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**Clinical Outcome of Kidney Biopsy in Elderly Patients : Multicenter
Retrospective Study**

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Objectives: As the average life span of humans becomes longer, there is increasing interest in diseases of the elderly population. We report the results of kidney biopsy in the elderly population.

Methods: We reviewed the records of kidney biopsy between March 2015 and December 2019 from eight St. Mary hospitals affiliated with the Catholic Medical Center in Korea. Patient demographic data and laboratory data were collected for analysis.

Results: Of the 212 cases, 134 were male and 78 were female patients. The mean patient age was 71.32 (range: 65-90). The mean BMI is 22.52 (range: 16.5-31.7). The mean creatinine is 1.65 (range: 0.36-11.92), the mean glomerular filtration rate is 52.55 (range: 4 -180). The mean spot urine protein/creatinine ratio is 7.17 (range: 0.04-896.7). Except for 13 patients whose reason for the biopsy was not recorded, the most common reason for biopsy is proteinuria (144 patients; 72.4%), followed by decreased renal function (47 patients; 23.6%) and gross hematuria (8 patients; 4.0%). The most common histopathological finding is membranous nephropathy (44 patients; 20.8%) followed by IgA nephropathy (32 patients; 15.1%), focal segmental glomerulosclerosis (30 patients; 14.2%) and minimal change disease (19 patients; 9.0%). Other diseases are subscribed in table 1. Baseline characteristics associated with kidney biopsy results are subscribed in table 2.

Conclusions: Based on our result, follow up studies of the prognosis in elderly nephrotic syndrome patients are needed.

Table 1. Pathology findings in kidney biopsy

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Pathology finding	Patients, n
Membranous nephropathy	44
IgA nephropathy	32
Focal segmental glomerulosclerosis	30
Minimal change disease	19
Crescentic glomerulonephritis	16
Chronic sclerosing glomerulonephritis	11
Amyloidosis	10
Diabetic nephropathy	9
Mesangial proliferative glomerulonephritis	6
Multiple myeloma	6
Lupus nephritis	4
Acute interstitial nephritis	4
Acute tubular necrosis	4
Post infectious glomerulonephritis	3
Arteriosclerosis	3
Light/heavy chain deposit disease	2
Type IV collagen disease	1
Thrombotic microangiopathy	1
Moderate interstitial mononuclear cell infiltration and fibrosis	1
Immune complex-mediated glomerulonephritis	1
Many plasmacytoid and moderate eosinophil cell infiltration in the interstitium	1
Glomerular nephritis with diffuse podocytopathy	1
Focal extracapillary proliferative glomerulonephritis	1
ANCA-associated small vessel vasculitis	1
Acute pyelonephritis	1

Table 2. Baseline characteristics associated with kidney biopsy results

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	All patients, n=212	Membranous nephropathy, n=44	IgA nephropathy, n=32	Focal segmental glomerulosclerosis, n=30	Minimal change disease, n=19
Men (%)	134 (64.6%)	27 (61.4%)	26 (81.3%)	19 (63.3%)	11 (57.9%)
Age, years old (range)	71.32 (65-90)	71.11 (65-88)	71.00 (65-80)	71.47 (65-90)	72.74 (65-82)
BMI, kg/m ²	22.53	23.37	24.21	25.38	25.36
Systolic BP, mmHg	150.00	135.21	126.16	133.29	126.88
Diastolic BP, mmHg	79.33	78.48	75.87	76.61	74.06
Serum Cr, mg/dL (range)	1.65 (0.36-11.92)	1.17 (0.40-4.6)	1.72 (0.49-6.56)	1.55 (0.58-5.14)	1.18 (0.56-2.66)
eGFR*, ml/min per 1.73 m ² (range)	52.55 (4-80)	74.54 (9-158)	58.46 (9-170)	56.90 (9-104)	66.51 (22-146)
Proteinuria** (range)	7.17 (0.04-896.7)	6.81 (0.49-20.01)	3.08 (0.04 -13.47)	7.04 (0.08-45.68)	6.89 (0.26-19.90)
Macroscopic hematuria*, n (%)	111 (52.4%)	21 (47.7%)	26 (81.3%)	15 (50.0%)	10 (52.6%)

BP : Blood pressure; Cr : Creatinine
 * : MDRD
 ++ : spot urine protein/creatinine ratio
 * :Urine analysis occult blood ≥ 2+