Scientific Research Publishing

Open Journal of Pathology, 2023, 13, 224-228
https://www.scirp.org/journal/ojpathology
ISSN Online: 2164-6783
ISSN Print: 2164-6775

Lesions Superimposed by Traditional Medicine on Renal Biopsies in Senegal

Cherif Mouhamed Moustapha Dial[1], Toni Djibrilla Gani[2], El Hadji Fary Ka[3], Abdou Niang[3], Boucar Diouf[3]

[1]Pathology Laboratory of the Idrissa Pouye General Hospital, Dakar, Senegal
[2]Reference General Hospital, Niamey, Niger
[3]Nephrology Department of Aristide le Dantec Hospital, Dakar, Senegal
Email: dialcherif@yahoo.fr, djibrilem@yahoo.fr, efaryka@yahoo.fr, niangabdou@yahoo.fr, diboucar@gmail.com

How to cite this paper: Dial, C.M.M., Gani, T.D., Ka, E.H.F., Niang, A. and Diouf, B. (2023) Lesions Superimposed by Traditional Medicine on Renal Biopsies in Senegal. *Open Journal of Pathology*, **13**, 224-228.
https://doi.org/10.4236/ojpathology.2023.134023

Received: August 11, 2023
Accepted: October 15, 2023
Published: October 18, 2023

Abstract

Traditional African medicine products are responsible for kidney damage that baffles both nephrologists and pathologists. Renal biopsies reveal acute or chronic inflammatory changes that cannot be explained by the progressive stage of the basic lesion of the nephropathy. The aim of this study is to analyze the lesions superimposed on 73 kidney biopsies from patients who took traditional herbal medications to treat the symptoms of kidney disease.

Keywords

Nephropathy, Traditional Medicine, Pharmacopoeia, Senegal

1. Introduction

Traditional pharmacopoeia is widely used in Senegal and elsewhere in Africa to treat various pathologies and symptoms. The products of the pharmacopoeia are diverse and come from different parts of plants. Their indications are varied. A recent study estimates that 19.7% of patients followed in nephrology have used these treatments which sometimes have an unfavorable impact on the basic state of nephropathy and the progression of the disease [1].

We listed the lesional aspects of these products on 73 renal biopsies in the management of patients followed in the nephrology department.

2. Patients and Methods

Renal biopsies are carried out on patients in the nephrology department of the Aristide le Dantec hospital in Dakar. The samples for optical microscopy ex-

amination are preserved in AFA (Alcohol-Formol-Acetic) and the samples for immunofluorescence study are delivered to the laboratory in Michel's liquid. The pathology laboratory of Idrissa Pouye general hospital carried out the histopathological technique, immunofluorescence and reading. In three years, Seventy-three (73) kidney biopsies are involved, coming from patients who consumed traditional medications before their biopsy. Pharmacopoeia is often used before nephrological treatment, but also in parallel with it.

3. Results

The seventy-three renal biopsies involved ten (10) women and sixty-three (63) men. The average age is 33 years, and the extremes 3 and 69 years. Their clinical signs were dominated by nephrotic syndrome (NS) in 72% (53 cases). NS was associated with hypertension in 16 cases (21.9%). Renal failure was found in 24 cases (32%). The results of renal biopsies showed focal segmental glomerulosclerosis (FSGF) as the main lesion with 41 cases (56%). They were followed by lipoid nephrosis with minimal glomerular lesions in 7 cases, extra-membranous glomerulonephritis (6 cases), and other less frequent renal diseases.

Several lesions overlapped and were not explained by the basic nephropathy especially the acute aspects (Table 1). Tubular necrosis was often found in 58 biopsies, or 79% in our sample. Tubular epithelia were destroyed, abrasive, with denudation of the tubular basement membrane and epithelial cells were sometimes reduced to debris in the dilated tubular lumens (Figure 1). Interstitial inflammation associated with variable intensity in 43 biopsies, or 58%, with tubulitis lesions in 5 cases, that is to say the penetration of leukocytes into the epithelium of the tubules, causing alterations in the epithelial cells. The interstitial

Table 1. Acute renal lesions caused by herbal medicine.

Acute lesions	Tubular epithelial necrosis	Interstitial inflammation	tubulitis	Tubular epithelial vacuoles
Workforce	58	43	7	7
pourcentages	79	58	9	9

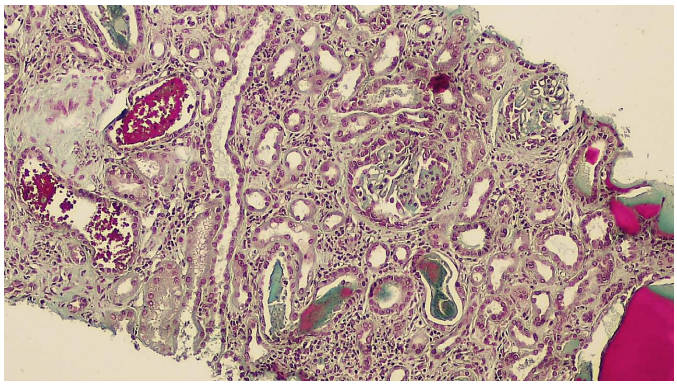

Figure 1. Œdema and epithelial tubular necrosis. Mild magnification 200×. Trichrome of Masson.

infiltrates were made up of lymphocytes, plasma cells and more rarely macrophages. Tubular epithelial vacuoles were also observed in 7 biopsies (9%). These vacuoles are large, single or small and numerous in the cytoplasm of epithelial tubular cells (Figure 2). Chronic tubulointerstitial lesions associating interstitial fibrosis, tubular atrophies and a lymphoplasmacytic infiltrate are described in 25 biopsies (34%) as described in Figure 2. Atherosclerotic lesions were found in 15 biopsies (20%). Certain particularities were found in two cases: edematous detachment of Bowman's capsule and tubular basement membranes, ischemia of the flocculus, glomerular thrombotic microangiopathy and vacuolization of podocytes (Figure 3, Figure 4).

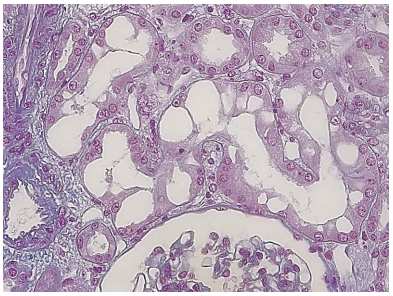

Figure 2. Vacuolation of tubular epithelial cells. Magnification 300×. Trichrome of Masson.

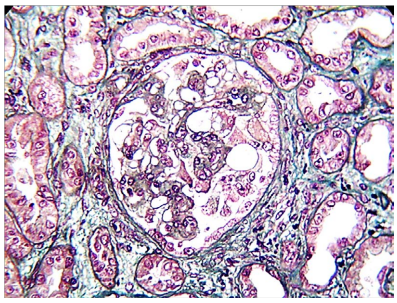

Figure 3. Glomerule showing vacuolized podocytes. Œdemas of interstitium. Mild magnification 200×. Trichrome of Masson.

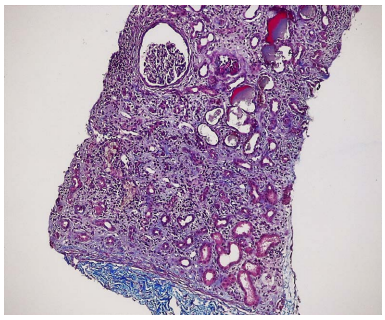

Figure 4. Renal biopsy sample showing glomerular ischemia, interstitial fibrosis with atrophic tubular and epithelial tubular necrosis. Low magnification 150×. Trichrome of Masson.

4. Discussion

Traditional medicine is used more often by men than women, as other studies have found [1]. Pharmacopoeia products sometimes constitute the first therapeutic option, they are also alternatives to the recurring symptoms of kidney disease. Edema is among the most common events leading to pharmacopoeia use, and there are several traditional products geared toward resolving edema. Questioning patients revealed certain plants used for the treatment of edema. According to our investigation, these are the following plants: *Anona senegalensis*, *Combretum glutinosum*, *Detarium microcarpum*, *Piliostigma reticulatum*, *Moringa oleifera*, *Ricinus communis*. These treatments are available from traditional healers.

Other symptoms such as high blood pressure have also motivated the use of several pharmacopoeias: *Cassia sieberiana*, *Combretum micranthum*, *Guiera senegalensis*, *Piliostigma reticulatum*, *Ricinus communis*, *Mangifera indica*, *Strichnos spinosa* [1] [2].

It is estimated that there are more than 14 families of products mentioned in the Senegalese pharmacopoeia against the symptoms of kidney disease [3] [4] [5].

The duration of herbal medicine varied from a few days to several weeks. According to a nephrology study, the average duration of exposure was 57 days to a maximum of 47 months [1].

Clinically, signs of renal failure are found in 32% of cases, unexplained by the stage of development of the nephropathy. Gold had shown that pharmacopoeia was responsible for renal failure in black subjects [6].

Indeed, the renal lesions caused by the use of these products detected in the biopsies are dominated by acute tubular necrosis which affected 79% of the sample, while the basic nephropathy is essentially not advanced. The direct cytotoxic effect on tubular cells was evident and it was sometimes noted that the persistence of vacuoles led to degradation of the cell cytoplasm. Tubular necrosis is usually reversible if toxic exposure is stopped [7].

The interstitial infiltrate was also common in 58%, it is mainly composed of polymorphic leukocytes and lymphocytes, plasma cells, sometimes histiocytes. These infiltrates are sometimes aggressive on the tubules causing tubulitis of variable intensity, often moderate (5 cases). And they seem to play an immunological mechanism, as in the action model of antibiotics and anti-inflammatories [8].

Chronic interstitial fibrous lesions represented 34% of renal biopsies and accounted at least in part for the toxic action of traditional medicines. Fibrosis is the feared development, associated or not with an inflammatory infiltrate. It was responsible for chronic tubulointerstitial kidney disease with irreversible mutilation [9]. These tubulointerstitial lesions are less severe and more varied in their appearance than those described in Chinese herb aristolochic acid nephropathy (AAN). We have indeed observed acute and chronic tubulointerstitial lesions,

while AAN presents a constant interstitial fibrosis more marked at the level of marrow and frequently epithelial atypia [10]. On the other hand, phytotoxic lesions mimic those of an immunosuppressive treatment such as Cyclosporine, and the associated chronic vascular lesions, observed in 20% of samples, could support a similar mechanism.

Glomerular abnormalities have been described in severe cases, fibro-edematous detachment of Bowman's capsule associated with significant podocytosis vacuolation, ischemia and collapse of the flocculus are described on a biopsy of 55 year old patients without retinopathy caused by phytotherapeutic products.

5. Conclusion

The changes superimposed on the basic nephropathy lesions called watered are alterations sometimes unexpected for pathologists. We must know how to think about it even in the absence of admission of the use of the pharmacopoeia by patients. These medicinal plant products could certainly have as yet unknown benefits in nephrology.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Gani Tondou, D. (2012) The Nephropathies Called Watered: Epidemiologic Aspects and Anato-Mo-Clinic on a Group of 375 Biopsy Punctures Performed in Dakar from January 1st, 2010 to August 31st. *Mémoire spécialisation en Néphrologie*.

[2] Tijani, M.A., Dieng, C., Faye, B. and Diouf, A. (1993) Study of the Anti-Inflammatory Activity of Khaya Senegalensis *in Vivo*. *Medicinal Plants and Phytotherapy*, **26**, 404-409.

[3] Laliberte, M.C., Norrmandeau, M., Lord, A., Lamarre, D., Cantin, I., Berbiche, B., *et al*. (2007) Use of Over-the-Counter Medications and Natural Products in Patients with Moderate and Severe Chronic Renal Insufficiency. *American Journal of Kidney Diseases*, **49**, 245-256. https://doi.org/10.1053/j.ajkd.2006.11.023

[4] (1984) LO (M) Practical Senegalese Pharmacopeia. Dakar University, 165.

[5] Pousset, J.L., Modou, L. and Maynart, G. Presentation of a Practical Senegalese Pharmacopeia. Edition Ellipses.

[6] Gold, C.H. (1980) Acute Renal Failure from Herbal and Patent Remedies in Blacks. *Clinical Nephrology*, **14**, 128-134.

[7] Lengani, A., *et al*. (2009) Traditional Medicine and Kidney Diseases in Burkina Faso. *Néphrologie & Thérapeutique*, **6**, 35-39.

[8] Noel, L.H., *et al*. (2008) Atlas de pathologie rénale. Flammarion SA, Paris, 684-685.

[9] Kerharo, J. and Adam, J.G. (1974) The Traditional Pharmacopeia: Medicinal and Toxic Plants of Senegal. Vigot Frères éditeurs, Paris, 1012.

[10] Cosyns, J.P., Jadoul, M., Squifflet, J.P., *et al*. (1994) Chinese Herbs Nephropathy: A Clue to Balkan Endemis Nephropathy? *Kidney International*, **45**, 1680-1688. https://doi.org/10.1038/ki.1994.220