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Clinical Outcomes in Transplanted Kidneys: The Analysis of Biopsy Timing and Indication Biopsy Results

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Objectives : A retrospective analysis across multiple centers was carried out to explore the outcomes of graft kidney biopsies that were clinically necessary and the subsequent impact on graft survival. The objectives were to analyze the biopsy timing relative to the transplant date, the histopathological findings, and the incidence of graft dysfunction.

Methods : The investigation included 414 recipients who underwent biopsies based on clinical indications for their transplanted kidneys within the study timeframe.

Results : The study assessed the variety of histopathological outcomes in transplanted kidneys from the point of transplant to the biopsy. Within the first year after transplantation, Acute T Cell Mediated Rejection (Acute TCMR) was the predominant type of rejection observed. However, beyond the first year, the incidence of Chronic Antibody Mediated Rejection (Chronic ABMR) and Relapsing Glomerulonephritis (Relapsing GN) increased significantly. Excluding those who were lost to follow-up, out of 398 participants, about 37.2% encountered graft loss. Where rejection was noted, Acute TCMR was the most frequent finding among those who retained graft function. However, among participants who experienced graft loss, Acute TCMR (27.7%) was observed, followed by Relapsing GN (18.9%) and Chronic ABMR (16.2%). Specifically, 54.9% of those with Relapsing GN faced graft loss, the highest failure rate among the various histological diagnoses. IgA nephropathy was identified as the most common cause among GN cases, with Focal Segmental Glomerulosclerosis and Membranous Glomerulonephritis following in prevalence.

Conclusions : The findings underscore that after the first-year post-transplant, Chronic ABMR and Relapsing GN become the primary considerations in indication biopsies. Moreover, the presence of Relapsing GN in biopsy outcomes signals a significantly heightened risk of graft failure.

Table 1. Proportion of Indication Biopsy Results Over Time After Transplantation.jpg

	Number (%) of Indication biopsies with each diagnosis			Total
	0 ~ 1 month	1 month ~ 1 year	> 1 year	
Normal	3 (6.1)	7 (5.5)	4 (1.7)	14
Acute TCMR	10 (20.4)	40 (31.3)	42 (17.7)	92
Acute ABMR	4 (8.2)	9 (7.0)	16 (6.8)	29
Chronic ABMR	0 (0)	0 (0)	48 (20.3)	48
Chronic TCMR	0 (0)	2 (1.6)	2 (0.8)	4
GN	0 (0)	6 (4.7)	48 (20.3)	54
Others*	32 (65.3)	64 (50.0)	77 (32.5)	173
Total	49 (11.8)	128 (30.9)	237 (57.2)	414

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Time to biopsy posttransplant (day, (95% CI))	Survived Graft		Failed Graft	
	1121, (915-1327)		2171, (1796-2545)	
Histology	n	%	n	%
Normal	10	4.0%	1	0.7%
Acute TCMR	46	18.4%	41	27.7%
Acute ABMR	18	7.2%	11	7.4%
Chronic ABMR	24	9.6%	24	16.2%
Chronic TCMR	2	0.8%	2	1.4%
GN	23	9.2%	28	18.9%
Others	127	50.8%	41	27.7%
Total	250	100.0%	148	100.0%