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Study of histopathological patterns in renal parenchymal disease

Dr. Govind Prasad[1], Dr. Roopak Kumar[2*], Dr. Om Kumar[3]

[1, 2,] Senior Resident, Department of Nephrology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India

[3] Professor & Head of Department, Department of Nephrology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India

Abstract
The causes of renal parenchymal disease are various. Some of them can damage patient's kidney function gradually, which will lead to kidney failure eventually, and they are known as chronic kidney disease. Some can cause patients to have acute kidney injury, and cause severe condition in a short time. The most common causes of renal parenchymal disease are diabetes and high blood pressure. Besides, medicines, bacteria, virus, kidney stone etc, are also common causes of renal parenchymal disease.
The study was planned in IGIMS to assess the Clinical profile and Correlative Histopathological Patterns in Renal Parenchymal Disease.
From the present study it can be concluded that the presence of renal failure regardless of other abnormalities in urinalysis showed a trend toward IgA nephropathy. Membranous nephropathy may have a more varied presentation, with microhematuria and renal failure, than was originally thought and IgA nephropathy presenting as nephrotic syndrome may not be uncommon.

Keywords: clinicopathological correlation, histopathology, renal failure etc.

Introduction
Parenchyma is the medical term used to describe those tissues that characterize an organ as opposed to those tissues which are providing supporting or connective function. It basically related to the functioning of any organ. Its purpose is to infiltrate all the abnormalities that may enter the tissue like cancer cells, calcium, fat, blood, starch or magnesium. The parenchymal disease defines all those diseases that relate to the kidney. The parenchymal disease involves impairment of the kidney in which case the body is unable to control the level of sodium which then results in more water retention. Therefore, parenchymal disease causes hypertension. In such cases, patients suffering from parenchymal disease are unable to respond to any blood pressure lowering medications. Thus patients who have the parenchymal disease are left with no option other than having a kidney transplant or dialysis [1].
The causes of renal parenchymal disease are various. Some of them can damage patient's kidney function gradually, which will lead to kidney failure eventually, and they are known as chronic kidney disease. Some can cause patients to have acute kidney injury, and cause severe condition in a short time. The most common causes of renal parenchymal disease are diabetes and high blood pressure. Besides, medicines, bacteria, virus, kidney stone etc. are also common causes of renal parenchymal diseases. Genetic factor is also a cause of renal parenchymal disease, and polycystic kidney disease is the typical example. What's more, autoimmune disorder is also a major reason of renal parenchymal disease, such as lupus nephritis, purpura nephritis, IgA nephropathy etc.
Kidney is in charge of our internal body balance, and when it is damaged, patients can have many metabolic disorders, which can cause patients to have many health problems.

1. Common complications of renal parenchymal disease: Anemia, Renal osteopathy, Edema, Proteinuria, Hematuria, Cardiovascular diseases, Hypertension, Hyper function of parathyroid gland.
2. Common symptoms of renal parenchymal disease: Fatigue, Itching, Muscle cramp, Abnormal urine color, Swelling, Foamy urine, Frequent urination at night, Joint pain, Hypertension, Loss of appetite, Nausea and vomiting etc.

Medicine is a major part in treating renal parenchymal disease, and hormone medicines are often used to treat inflammatory reaction in kidney. Beside, medicines like glucocorticoid, immunosuppressor and cytotoxic drug are often used in treating renal parenchymal diseases. Blood Purification is another important aspect in treating renal parenchymal disease, which can help remove metabolic wastes and toxins in patient's body. Some blood purification technologies are often used, like plasma exchange, blood perfusion, dialysis, etc. In fact, dialysis is the most common way to prolong patient's lifetime when they are in the late stage of kidney disease. Besides, kidney transplant is another important choice for patients with non-functioning kidneys [2].
The aim of the present study is to analyse the Clinical profile and Correlative Histopathological Patterns in Renal Parenchymal Disease.

Methodology
The study was planned in IGIMS to assess the Clinical profile and Correlative Histopathological Patterns in Renal Parenchymal Disease. The patients visited to Out Patient Department (OPD) and in-patient department (IPD) of IGIMS were considered in the study. All the patients were informed consents. The entire patient's clinical history was collected.
Detailed history taking and clinical examination of patients were carried out and noted. Biochemical investigations were

carried out.

Results & discussion

The data from the 100 patients suffering from Renal Parenchymal Disease were collected and presented as below.

Table 1: Indicates the different types of cases.

Duration	1 year
Total number of patients	100
Male	70
female	30
Mean age (years)	30-50
Minimal change disease cases	14
Focal segmental glomerulosclerosis cases	29
Membranous nephropathy cases	24
IgA nephropathy cases	22
Lupus nephritis cases	11

Table 2: Histopathological correlation of major diseases

	Pure nephrotic %	Nephrotic + microhematuria, %	Nephrotic + microhematuria + renal failure %	Pure subnephrotic %	Subnephrotic + microhematuria, %	Subnephrotic + microhematuria + renal failure %	Nephrotic + renal failure %	Subnephrotic + renal failure %	Total %
Minimal change disease cases	61	35	0	0	0	0	4	0	100
IgA nephropathy cases	9	7	15	1	22	41	2	3	100
Focal segmental glomerulosclerosis cases	24	29	11	3	10	16	0	7	100
Lupus nephritis	0	7	0	11	46	32	0	4	100
Membranous nephropathy cases	29	53	16	0	0	0	2	0	100

Thus, urine sediment and histopathological correlation is useful in predicting the possibility of a disease process. MCD and membranous nephropathy formed the majority of diseases in biopsied pure nephrotic syndrome. The presence of added microhematuria did not seem to decrease the incidence of either disease on the whole.

The presence of renal failure regardless of other abnormalities in urinalysis showed a trend toward IgA nephropathy. Membranous nephropathy may have a more varied presentation than was originally thought and IgA nephropathy presenting as nephrotic syndrome with varying combinations of sediment may not be uncommon.

The prevalence of native kidney disease varies according to the geographic area, socioeconomic condition, race, age, demography, and indication of renal biopsy. We were unable to find corresponding studies classifying native kidney disease according to urine sediment and their histopathological correlation, and as to our knowledge.

In adults, approximately 30% have a systemic disease such as amyloidosis, or systemic lupus erythematous; the remaining are due to primary renal disorders such as MCD, FSGS, and membranous nephropathy [3, 6-8]. Previous studies have shown that upto 50% of cases of membranous nephropathy may have microhematuria [4]. The incidence of acute kidney injury in IgA nephropathy is rare (<5%), but renal failure may be present in established IgA nephropathy. In this setting, the presence of renal failure irrespective of urinalysis finding may be a significant predictor for IgA nephropathy [5].

Conclusions

From the present study it can be concluded that the presence of renal failure regardless of other abnormalities in urinalysis showed a trend toward IgA nephropathy. Membranous nephropathy may have a more varied presentation, with microhematuria and renal failure, than was originally thought and IgA nephropathy presenting as nephrotic syndrome may not be uncommon.

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