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Histopathological patterns of renal disease at Helen Joseph Hospital, South Africa: a 5-year retrospective review

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ABSTRACT

Introduction: The prevalence of chronic kidney disease and kidney failure has been on the rise globally. Early detection and appropriate management of renal disease is imperative for both patient outcomes, as well as to lessen the financial burden on the health sector which in South Africa is already resource constrained. Due to the paucity of data on histopathological patterns of renal disease in South Africa, this research was undertaken to assist with management of renal disease by establishing the spectrum of disease.

Objectives: The primary objective of this study was to describe the relative frequency of native kidney disease diagnosed at Helen Joseph hospital on renal biopsy.

Methods: A retrospective audit was undertaken of all patients that underwent native kidney biopsy at Helen Joseph hospital in Johannesburg during the period 1 January 2014 to 31 December 2018. Inclusion criteria for this study were: adults over the age of 14 and specimens with a definitive pathological diagnosis. Renal allograft biopsies were excluded. The following data was recorded for each patient: age, gender, ethnicity, indication for biopsy, urine protein: creatinine ratio, urine (microscopy, culture and sensitivity), blood results (creatinine, GFR, HIV status, CD4 count) and histopathological diagnosis.

Results: Data from 205 patients was extracted from clinical records. The cohort demonstrated a slight female preponderance (54.15%), with a median age of 36 years and of predominantly black ethnicity (82.93%). The most common primary glomerular diseases were focal segmental glomerulosclerosis (14.63%), membranous glomerulopathy (8.29%), minimal change disease (5.37%) and membranoproliferative glomerulonephritis (4.39%). The most common secondary glomerular diseases were lupus nephritis (26.83%), HIV associated nephropathy (10.24%), Hypertensive change (7.32%) and diabetic nephropathy (4.88%). Nephrotic syndrome was the most frequent indication for renal biopsy with 38.54%, followed by unexplained renal dysfunction with 36.10%, asymptomatic urine abnormalities 16.58% and the least frequent being nephritic syndrome with 8.78%. Certain glomerular diseases appeared to show age clustering, with proliferative lupus nephritis tending to affect younger

patients whilst membranous glomerulopathy was more common in older patients. A significant difference in the frequency of histological diagnoses was observed between ethnicities, with HIV associated nephropathy and proliferative lupus nephritis occurring more often in people of black African ethnicity. Lupus nephritis was statistically significantly more frequent amongst females ($p<0.001$). Results showed that (76.36%) of all lupus nephritis were female as compared to (23.64%) which were males. Males had a higher frequency of hypertensive change, diabetic nephropathy and membranoproliferative glomerulonephritis.

Discussion: NS was the most frequent indication for renal biopsy in this study and has been reported to be the most common indication for renal biopsy worldwide (10). LN was the most common histological finding overall and probably reflects the low threshold for renal biopsy in SLE patients as proteinuria of more than 500mg/day and / or deteriorating renal dysfunction are considered as indications for renal biopsy in these patients.

When comparing the frequency of native kidney disease by age in this study, it was found that LN, FSGS and ATN were more frequent in younger patients whilst primary MGN, DN and hypertensive change were more common in older patients. The global population of the elderly is steadily increasing which translates into more elderly patients with acute and chronic diseases and hence the increased frequency of DN and hypertensive change in this category (43). This can also be attributed to the fact that the renal effects of these diseases take time to manifest so they are more likely to be detected in older patients. In this study, it was found that males had a higher frequency of hypertensive change, DN and MPGN.

NS (47.62%) and unexplained renal dysfunction (52.38%) were the most frequent indications for biopsy in patients with HIVAN. This reflects the significant proteinuria associated with HIVAN. Unexplained renal dysfunction, which included AKI and CKD, was the most frequent presentation in patients with HIVAN (52.38%), hypertensive change (60%) and DN (80%). This probably reflects the significant target organ damage associated with these diseases as well as delayed presentation due to progressive asymptomatic injury and hence poorer renal functions at presentation.

Conclusion: The data attained in this study is an important contribution to the patterns of renal disease particularly in the South African context. These findings could assist in the early detection and appropriate management of renal disease which would ultimately result in improved patient outcomes and decrease the financial burden on the health sector.