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Frequency and patterns of direct immunofluorescence positivity in glomerular diseases: a descriptive analysis

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Introduction and objectives: Direct immunofluorescence (DIF) is the gold standard investigation, adjunct to morphological diagnosis, vital to establish the aetiology of glomerular diseases, which enables initiation of treatment to mitigate disease progression. DIF patterns may vary due to geographic variation in renal diseases. The objective of this study was to determine the frequency and pattern of DIF positivity in glomerular diseases.

Methodology: This was a retrospective analysis of renal biopsies with glomerular pathology reported at Colombo South Teaching Hospital in 2020. Biopsies with less than five glomeruli and transplant biopsies were excluded. Morphological diagnoses and frequency and pattern of DIF positivity were documented. Analysis was done using SPSS.

Results: DIF results were available in 392 renal biopsies, and 63.9% (212/392) showed positive DIF results. The most common morphological pattern of renal disease was FSGS, noted in 21.9% (73/392), followed by acute diffuse proliferative glomerulonephritis (ADPGN) in 19.6% (65/392), IgA nephropathy in 12.7% (42), minimal change disease (MCD) in 11.1% (37/392), and lupus nephritis in 10.6% (15/392). In FSGS, IgM was the most common immune deposit present in varying intensity and present in combination with C3 (46.6%;34/73). In MCD, 78.3% (29/37) had no immune deposits. ADPGN had variable immune deposits with IgG predominance in 60% (39/65) and C3 in 83% (54/65). IgA nephropathy had IgA in 90.4% (38/42) and C3 in 78.6% (33/42). Lupus nephritis had all immune reactants in 85.7% (30/35) and variable in 14% (5/35).

Discussion and conclusion: As the electron microscopy facility is lacking in the local setting, awareness of the different immune reactant patterns associated with glomerular diseases is helpful in differentiating glomerular diseases of similar morphology, such as FSGS and MCD. DIF-positive MCD cases were likely to be FSGS. DIF in lupus nephritis is likely to have all immunoreactants.

Keywords: direct immunofluorescence, FSGS, MCD, IgA nephropathy, lupus nephritis

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