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Comparison of mycophenolate mofetil with intravenous cyclophosphamide for induction therapy of lupus nephritis; CMC GN registry

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Objectives: The treatment of lupus nephritis (LN) comprises timely and coordinated immunosuppressive therapy. This study aimed to evaluate and compare the effectiveness of mycophenolate mofetil (MMF) and cyclophosphamide (CYC) in induction therapy of LN.

Methods: This multicenter retrospective study included 71 adult patients with a renal biopsy-confirmed diagnosis of LN class III through V and received induction therapy consisting of MMF and prednisolone (n=63) or intravenous CYC and prednisolone (n=8), and followed up for six months. The primary endpoint was expressed as the percentage of responders, who in turn were defined as the patients after induction treatment who met complete or partial response according to the catholic medical center consensus statement. The secondary endpoints comprised the renal activity component and serum immunological variables.

Results: The primary endpoint was achieved in fifty-three (84.1%) patients receiving MMF and in six (75.0%) receiving IV CYC, with no statistically significant difference between the two groups (p = 0.190). There were no significant differences between the two groups for any of the secondary efficacy end points either. Fewer severe infections occurred among patients treated with MMF and prednisolone.

Conclusions: Our data suggest that the combination of MMF and prednisolone may be an effective regimen as for the induction therapy of lupus nephritis. However, further randomized, prospective studies are needed to prove the effectiveness of MMF therapy in lupus nephritis.

Table 1. Demographics and baseline disease characteristics

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Characteristics	**MMF** (n = 63)	**CYC** (n = 8)	***p*-value**
Age (years; mean±SD)	39.4±13.5	34.8±13.1	0.360
Gender (no., female (%))	55 (87.3%)	6 (75%)	0.346
Renal Biopsy class (no. (%))			
II / II + V	7 (11.1)	0 (0)	
III / III + V	16 (25.4)	0 (0)	
IV / IV + V	35 (55.6)	7 (87.5)	
V	5 (7.9)	1 (12.5)	
Creatinine (mg/dL; mean±SD)	0.8±0.4	1.3±0.5	0.001
MDRD (ml/min/1.73m²; mean±SD)	110.9±44.4	58.7±23.0	0.000
Urine protein-creatinine ratio (g/g; median-IQR)	3.1 (1.6-5.3)	2.5 (2.0-6.7)	0.702
Anti-dsDNA (IU/mL; median-IQR)	47.3 (25.5-151.7)	193.1 (106.0-562.5)	0.213
C3 (mg/dL; mean±SD)	55.7±23.6	43.1±19.7	0.154
C4 (mg/dL; median-IQR)	9.3 (4.9-17.0)	7.9 (3.3-8.9)	0.181

MMF: mycophenolate mofetil; **CYC**: cyclophosphamide pulses; **MDRD**: Modification of Diet in Renal Disease Study; **dsDNA**: double-stranded DNA; **C3**: complement component 3; **C4**: complement component 4; **SD**: standard deviation; **IQR**: interquartile range.

Table 2. Summary of treatment response and change in complement level

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Parameter	**MMF** (n = 63)	**CYC** (n = 8)	***p*-value**
Treatment response			0.190
CR (no. (%))	29 (46.0)	1 (12.5)	
PR (no. (%))	24 (38.1)	5 (62.5)	
TF (no. (%))	10 (15.9)	2 (25.0)	
Change in C3 concentration (mg/dl, median-IQR)	27.0 (8.0-45.0)	42.1 (15.7-68.3)	0.127
Change in C4 concentration (mg/dl, median-IQR)	6.1 (1.0-13.6)	11.2 (1.0-17.3)	0.369

MMF: mycophenolate mofetil; **CYC**: cyclophosphamide pulses; **CR**: complete response; **PR**: partial response; **TF**: treatment failure; **C3**: complement component 3; **C4**: complement component 4