REVIEW ARTICLE

Pattern of Glomerulonephritis in Nigeria and Challenges Faced in Treating It

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ABSTRACT

Glomerulonephritis is one of the leading causes of chronic kidney disease in Nigeria. The pattern of glomerulonephritis is said to be different from other parts of the world which can be attributed to the prevalence of *APOL1* gene in the black population and prevalence of tropical diseases. Treating glomerulonephritis in Nigeria can be challenging due to poor awareness and understanding of the disease, limited access to health care facility and lack of trained nephrologist. Possible solutions to this problems include creating awareness and education of the populace, partnering with NGOs to subsidize treatment and training of Nephrologist.

Keywords: Challenges, patterns, glomerulonephritis, Nigeria

Glomerulonephritis (GN) is a disease that affects the kidneys, specifically the glomeruli, which are the tiny blood vessels that filter waste and excess fluids from the blood.[1] The disease is common in Nigeria, where it is one of the leading causes of chronic kidney disease (CKD).[2,3] The pattern of GN in Nigeria is distinct from that in other parts of the world, and treating it presents several challenges. Here is what you need to know.

PATTERN OF GLOMERULONEPHRITIS IN NIGERIA

Glomerulonephritis in Nigeria has a unique pattern compared to other parts of the world. According to studies, the most common type of GN in Nigeria is focal segmental glomerulosclerosis (FSGS).[3,4] In contrast, IgA nephropathy is the most common type of GN in many other parts of the world.[5,6]

There are several factors that contribute to the unique pattern of GN in Nigeria. These include genetic factors, infectious diseases and environmental factors such as exposure to toxins and pollutants.[4]

More than 600 genes have been implicated in kidney diseases such as FSGS, IgA nephropathy and membranous nephropathy just to mention a few.[7]

Of note is the *APOL1* gene, which is associated with increased risk of CKD and is predominantly higher in Blacks.[7,8]

In a study done by Kopp et al, it was seen that *APOL1* gene increased the risk of FSGS by 17 folds, risk of human immunodeficiency virus-associated nephropathy (HIVAN) by 29-fold along with rapid progression to end-stage kidney disease (ESKD).[9]

Infections like HIV, tuberculosis, hepatitis B and C are said to be endemic in Africa, especially in Nigeria,[10-12] which can lead to HIVAN, renal amyloidosis, membranous and membranoproliferative GN, respectively.[13-16] Tropical diseases like schistosomiasis, onchocerciasis and lymphatic filariasis have also been associated with membranoproliferative GN.[17,18]

In some areas of Nigeria like Yobe, exposure to toxins and heavy metals has been shown to correlate with the incidence of CKD in the region.[19] Ojo et al[20] found the same trend among CKD patients attending outpatient clinic at Owo; hence, advocating that the sources of this exposure be identified and eliminated.

CHALLENGES FACED IN TREATING GLOMERULONEPHRITIS IN NIGERIA

Treating GN in Nigeria presents several challenges. The following are some of the most significant challenges (Table 1).

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Table 1. Challenges Faced in Treating GN in Nigeria

Challenges
Limited access to health care
Lack of trained nephrologists
Limited availability of medications
Poor awareness and understanding of the disease
Poor infrastructure

- **Limited access to health care**: Access to health care is limited in many parts of Nigeria, particularly in rural areas.[21,22] This makes it difficult for patients with GN to receive timely and appropriate care, which can lead to complications and worsen the prognosis.[23]
- **Lack of trained nephrologists**: There is a severe shortage of trained nephrologists in Nigeria, which makes it challenging to provide specialized care for patients with GN.[24] Many patients are treated by general practitioners who may not have the expertise or experience to manage the disease effectively.[25]
- **Limited availability of medications**: The cost of medications is a significant barrier to treatment in Nigeria. Many patients cannot afford to buy the drugs they need, and even when the medications are available, they may be of poor quality or counterfeit.[26] Drugs like tacrolimus, mycophenolate mofetil (MMF), cyclosporine and rituximab used in some cases of GN, are expensive for the average Nigerian patients, who need it for treatment.
- **Poor awareness and understanding of the disease**: There is limited awareness and understanding of GN among the general population and even some health care professionals in Nigeria. This can lead to delayed diagnosis and inappropriate treatment, which can worsen the prognosis.[25,27]
- **Poor infrastructure:** The health care infrastructure in Nigeria is inadequate, with many hospitals lacking the necessary equipment, facilities and personnel to provide quality care.[28]

Kidney biopsy is critical in the diagnosis of GN; unfortunately the cost of procedure and standard histologic analysis makes it impossible for many patients to be able to afford it.[29] This can hinder the delivery of appropriate treatment for patients with GN.

Genetic testing should be considered in patients with a positive family history, early age of onset of renal impairment and presence of extrarenal symptoms as they have a high likelihood of having a monogenic kidney disease.[7]

However, genetic testing facilities are not readily available and expensive in our environment.[30] Early diagnosis with genetic testing has been shown to be helpful in showing down progression of CKD and also donor workup in high-risk families; however, our patients are not able to benefit from its advantages.[7]

WHAT IS THE WAY FORWARD?

Kidney Biopsy

With political will and relationship with sister organizations, standard local laboratories that can analyze kidney biopsy samples using at least 2 out of the 3 recommended methods (light microscope, immunofluorescence, electron microscope), will go a long way in reducing cost. This will put a stop to sending samples out of Nigeria for analysis, which comes with a huge cost.

Government should encourage local industries to make the biopsy needles locally to also reduce cost. Increasing the number of biopsies done yearly will go a long way in improving the skills of the nephrologists and also presents an opportunity to train nephrology trainees.

Immunosuppressive Medications

Till date, drugs like tacrolimus, MMF, rituximab and many more, are shipped into Nigeria as it is not yet locally manufactured by pharmaceutical companies in Nigeria. Because of the increasing use of these medications and the increasing number of kidney transplants,[31] government should support local pharmaceutical companies in partnering with international organizations to set up companies that can manufacture these drugs locally.[28]

Inaxaplin, a novel small molecule inhibitor of *APOL1* channel has been demonstrated to reduce proteinuria in patients with *APOL1*-associated FSGS.[32]

This is likely to have impact on the incidence of GN; however, cost will remain a major barrier in getting it across to patients in Nigeria that will benefit from it.

AWARENESS AND TARGETED EDUCATION

Awareness and education by the nephrology community is key so as to improving health seeking behavior of the population and raise the index of suspicion of non-nephrologist for prompt referral of GN patients to the nephrologist.

CONCLUSION

In conclusion, the pattern of GN in Nigeria is distinct from that in other parts of the world, and treating it presents several challenges. Limited access to health care, a shortage of trained nephrologists, limited availability of medications, poor awareness and understanding of the disease and poor infrastructure are some of the challenges that need to be addressed to improve the management of GN in Nigeria. Addressing these challenges will require a concerted effort from policymakers, health care professionals and the general public.

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Recurrence Risk of Adverse Pregnancy Outcomes

Around 40% of women who have had an adverse pregnancy outcome (APO) in their first pregnancy also experienced an APO during their second pregnancy, suggests a study presented February 13, 2024 at The Pregnancy Meeting, the 44th Annual Meeting of the SMFM.[1]

This study sought to determine factors that are present early in the first pregnancy and are potentially associated with the occurrence of APOs in a second pregnancy.

Researchers examined data of 2,830 women from the Nulliparous Pregnancy Outcomes Study: Monitoring Mothers-to-be Heart Health Study (nuMoM2b HHS). Women who had experienced two pregnancies lasting at least 20 weeks each were included in the present analysis. The nuMoM2b HHS investigated the link between pregnancy problems and heart disease and includes nulliparous pregnant women from the early stages of their first pregnancy through delivery followed by an in-person visit 2 to 7 years after delivery.

Various demographic, clinical and laboratory variables from the first trimester of the first pregnancy were evaluated as potential risk markers for APOs, which referred to a range of complications that can occur during pregnancy, including hypertensive disorders (such as pre-eclampsia), preterm birth (delivery before 37 weeks), delivering a baby who is small for their gestational age (less than fifth percentile), fetal demise (stillbirth) or gestational diabetes. Logistic regression was used as the statistical method to assess the association between these risk markers and adverse outcomes in the second pregnancy while controlling for the APOs in the first pregnancy.

The mean time between pregnancies for the included participants was 2.9 years. Overall, 32% participants had experienced an APO in their first pregnancy; of these, 40% also experienced an APO in their second pregnancy. Among those without an APO in their first pregnancy, 15% had an APO in their second pregnancy.

Several markers from the first trimester of the first pregnancy were associated with the occurrence of APOs in the second pregnancy. These markers include BMI, blood pressure and cardiometabolic serum analytes. Race/ethnicity was also found to influence the recurrence risk of APOs with the highest risk observed in non-Hispanic Blacks.

This study has identified various factors in the first pregnancy, which are associated with APOs in a second pregnancy. Since some of these markers are modifiable, it suggests that interventions targeting these factors could potentially reduce the risk of APOs in subsequent pregnancies. Since the impact of prior APOs on the risk of recurrence of APOs in subsequent pregnancies varied among different racial and ethnic groups, it is important to consider such factors in prenatal care and risk assessment.

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