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Research Article

Epidemiological Profile of Glomerular Nephropathies in the Oran Region West Algeria

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Abstract

Introduction: Early identification of kidney disease is an essential step in optimizing management. To this end, we present to you the anatomo-clinical description of the main nephropathies of our department during the interval from 01.09.2017 to 28.02.2021.

Material and Methods: 180 renal biopsies were performed during this interval. Our study is prospective and descriptive. It relates to the study of the frequency, and the anatomo-clinical specificity of nephropathies. Any adult patient over 16 years old with kidney disease was included in the study; descriptive analysis was done by Microsoft Excel2010.

Results: Average age 33.94 ± 15.06 years with overall male to female ratio 1.12. Among primary nephropathies, lipoid nephrosis dominates (33.33% including 25% MCD and 8.33% FSGS) followed by MGN (10%), IgA nephropathy (5.55%), DPGN (2.77%), Crescentic GN (2.21%), CIN (2.22%) and AIN (1.6%). For secondary nephropathies, lupus nephropathy dominates (20%) followed by AA amyloidosis (3.33%). Nephrotic syndrome (74%) represents the most frequent reason for renal biopsy. Histologically, with regard to the low chronicity index compared to 00 globally sclerotic glomeruli (75%) and absence of interstitial fibrosis (77%).

Discussion and Conclusion: In comparison with the data from the African Registry of the main glomerular nephropathies (Plos one 2016; 11 (5); e0152203), the Nephrotic syndrome remains the main reason for renal biopsy and the transition observed in Tunisia [1] (little amyloidosis and DPGN) matches our results with however a predominance of lipoid nephrosis.

Keywords: Crescentic; Glomerular Nephropathies; Algeria

Abbreviations

MCD: Minimal Change Disease; FSGS: Focal Segmental Glomerulosclerosis; MGN: Membranous Glomerulonephritis; DPGN: Diffuse Proliferative Glomerulonephritis; Crescentic GN: Crescentic Glomerulonephritis; AIN: Acute Interstitial Nephritis; CIN: Chronic Interstitial Nephritis; RF: Renal Failure

Introduction

Chronic kidney disease is a public health problem. Silent disease that progresses to the final stage of chronic kidney disease if not managed early. Causes 1.2 million deaths worldwide with an estimated median prevalence of 8.9% (IQR7.1 at 10.8%) [2]. According to recent data, it is estimated that 3.5 million patients in Algeria suffer from chronic kidney disease in all stages with more than 4,577

deaths during the year 2017 [2]. Progress has been made on access to extra-renal purification where more than 25,000 ESRF patients are undergoing hemodialysis with a prevalence of 600pmp (patients per million population) and an incidence of 200 pmp [3].

A National registry stratifying the different causes of chronic kidney disease is not available in our country. To this end, we offer you a prospective and descriptive study of glomerular nephropathies identified from 01.09.2017 to 28.02.2021 in the Oran region of West Algeria.

Material and Methods

180 renal biopsies were performed during this interval with a minimum of 27 to 53 biopsies/year. We have studied the frequency, histological and clinical specificity of primary and secondary glomerular nephropathies. All patients over 16 years of age with kidney symptoms were included in the study. Kidney transplant patients and diabetics were excluded from the study. Statistical analysis was done by Microsoft Excel 2010 system, significant $P < 0.5$.

Results and Comments

Average age 33.94 ± 15.06 years with a male to female ratio of 1.12. In primary glomerular nephropathies, the youngest patients present with NG type MCD 29.48 ± 14 years. A male predominance affects all glomerular nephropathies except nephropathy secondary to acute systemic lupus erythematous LEAD male to female ratio of 0.09. In decreasing order of importance, among primary glomerular nephropathies, lipoid nephrosis dominates (33.3% including 25% MCD and 8.33% FSGS) followed by MGN (10%), mesangial deposit nephropathy of IGA (5.55%) then DPGN (2.77%), and Crescentic GN (2.21%). Regarding secondary glomerular nephropathies, lupus nephropathy dominates (20%) followed by AA amyloidosis (3.33%). Note also the absence of glomerular nephropathies secondary to viral hepatitis and other infectious causes.

In the analysis of anatomo-clinical confrontations, Nephrotic syndrome is the most frequent reason for renal biopsy (40 to 95.5%). Microscopic hematuria is common in MCD because it often affects patients who have experienced episodes of Nephrotic syndrome in pediatric age. Hypertension is more common in FSGS lesion (46.66%) and IGA mesangial deposition nephropathy (40%). Renal failure is common at (50%) in IGA mesangial deposit nephropathy followed by lupus nephropathy (38.89%) and then FSGS lesion (26.66%). It is most often acute renal failure or else acute on a chronic background. Histologically, with regard to the low chronicity index compared to 00 globally sclerotic glomeruli (75%) and absence of interstitial fibrosis (77%).

Nephropathy	Nomber	Average Age	Male to female ratio	Nephrotic Syndrom	Hématuria %	HBP* %	RF* %	Deposits
MCD	45	29.48 ± 14	1.5	95.55	68.88	11.11	13.33	00
FSGS	15	31.26 ± 12	2	64.28	80	46.66	26.66	IGM/C3
MGN	18	40.75 ± 15	2	94.45	61.11	27.77	5.55	IGG/IGA/ C3
N. IGA	10	31 ± 16	M	40	60	40	50	IGA/C3
Lupus N	36	30.64 ± 9	0.09	66.67	63.89	38.89	30.55	All C1Q

Table 1: Anatomo-clinical comparison of glomerular nephropathies.

HBP: High Blood Pressure*; RF: Renal Failure*.

Regarding the geographical distribution, 50% of the patients are from Oran, the other patients are from the west and south-west of Algeria.

Figure 1

These results, although limited, demonstrate the need to maintain histological exploration of nephropathies from pediatric age to adulthood. Indeed, during the last round table on hypertension and kidney, unpublished data [4] on regional statistics of Western Algeria Oran during the year 2020 confirm that out of 475 patients referred for reason of renal failure, 167 patients were in stage V with GFR ≤ 15 ml/min/1.73m^2, i.e. a proportion of 35.15%. This late referral of these patients poses a real problem in optimizing the chronic kidney disease management program.

Also in comparison with the results of a meta-analysis published in 2016 [5] on the spectrum of the histology of glomerulonephritis in Africa, analysis having concerned 12,093 patients from 13 countries, we note that our results join those of Africa of the North, not forgetting that there is a big difference in the distribution of glomerulonephritis between the sub-Saharan region and North Africa (predominance of lipoid nephrosis and post-infectious GN in the sub-Saharan region while the Lupus nephropathy and amyloidosis dominate in North Africa). In our series we did not confirm any post infectious GN, very little amyloidosis and Crescentic GN.

Type of lesions	Our series %	North Africa (IC 95%) %
MCD	25	22.5 (12.6-34.3)
FSGS	8.33	13.2 (9.5-17.5)
MGN	10	5.7 (2.2-10.5)
Np IGA	5.55	3.8 (1.6-6.9)
DPGN	2.77	4.6 (1.1-10.2)
Crescentic GN	2.21	1.4 (0.5-27.4)
Lupus Nephritis	20	13.9 (8.8-19.9)
AA Amyloidis	3.33	4.3 (1.4-8.6)
HIVAN	00	00 (00-0.3)
Hep B	00	3.1 (1.5-5.3)
PIGN (Post infectious GN)	00	10.3 (00-41.3)

Table 2: Distribution of glomerulonephritis in the North African region [5].

In comparison with the Swiss regional register [6] (University of Lausanne 2007-2016), very little lipoid nephrosis was observed with a predominance of nephropathy with mesangial deposits of IGA (32.7%) for the primary form, and nephropathy lupus (29.8%) as well as paucity immune glomerular nephropathy (11.9%) for secondary forms. The incidence of glomerular nephropathies remained stable during the period from 2007 to 2016 at 1.3/100,000/year. On the other hand, the clinical manifestations motivating the renal biopsy are more severe (renal failure and proteinuria) with a significant degree of renal fibrosis. Male predominance and a mean age of 50 years have been reported. This

profile is totally different compared to our results, which points to the importance of the contribution of environmental and genetic factors in these kidney diseases.

Conclusion

Cardiovascular risk factors: diabetes and hypertension represent the main causes of ESRD [7,8]. In addition, the risk of progression to chronic renal failure depends on the type of GN [9]. Thus, in our series, proliferative forms are infrequent with a predominance of slowly progressive lipoid nephrosis, which suggests a better prognosis despite the constraint of treatment and long-term follow-up.

Conflict of Interest

I have not any conflict of interest exists.

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