

IS THE ART OF RENAL BIOPSY ON THE DECLINE IN NIGERIA?

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ABSTRACT

Background: Renal biopsy remains the means by which definitive parenchymal kidney disease diagnoses are made. With the renal biopsy, the activity, progression and prognosis of renal parenchymal diseases can be studied with objectivity. We investigated the trend of renal histopathology request in a tertiary hospital in Nigeria over 31 years.

Objective: To determine the trend of renal biopsy requests in one of the biggest tertiary hospitals in Nigeria over a 31-year period (1981-2011).

Methods: We retrospectively analysed all the renal biopsies submitted to the Department of Pathology, University College Hospital (UCH) Ibadan, South-West Nigeria over a 30 year period (1981-2011). Trend of requests of all the biopsies submitted from the Surgery, Paediatrics and Medicine departments was analysed using a test for linear trend. Gender and age groups trends were also studied.

Results: A significant reduction in the rates of renal biopsy request over the 31-year period ($p=0.001$) was noted which is attributed to diminution in requests from the Medicine and Paediatrics Departments ($p<0.001$), while the rates of requests from Surgery Department remain fairly uniform over this period ($p=0.05$). Decrease in biopsy requests significantly cuts across the ages in both genders.

Conclusion: Lack of adequately trained manpower, poor health insurance scheme and lack of facilities may be contributory in renal biopsy requests decline. Adequate efforts should be made towards reviving this important investigative modality in Nigerian tertiary hospitals.

Keywords: Kidney, Biopsy, Histology, Trend test, UCH Ibadan.

INTRODUCTION

Obtaining a trucut renal biopsy and subjecting it to thorough histological studies (which includes: basic Haematoxylin & Eosin staining technique, histochemical, immunofluorescence, immunohistochemical) and ultra-structural studies has been the bed-rock for achieving definitive diagnoses and management of many kidney diseases worldwide¹. The processes involved in obtaining reliable reports involve a multi-disciplinary approach with a maximum involvement of all the highly trained and skilled personnel. The nephrologists, ultrasonographers, pathologists and technologists in the laboratory must be adequately trained if reliable and optimal patient management is desired by any institution. In a centre with a recordable high incidence of renal disease, it is expected that the rate of renal biopsy requests should approximate the

number of patient with the diseases presenting to the hospital. It is therefore worrisome to note that in Nigeria and other African countries, despite reports on rising incidences of kidney diseases²⁻⁶, there seems to be steeply steady decline in kidney biopsies in the region. In order to quantify this assertion, we retrospectively investigated the trend of renal histopathology requests at Pathology Department, UCH, Ibadan.

MATERIALS AND METHODS

All the renal biopsies (including nephrectomies and trucut biopsies) submitted to the Department of Pathology of the UCH, Ibadan, South-West Nigeria and documented in the Surgical Day-Book over a 31-year period (January 1981 to December 2011) were

analysed. Using trend test, we studied the trend of histopathology requests from the Medicine, Paediatrics and Surgical Departments. We also analysed the differences in trend by gender.

Table 1: Specimen distribution by clinical department and gender

	Male n (%)	Female n (%)	Total
Medicine	278 (64.7)	152 (35.3)	430 (100.0)
Paediatrics	230 (57.6)	169 (42.4)	399 (100.0)
Surgery	81 (43.6)	105 (56.4)	186 (100.0)

RESULTS

A total of 119,986 tissue biopsies were received over the 31-year period and only 1015 (0.85%) represented renal tissue from Paediatrics, Medicine and Surgery Departments. The specimens were obtained from 426 females (42.0%) and 589 males (58.0%). Table 1 shows the tissue distribution by clinical department and gender.

Trend test revealed a significant decrease in the overall kidney biopsy requests over 31 years ($p=0.001$), figure 1. The decline is attributed to reduction in requests from the Paediatrics and Medicine Departments

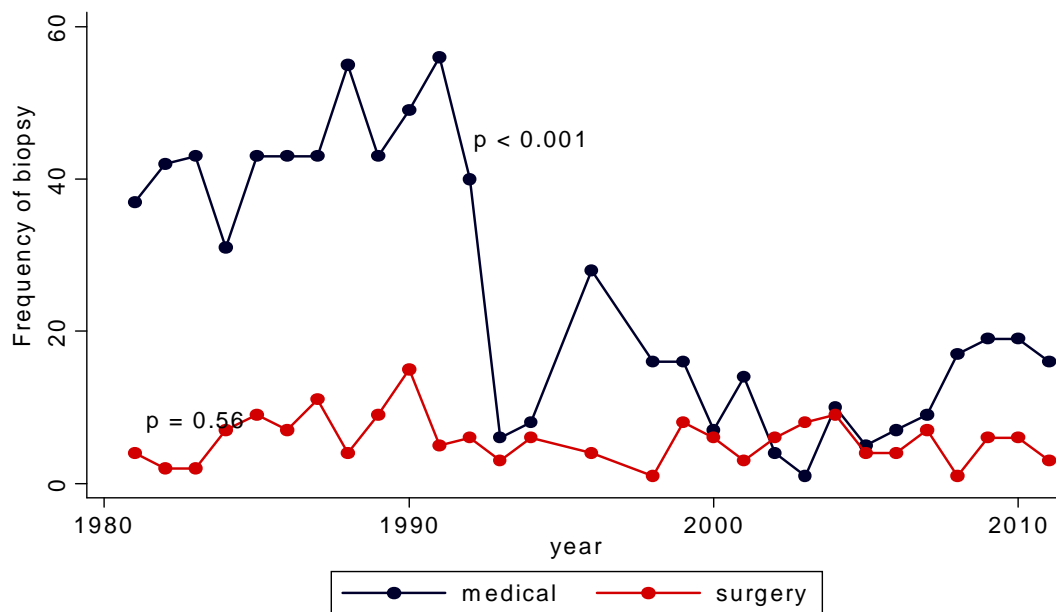


Fig. 1: Trend of renal histopathologic requests over 31 years by clinical department

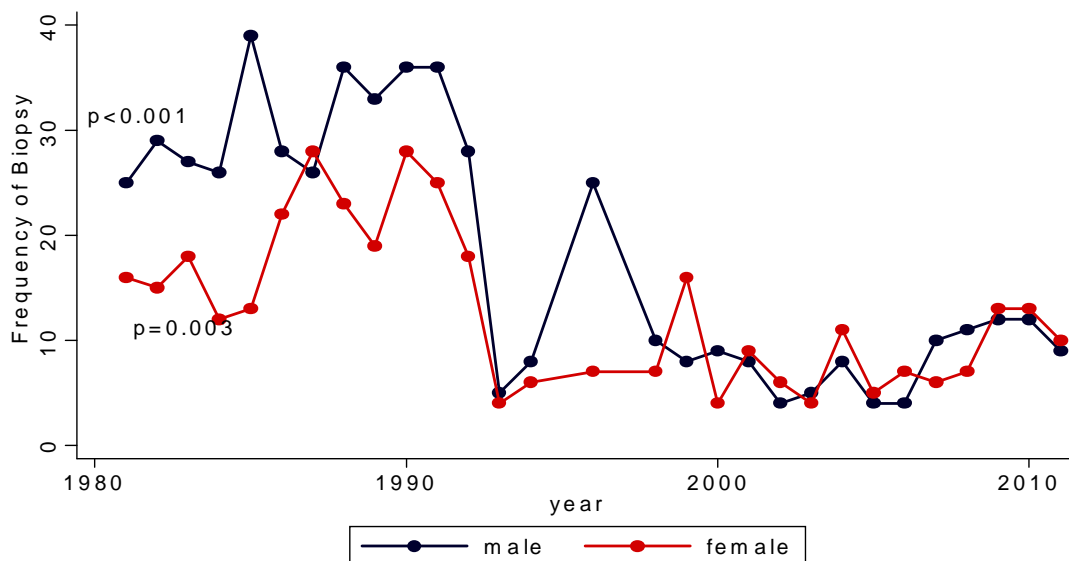


Fig. 2: Gender trends of histopathologic requests in Ibadan over 31 years

($p < 0.001$) while the requests from Surgery Departments remained unchanged over this period ($p = 0.05$). A significant decline across the ages in both genders (figures 2). Before 1993, an average of 10 to 20 renal biopsies was performed in a year, but the value dropped significantly plateauing to average of 1 to 10 per year for more than two and half decades.

DISCUSSION

Renal biopsy subjected to histopathological analysis is the only form of making a definitive diagnosis for patients with kidney parenchymal disease. There are diverse indications for renal biopsy which vary from centre to centre⁷. Disease activity, progression and prognostication are monitored with renal biopsies⁸. Analysis of renal biopsy data is needed for the study of prevalence of biopsy-proven renal disease (BPRD), distribution and variation with respect to gender, race, age, geographic locations, and socioeconomic status. It is also used to determine the usual indications for renal biopsy and for studying the regional epidemiology of glomerular disease in a particular geographical region. The understanding of the utility of renal biopsy which acts as a template for future research into renal parenchymal disease cannot be over emphasized. Unfortunately, this single most important diagnostic tool seems to be gradually going into extinction in Nigeria even in the face of rising incidence of renal parenchymal disease in Nigeria⁹. This index study shows that before 1993, an average of 15 to 20 renal biopsies per year were performed by both the Medicine and Paediatrics Departments of UCH, Ibadan. This value dropped sharply after 1993 to as low as one to ten biopsies per year in average till 2011. What could be the cause of this persistent drop in biopsy rate at the University College hospital (UCH) is a subject for further studies.

The UCH, Ibadan is strategically located in Ibadan. The Hospital started in 1948 but was legally backed by an act of parliament in November 1952. The University College Hospital, Ibadan was initially commissioned with 500 bed spaces in 1957 after the completion of the physical structures, currently the hospital has 850 bed spaces and 163 examination couches. The current rates of bed occupancy ranges from 55-60%. It is therefore, worrisome to believe that renal biopsies would keep declining instead of increasing¹⁰.

In Nigeria, there are documented evidences that suggest a consistent rise in incidence of kidney diseases. Various authors have specifically reported that chronic kidney disease (CKD) are on the increase in younger and old age groups¹¹. Other countries in the world have also shown evidences of increase in CKD cases

irrespective of the age groups and sexes. In the United States of America, the prevalence of End State Renal disease (ESRD) among blacks is high vis-à-vis other races. With this information, it may be inferred, owing to the facts that there are no reliable data in kidney disease burden in Africa, that there may be a high prevalence of ESRD in Africa as a whole. In Nigerian, adults with CKD, glomerulonephritis and hypertension were identified as the common causes, while glomerulonephritis and posterior urethral valves were seen as the common causes in children while diabetes and hypertension were common causes of CKD in the United States of America. It is however, expected that increase disease prevalence in a society will in a way lead to increase in number of patients seeking medical attention and by extrapolation increase in demand for laboratory investigations specific for the patient care optimization. Surprisingly, we found a steady decline in renal biopsy despite a consistent report on increase in renal diseases in Nigeria. This decline in request for biopsies may not be unconnected to the limitation in access to renal replacement therapy (RRT) in Nigeria and a high mortality rate being recorded among individuals with CKD. Currently, there is paucity of training and experience on treatment of patients in Nigeria. Renal transplantation which is adjudged the best form of RRT in terms of cost and quality of life has a less than 1% utilization in Nigeria¹². The University College Hospital Ibadan is one of the Hospitals where renal transplantation is done in Nigeria and it is surprising to note that renal biopsy rates were higher during the pre-renal transplantation era than this period when the hospital could afford the best form of RRT.

One key factor that influences limitation to total health care of CKD patients is the fact that patients pay for every form of medical care out-of-pocket, Arije *et al* reported¹³. Another factor negating the efficacy of health care delivery is the decline in number of trained and skilled personnel with clinical and diagnostic dexterity in managing renal patients. In those countries that have experienced reduction in CKD, the evidence appears to suggest that overall; they have adequately trained personnel, adequate funding and health policies that promote efficient healthcare delivery to the citizenry¹⁴.

CONCLUSION

There is need to perform further studies on the factors affecting the decline in renal biopsy requests in Nigeria. Lack of adequate man-power, facilities and political will may not be unconnected to the steady decline in renal biopsy even in the face of increase in renal diseases in Nigeria.

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