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Original Article

The evaluation of kidney biopsy results in the 6 years period: single center experience

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Abstract

Aim: Kidney biopsy is the golden standard method for both diagnosis and determining the therapeutic options in renal parenchymal diseases. In our study, we aimed to evaluate the results of kidney biopsies that have been performed in the last 6 years.
Material and Methods: The results of 202 patients who underwent renal biopsy in our hospital between 2011 and 2017 were retrospectively evaluated.
Results: The mean age of the patients were found as 50.7 ± 15.1 years. The male and female numbers of the patients were 114 (56.4%) and 88 (44.6%) respectively. Proteinuria in 96 patients (47.5%) was the most common indication for kidney biopsy. When we evaluated the biopsy results; 123 (60.9%) of the patients were diagnosed for primary glomerulonephritis, 43 (21.3%) of the patients were diagnosed for secondary glomerulonephritis while 36 (17.8%) of the patients were diagnosed for tubulointerstitial involvement. The most common pathological diagnosis were Focal Segmental Glomerulosclerosis in 40 patients (19.8%) and Immune Globulin A Nephropathy in 38 patients (18.8%) in our patient group who had primary glomerulonephritis.
Conclusion: The most common pathology of the patients who had native kidney biopsy was primary glomerulonephritis. 61.3% of the patients who had diagnosis for Diabetes Mellitus had pathologies other than Diabetic Nephropathy shows the importance of screening any other co-existing pathologies in this group of patients. Uncontrolled use of the drugs accelerates the rate of Tubulointerstitial Nephritis as the primary and co-existing pathological diagnosis.

Keywords: Renal Pathology; Primary; Secondary; Tubulointerstitial; Co-Existing.

INTRODUCTION

Kidney biopsy is an important method to diagnose and determine the therapy of renal parenchymal diseases in nephrology practice. Diagnosing by kidney biopsy may facilitate foreseeing the prognosis and determining the therapeutic options of the disease. Proteinuria, acute kidney injury, isolated microscopic hematuria, systemic diseases that diminishes kidney function, decrease in kidney function and renal allograft dysfunction are the major kidney biopsy indications (1-3).

Various incidence and prevalence rates have been reported from many different geographic areas and countries. Immunglobulin A nephropathy (IgAN) has been shown to be the most common primary glomerulonephritis in Europe, Asia and Australia while focal segmental glomerulosclerosis (FSGS) has been reported to be the most common glomerulonephritis in North America.

In Turkey, there are only a few study that reports the incidence and prevalence rates of renal parenchymal diseases(4-8). In our study, we aimed to find out the characteristics of the patients and to evaluate the biopsy results who received kidney biopsy in the last 6 years period.

MATERIAL and METHODS

The biopsy results of 202 patients, who admitted to our Nephrology Clinic and received native kidney biopsy with various indications, were retrospectively evaluated. All biopsies were performed by taking at least 2 tissue materials with 16 Gauge biopsy needle with synchronous ultrasonography at the Interventional Radiology Unit.

All patients had at least 8 hours of fasting period and serum hemoglobin levels lower than 10 g/dL, platelet level lower than 50000/μL, prothrombin time elongation more than 1.5 for INR and blood pressure measurements higher than 140/90 mmHg were accepted to be relative contraindications for the biopsy procedure. All the biopsy specimens were evaluated by light and immune fluorescent microscopy. At least 7 glomerulus and 1 arteriol in the specimen were the inclusion criteria.

Proteinuria, hematuria, acute kidney injury (depending to the RIFLE criteria) and hematuria with co-existing non-

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nephrotic proteinuria were defined as the major kidney biopsy indications. The pathological classification of the biopsy results were primary glomerulonephritis, secondary glomerulonephritis and tubulointerstitial involvement, respectively. When a secondary biopsy result was defined synchronous to the basic biopsy result in a biopsy specimen, the basic biopsy result was recorded as "biopsy result" and the secondary result was recorded as "co-existing pathology".

Focal segmental glomerulonephritis (FSGS), immunglobulin A nephropathy (IgAN), membranoproliferative glomerulonephritis (MPGN), mesengioproliferative glomerulonephritis (MsPGN), membranous nephropathy (MN), minimal change disease (MCD) were classified as primary glomerulonephritis while lupus nephritis(LN), Good-Pasture syndrome (GPS), Amiloidosis (AA), Diabetic Nephropathy (DMN), Hypertensive Nephrosclerosis (HTNS) and trombotic Microangiopathy (TMA) were classified as secondary glomerulonephritis. Acute tubular necrosis (ATN), acute and chronic active tubulointerstitial nephritis were classified as Tubulointerstitial Diseases. The patients who were diagnosed for diabetes mellitus and hypertension were recorded.

Data were evaluated and analyzed with IBM-SPSS-24 Package Statistics Programme.

RESULTS

The pathologic results of 202 native kidney biopsy results and demographic data of the patients who received kidney biopsy between 2011-2017 were retrospectively recorded and evaluated. The mean age of the patients were 50.7 ± 15.1 (19-83) years, 114 were male (56.4%) and 88 were female (44.6%).

The most common biopsy indication was isolated proteinuria in 96 patients (47.5%). When we add the 8 patients who had proteinuria with co-existing hematuria (4%) and 47 patients who had proteiuria with co-existing acute kidney injury (23.3%), proteinuria was found to be the major and the most common indication of kidney biopsy in our study population. The biopsy indications were summarized in Table 1.

Table 1. Biyopsy Indications

	Patients (n)	Rate (%)
Hematuria	1	0.5
Worsening kidney function (WKF)	50	24.8
Proteinuria	96	47.5
Proteinuria + WKF	47	23.3
Proteinuria + Hematuria	8	4

When we evaluate the pathologies; 123 patients (60.9%) diagnosed as primary glomerulonephritis, 43 patient (21.3%) showed secondary glomerulonephritis and 36 patients (17.8) diagnosed as tubulointerstitial disease. The most common pathologies of primary glomerulonephritis were FSGS for 40 patients (19.8%) and IgA nephropathy (IgAN) for 38 patients (17.3%), respectively.

The prevelence of IgAN was much more common in male gender but the other primary glomerulonephritis showed no difference between the different genders and age groups. When we analyzed the secondary glomerulonephritis; 12 patients

(5.9%) with DMN and 8 patients (4%) with Amyloidosis type AA were the most common diagnoses. All the patients with AA Amiloidosis had a history of Familial Mediterranean Fever (FMF). 7 patients' pathology (3.5%) was repoerted as Lupus Nephritis.

The prevalence of Diabetes Mellitus (defined as the use of oral antidiabetic or insulin therapy) was 15.3% (31 of 202 patients). 12 of 31 diabetic patients(38.7%) who had been performed kidney biopsy showed isolated DMN on kidney biopsy while 61.3% showed other pathologies. In our patient group, 140 of 202 patients (69.3%) were using anti-hypertensive medication whereas only 5 patients (2.5%) showed hypertensive nephrosclerosis on kidney biopsy. All the biopsy results were summarized in Table 2.

Table 2. Biopsy Results

	Patients (n)	Rate (%)
Amyloidosis	8	4
AntiGBMnephritis	1	0.5
AcuteTubular Necrosis	3	1.5
C3nephritis	1	0.5
DMnephropathy	12	5.9
FSGS	40	19.8
IgAN	38	18.8
IgMN	3	1.5
ImmuneComplexN	3	1.5
KLL	1	0.5
Lupus Nephritis	7	3.5
MembranousNP	16	7.9
Myeloma	2	1
MPGN	13	6.4
MsPGN	6	3
Nephrosclerosis	5	2.65
Vasculitis	4	2
Ocsalosis	1	0.5
Pauci-immune	1	0.5
TIN	35	17.3
TromboticMicroangiopathy	1	0.5

The pathological classification of the biopsy results were primary glomerulonephritis, secondary glomerulonephritis and tubulointerstitial involvement, respectively.

When a secondary biopsy result was defined synchronous to the basic biopsy result in a biopsy specimen, the basic biopsy result was recorded as "biopsy result" and the secondary result was recorded as "co-existing pathology". When we analyzed the "co-existing pathologies"; 147 patients (72.8%) had no synchronous pathology while 32

patients (15.8%) showed TIN as co-existing pathology. Background pathologies were summarized in Table 3.

None of the patients had a serious and major bleeding complication that would result for a surgical or blood transfusion. Patients with insufficient material were excluded.

Tablo 3. Co-existing Pathologies

	Patients(n)	Rate(%)
ATN	5	2.5
DMN	5	2.5
IgAN	1	0.5
ImmuneComplexN	4	2
Lipiddeposit	1	0.5
Nephrosclerosis	6	3
TIN	32	15.8
Vasculitis	1	0.5
None	147	72.8

DISCUSSION

Kidney biopsy is the gold standard method for diagnosing the renal parenchymal diseases. The prognosis, therapeutic options and long-term survival are clearly determined in patients who were performed kidney biopsy (1-3).

In patients with DM, kidney biopsy is generally not preferred because of the natural course of the diabetic nephropathy. In diabetic patient group, worsening of heavy proteinuria despite sufficient treatment, sudden worsening of kidney function and deflection from the natural course of the disease are the major indications for performing kidney biopsy. In our study, 31 patients with known DM received kidney biopsy. 12 of 31 patients (38.7%) showed DMN on kidney biopsy while 19 patients (61.3%) showed other pathologies. Our results show that, patients with DM should not be underestimated for worsening of kidney function specially when they show a sudden deflection from the natural course of the disease in the follow-up (9,10).

We showed that, hypertension is the most common systemic disease (69.3%) in our biopsy group that may co-exist with any kind of renal parenchymal disease. If there is no suspect for a rapidly progressive glomerulonephritis, effective blood pressure regulation may help the biopsy procedure to be performed under ideal conditions in short term and maintenance of the disease in long term (11,12).

Similar to the literature, primary glomerulonephritis is the most common pathology in our study group. Most common glomerulonepritis were reported as FSGS and IgAN in our patient group while MN was reported for 7.9% of the patients which was reported more common in some studies in Turkey specially in patients with nephrotic-range proteinuria. The difference may be the result of different time-line of the studies and different pathologists who make the final diagnosis (5-8).

In our study, the most common secondary glomerulonephritis was reported as DMN, while amyloidosis remained as the second that differs from the other recent studies in our country. This finding may be explained by preferring an upper or rectal biopsy for diagnosis of amyloidosis becoming more favorable compared to kidney biopsy in patients who were suspected to have amyloidosis type AA(13).

A co-existing pathology may be found in kidney biopsies. 58.1% of the patients who had a co-existing pathology showed TIN on kidney biopsy in our study. The over-use or abuse of medications specially the non-steroidal anti-inflammatory drugs (NSAID) ,antibiotics and herbal medications in our country may be an acceptable explanation of this result. Besides, this may reflect the inflammatory reflection of the primary pathologic condition(14).

CONCLUSION

In conclusion, kidney biopsy is an invaluable method in the diagnosis of renal parenchymal diseases. The most common indication for biopsy is the proteinuria and when proteinuria with sudden worsening of kidney function are found together, this consists 75% of the biopsy indications. The most common pathologies in our biopsy group were FSGS and IgAN. The presence of other pathologies in 61.3% of the patients with DM should allert us about the importance of co-existing disease in diabetic patients who showed deflection from the natural course of DM nephropathy. The increasing choice of endoscopic biopsy procedures in patients who are suspected for amyloidosis may be the result of decreasing number of kidney biopsies in this group of patients. Uncontrolled use and abuse of the medications and herbals may be the explanation of increasing prevalence of TIN as both biopsy result and co-existing pathology. A national registry system for biopsy results may provide the opportunity to access and interpret the biopsy results nationwide in the future.

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