteinuria (g/24 h) ≤ 0.7 g and eGFR ≥ 60 ml/min/1.73 m².

Results: The median (IQR) follow-up was 20 (13.5-34) months. 53.8% were class IV lupus nephritis at the first biopsy. Repeat biopsies were performed after a median time (IQR) of 6 (6-9) months. The majority of the patients received cyclophosphamide and corticosteroids as induction regimen (69.2%) and mycophenolate mofetil and corticosteroids as maintenance regimen (92.3%). PERR was achieved in 61.5% of cases at 12 months. Proteinuria (g/24 h) decreased from the median value (IQR) of 2.3 (1.55-4.3) to 0.4 (0.2-3.1) at biopsy 2 (p 0.02), hematuria (red blood cells/μl) decreased from 33 (11.5-178.5) to 10 (1.75-62) at biopsy 2 (p 0.017) and serum creatinine decreased from 1.18 (0.81-1.48) to 0.9 (0.73-1.07) at biopsy 2 (p <0.001). Serum C3 (mg/dl) increased from 56 (41-76.5) to 103 (84-126) (p <0.001), whereas serum C4 (mg/dl) increased from 10 (4-19) to 22 (11-31) (p <0.001). AI scores decreased from 10 (8.5-13.5) to 3 (2.5-7) (p <0.001) and CI scores increased from 2 (2-3) to 3 (3-5.5) (p <0.001). At repeat biopsy, CI increased in 8 patients (61.5%). Its increase was not predicted by baseline or at the moment of repeat biopsy values of activity and chronicity indices, renal function, hematuria, proteinuria and complement fractions. The type of induction regimen used did not protect against CI increase (p 0.506). The baseline value – median (IQR) of AI (9 (6.5-14.5) vs 10.5 (9-13.75), p 0.596), CI (2 (1.5-2.5) vs 3 (2-4.5), p 0.127), serum creatinine (mg/dl)(1.18 (0.96-1.66) vs 1.03 (0.75-1.36), p 0.316), hematuria (red blood cells/μl) (78 (10.9-1086) vs 29 (7.25-111.5), p 0.622) and complement fractions C3 (mg/dl) (74 (40-104) vs 48.5 (41-71.5), p 0.33) and C4 (mg/dl) (18 (6-23.5) vs 8 (3-15.75), p 0.36) were not associated with the PERR at 12 months. The median value (IQR) of AI (3 (2-9) vs 3.5 (2.25-7), p 0.943) and CI (3 (2.5-5) vs 5 (3-5.75), p 0.42) and CI (3 (2.5-5) vs 5 (3-5.75), p 0.42), hematuria (red blood cells/μl) (36 (22.25-85.5) vs 6.5 (1.48-25.85), p 0.35) and serum creatinine (mg/dl) (1.18 (0.89-1.12) vs 0.77 (0.7-0.9), p 0.13) at the second biopsy were also not associated with the PERR at 12 months. Proteinuria at baseline (g/24 h) (4.6 (2.37-8.1) vs 1.85 (1.16-2.6), p 0.019) and proteinuria at repeat biopsy (g/24 h) (4.6 (1.45-6.1) vs 0.23 (0.17-0.36), p 0.002) were associated with PERR at 12 months. Lower complement fraction C3 at the second biopsy (mg/dl) (123 (104-142) vs 88.5 (74.75-106.5), p 0.036) was associated with the PERR at 12 months and lower serum C4 at the second biopsy (mg/dl) (26 (21-34.5) vs 16 (7-29), p 0.082), had a trend to associate with the PERR at 12 months.
Conclusion: At the second biopsy, the chronicity index increase was not predicted by baseline or at the moment of repeat biopsy values of activity and chronicity indices, renal function, hematuria, proteinuria or the values of complement fractions. The type of induction regimen used did not protect against chronicity index increase. Proteinuria at baseline and at repeat biopsy was associated with PERR at 12 months. Lower complement fraction C3 at the second biopsy was associated with the PERR at 12 months and lower serum C4 at the second biopsy had a trend to associate with the PERR at 12 months.