

Pattern of Glomerular Diseases in Gombe, Northeastern Nigeria

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ABSTRACT

Background: Glomerular diseases contribute significantly to the burden of chronic kidney disease and end stage kidney disease in Nigeria. Most patients present with end stage kidney disease when the primary diagnosis could not be made coupled with the fact that there is also very low rate of kidney biopsies in our hospitals. In most developed countries, IgA nephropathy is the most frequent histological entity diagnosed. Studies in the United States have found that focal segmental glomerulosclerosis (FSGS) is the leading glomerular disease among African American population. Genetic factors such as having the APOL1 gene have been implicated in the preponderance of FSGS among Africans. Improved kidney biopsy will add to the understanding of the epidemiology of chronic kidney disease in Africa.

Materials and Methods: The study is a cross sectional study carried out at the Federal Teaching Hospital Gombe between October 2016 and May 2017 on consenting adults who had indication for kidney biopsy. All patients were negative for hepatitis B, C and HIV. Kidney biopsyspecimen were stained and examined with light microscopy.

Results: Out of the ten (10) patients biopsied, 70% (7) were male, their ages ranged from 19 to 54 years with a mean of 34.25±12.45 years. Nephrotic syndrome was the commonest indication for renal biopsy (60%). Focal segmental glomerulosclerosis was seen in 50% of patients.

Conclusion: Focal segmental glomerulosclerosis is the commonest glomerular disease in Federal Teaching Hospital Gombe.

KEYWORDS: Glomerular diseases, Northeast, Nigeria

Introduction

Glomerular diseases are responsible for a large part of the burden of chronic kidney

disease in the world¹. In developed countries, where renal biopsies are performed routinely, glomerular diseases constitute 5 to 15% of kidney diseases². In China, glomerular diseases are the most common causes of end stage kidney disease (57.4%)³. In Africa, although chronic glomerulonephritis has been reported to be responsible for 10.2% to 52% of end stage kidney disease, lack of histologic studies has prevented characterization of the pattern of glomerular diseases⁴. Studies in patients with nephrotic syndrome have shown that focal segmental glomerulosclerosis is the most common underlying histologic disorder⁵⁻⁸.

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In Nigeria, clinically diagnosed chronic glomerulonephritis is the commonest cause of end stage kidney disease. Patients often



present late with features of uraemia requiring renal replacement therapy immediately after admission¹⁰.

In Europe and Asia, IgA nephropathy has been found to be the most common cause of GN whereas in Africa Minimal change disease was found to be the most common responsible for 16.5% of causes of GN⁹. In Brazil, focal segmental glomerulonephritis was found to be the most prevalent (19.6%)¹¹.

Renal histology provides information that confirms the diagnosis, determines extent of the disease and gives the prognosis. Unfortunately, renal biopsies are not carried out routinely in most hospitals in the Northeast of Nigeria¹⁰. This study aims to determine the prevalence and pattern of glomerular diseases in Northeastern Nigeria.

Materials and Methods

The study is a cross sectional study conducted in a single centre in Northeast Nigeria to evaluate the pattern of the histologic types of glomerular diseases in native kidneys from kidney biopsies taken from October 2016 to May 2017. All biopsy specimens were analysed at the department of pathology of the federal teaching hospital Gombe. Ethical approval was obtained from the Federal Teaching Hospital Gombe ethics and research committee. For each patient, we documented the sociodemographic, the indication for renal biopsy and histological diagnosis. All patients

had laboratory parameters recorded including; full blood count, prothrombin time, INR, platelets count, electrolytes, urea and creatinine, serological markers for hepatitis B, C and HIV. Renal ultrasound scan was done to demonstrate two normal sized kidneys were present. Informed written consent was obtained for each patient. Kidney tissue was obtained using a size 16 semi-automatic trucut needle under real time ultrasound guidance. The lower pole of the left kidney was localized with the ultrasound and the skin over the marked area was injected with 1% xylocaine. Biopsy tissue was obtained and visually examined. The biopsy specimen were placed in formalin solution and fixed in paraffin. It was then cut, placed on slides, stained and analysed by light microscopy with haematoxylin and eosin, silver-methanamine and periodic acid schiff. Slides were viewed under the microscope at various magnifications by two pathologists. Immunofluorescence stains and electron microscopic examinations are not available in our centre thus the specimens were not subjected to them.

Results

Out of 10 patients that underwent kidney biopsy, 70% (7) were male and 30% (2) were females. Their ages ranged from 19 to 54 years with a mean age of 34.25±12.45 years. Nephrotic syndrome was the major indication for biopsy. Focal segmental glomerulosclerosis was found in 50% of patients.



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Table 1: Sociodemographic characteristics

Variable	
Age (years±SD)	34.25±12.45
Sex	
Male n(%)	7 (70%)
Female n(%)	3 (30%)
Educational status	
None	2 (20%)
Primary	3 (30%)
Post primary	5 (50%)
Body Swelling	
Yes	7 (77.8%)
No	2 (22.2%)
Systolic blood pressure (mmHg)	138.75±40.51
Diastolic blood pressure (mmHg)	90.75±26.16
INR	1.24±0.17
Cholesterol (mmol/l)	6.45±2.45
Albumin (mg/ dl)	24.25±7.4
Proteinuria (g/ day)	6.99±4.96

INR: International Normalized Ratio

Table 2: Frequency of histological diagnosis

Histology	Frequency (%)
Focal segmental glomerulosclerosis	5 (50)
Membranous nephropathy	1 (10)
Post streptococcal GN	1 (10)
Membranoproliferative GN	1 (10)
Global glomerulosclerosis	1 (10)
Haemolytic uraemic syndrome	1 (10)

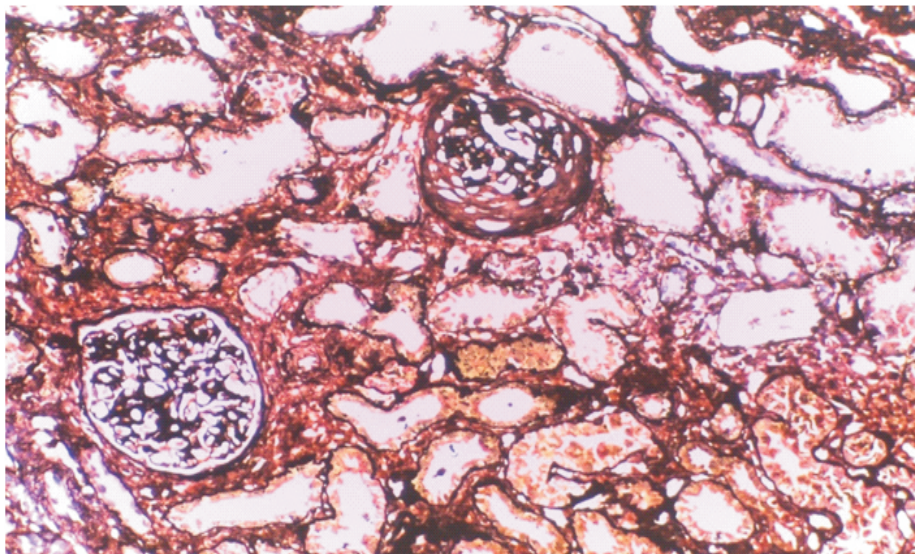


Figure 1: Slide showing focal segmental glomerulosclerosis

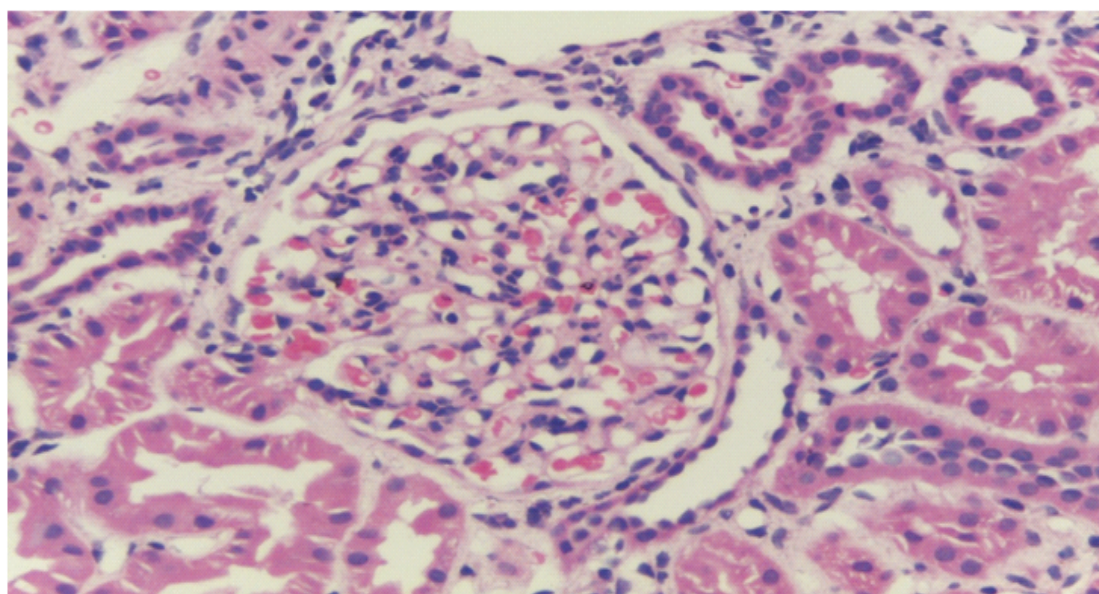


Figure 2: Slide showing proliferative glomerulonephritis

Discussion

This study provided the first histologic characteristics of renal diseases in Northeastern Nigeria. The mean age of our study population is similar to that found by several studies in Africa^{7,9,11}. Majority of our patients were males as seen by Zajjari et al⁷ in Morocco whereas Umeizudike et al¹¹ in Lagos, found that half of the patients were males. This finding may have been due to the higher prevalence of risk factors for kidney diseases among males than females and perhaps the better health seeking behaviour in males.

Nephrotic syndrome was the most common indication for kidney biopsy: 6 patients (60%) whereas AKI of undetermined cause was the indication in 40% of patients. This finding agrees with that of Zajjari et al⁷. Asymptomatic urinary abnormalities were not common indications for kidney biopsy because patients do not have routine investigations.

Focal segmental glomerulosclerosis was the commonest histologic diagnosis seen in 50% of our patients which agrees with more recent studies by Umeizudike et al¹¹. This pattern of glomerular disease has been found to be most common among black Africans who may have genetic predisposition to this disease. In contrast to studies by Okpechi et al⁶, Zajjari et al¹¹ who reported lower proportion of patients with FSGS. This may have been due to racial and genetic differences.

The limitations of this study include the small number of kidney biopsies and the lack of immunofluorescence and electron microscopic examination of the renal tissues.

In conclusion, this study adds to the prevalence of various histologic patterns of GN in our environment and it also shows that FSGS is the most common cause of nephrotic syndrome in our environment.

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