Original Article

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A Clinico-pathological Study of the Adult Nephrotic Syndrome in Northern Iraq

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Abstract

One hundered eleven patients, 61 males and 50 females, with a mean age of 27 years (SD 16) and the range of 12 years to 70 years who had nephrotic syndrome were biopsied and their clinical and laboratory features studied. Minimal change glomerulonephritis accounted for 23% of cases followed by membranoproliferative glomerulonephritis (19%) and amyloidosis (15%), both of which are uncommon in Western literature. Seventy six (68%) of the cases were idiopathic. Thirty five (32%) were secondary amyloidosis accounting for 17, and systemic lupus erythematosus accounting for eight of them. Serum cholestrol was elevated in nine of the 17 patients with amyloidosis, which is the same proportion seen in the patients as a whole, and hypertension was absent in all but one of them. Membranous glomerulonephritis, the most common cause of the nephrotic syndrome in most reports accounted for 12%. Of three diabetics, one was not a known diabetic before, and one was a known diabetic for two years only.

The relative frequency of the causes of the nephrotic syndrome and some features of amyloidosis and diabetes are apparently different in our patients from what is classically described.

Key words: Adult nephrotic syndrome, kidney, histophathological lesions.

The relative frequency of the various histopathological lesions in the kidney leading to the nephrotic syndrome may vary in different geographical areas, e.g. amyloidosis is a common cause in Turkey,[1] and malaria nephropathy is a common cause in Nigeria[2] and Uganda.[3] We undertook this work to find out the relative frequency of the various causes of the nephrotic syndrome in our area (Northern Iraq) and to study their main clinical features. The first 14 cases have been described in a preliminary report.[4] We here describe all the cases seen until now. Clinically and pathologically, this syndrome includes a wide variety of renal diseases; a definite diagnosis can only be established by renal biopsy. The present study deals with different cases of patients who presented with nephrotic sydrome in our areas.

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Materials and methods

In the past several years, we have biopsied all patients with nephrotic syndrome admitted under our care in the General Hospital and Saddam Hospital in Mosul, except when there was a contraindication or when the patient refused. There

were 111 patients (61 males and 50 females) forming the material of this study. Their ages ranged from between 12 years and 70 years with a mean of 27 (SD 16) years. Complete clinical examination and laboratory investigations to assess their condition, look for the cause and evaluate renal function were done.

Biopsies were taken percutaneously using either a Vim Silvermann needle (Franklin modification) or Tru-Cut (Travenol) disposable needles. Localizing the site was done with ultrasonography or with intravenous urography.

Specimens were collected in Formul-glutaraldehyde cacodylate buffered solution. Fourteen biopsies were studied with electron and light microscopy. The rest were studied with light microscopy only.

Preparation of specimens for light and electron microscopy followed the steps described in our preliminary report. For light microscopy, sections were prepared at 4mm thickness and stained with Hematoxylin and Eosin, periodic Acid Schiff (PAS), PASilver, picromallory, Reticulin, and stains for Amyloid including Thioflavin T. The adequacy of the biopsy depends not only on the size of the specimen but also on the nature of the disease being investigated.

Results

The frequency of the various histopathological categories and the main clinical laboratory features of each are shown in Table 1. Minimal change glomerulonephritis was the most common cause (23%), followed by membranoproliferative glomerulonephritis (19%) and amyloidosis (15%). Illustrative examples of various histopathological lesions were given in our preliminary report.[4] The frequency of idiopathic and secondary forms of nephrotic syndrome and the etiology of the latter are shown according to each histopathological category in Table 2 and for the patients as a whole in Table 3 which shows that 68% of cases are idiopathic. Among 17 patients with amyloidosis, only two had clinically enlarged livers, and one had a palpable spleen. One of the three diabetics (a 26-year-old woman) was not a known diabetic before the development of the nephrotic syndrome. Her biopsy was consistent with diffuse diabetic glomerulosclerosis,

Table 1. The main clinical and laboratory features of the various histopathological groups.

Histopatho logical diagnosis	No. of patients	M	F	Avg.	Hyper tension	Haem aturia	Impaired renal function	Raised serum cholestrol
Min. change G.N.	26 (23%)	16	10	26	4	4	2	25
Amyloidosis	17 (15%)	9	8	38	1	2	6	9
Memb. Prolif. G.N.	21 (19%)	10	11	22	8	16	6	13
Membranous G.N.	13 (12%)	9	4	31	5	9	5	7
Focal G. sclerosis	5 (5%)	4	1	21	1	2	2	5
Diffuse G. sclerosis	7 (6%)	3	4	30	5	6	5	5
Focal prolif. G.N.	7 (6%)	3	4	25	2	5	1	4
Diabetic neph-ropathy	3 (3%)	-	3	2	2	1	-	1
Total	111 (100%)	651	50	27	34	54	35	77

M=male F=female

and her fasting blood glucose was 320 mg/dl. The other diabetic (19-year-old woman) was known diabetic for two years only before the onset of the nephrotic syndrome. The third (an 18-year-old woman) was a known diabetic for twelve years.

Discussion

The predominance of young patients and the higher incidence among males fits with reported incidence from other parts of the world.[5] The frequency of the various histopathological groups is compared in Table 5 with two collective series compiled from several sources, one in America[6] and the other in Europe.[7]

Table 2. The etiology of the various histopathological groups.

Histopath. diagnosis	Etiology
Minimal change G.N	26 idiopathic
Amyloidosis	5 familial Mediterranean fever 5 bronchiectasis 3 pulmonary tuberculossi 4 idiopathic
Membranproliferative G.N.	17 idiopathic 2 systemic lupus erythemtosus 1 schistosoma Mansoni 1 hepatitis b surface antigen
Mesangial Prolif. G. N.	6 idiopathic 1 shunt nephritis
Membranous G. N.	10 Idiopathic 1 Shunt nephritis
Focal G. sclerosis	5 idiopathic
Diffuse G. sclerosis	6 idiopathic 1 ineffective endocarditis
Focal Prolif. G.N.	4 idiopathic 2 systemic lupus erythmatosus 1 anaphylactoid purpura
Crescentic G. N	2 idiopathic 3 systemic lupus erythematosus
Diabetic nephropathy	3 diabetes mellitus

G.N.= Glomerulonephritis
G. sclerosis = Glomeruolsclerosis

The incidence of amyloidosis is higher than that quoted in reports coming from the West where it forms less than 10% of the causes of nephrotic syndrome.[3] But it is not as high as in Turkey where in one report,[1] amyloidosis was present in 32% of all renal biopsies done and was responsible for 62% of the cases of nephrotic syndrome. The reason for the high proportion of amyloidosis in our series is the relatively high incidence of Familial Mediterranean Fever and chronic sepsis. In a report from a pathology center in Saudi Arabia[9] describing the results of 380 renal biopsies for various diseases, amyloidosis was not mentioned. Although it may have been included in the group entitled "other systemic diseases," which accounted for 10.5% of the cases or the group entitled "miscellaneous conditions" which accounted for 7.6% of the cases, amyloidosis seems from this report to be an uncommon cause of renal disease in Saudi Arabia.

The absence of an enlarged liver or palpable spleen in a patient with nephrotic syndrome should not be taken as an important point against the diagnosis of amyloidosis as they were absent in most of our amyloidosis patients. The disease should be looked for using the special stains like Congo red in the renal biopsy of any patient with nephrotic syndrome when the cause is not obvious or the lesion is not typical of another diagnosis. If light microscopy does not pick it up, electron microscopy usually does by showing the typical fibrils.

Serum cholestrol is said to be less frequently elevated in amyloidosis than in other causes of nephrotic sydnrome.[10]

Table 3. Etiology of the nephrotic syndrome.

Idiopathic		76 (68%)
Secondary		35 (32%)
Amyloidosis	17	
Systemic lupus erythematosus	8	
Schistosomiasis	2	
Diabetes mellitus	3	
Anaphylactoid purpura	1	
Shunt nephritis	1	
Subacute bacterial endocarditis	1	
Hepatitis Bs Ag.	1	
Hodgkin's disease	1	

Table 4. Frequency of diagnostic categories compared with those of Glassock et al. (America) and Robson (Europe).

Diagnosis	Glassock et al.	Robson	Present series
Min. change G.N.	21	18	23
Membranous G.N.	32	30	12
Proliferative G.N.	32	22	17
Membranoprolif. G.N.	5	7	19
Others	9	23	29

G.N.= Glomerulonephritis

This is confirmed in our patients, as it was elevated in nine out of the 17 (53%) amyloidosis patients and in 68 out of the remaining 94 (72%). The poor prognosis of renal amyloidosis is shown by the fact that six out of the 17 patients were in renal failure at the time of diagnosis, two of them requiring dialysis. This is also the experience of other workers. Kyle and Bayrd[11] in 1975 reported survival rates of 54% at one year, 26% at three years and 20% at five years after diagnosis. Survival in Familial Mediterranean Fever complicated by amyloidosis is equally poor.[12] The frequency of hypertension in renal amyloidosis was a variable in various reports. While early reports suggested it is uncommon, more recent reports gave a prevalence of 50%, and in some ethnic groups, such as the Germans and Poles, hypertension was the rule.[13] In this series it was conspicuously absent in all but one of the patients. Membranous glomerulonephritis, the most common renal lesion accounting for one third of cases of adult nephrotic syndrome in most Western series, was responsible for only 12% of our cases (Table 4). The cause for this difference is not clear. It may be partly attributed to the relatively young age of the group and partly to the higher frequency of amyloidosis and membranoproliferative glomerulonephritis. The latter accounted for 19% of cases, which is significantly higher than the 5% to 10% figure usually cited.

The minimal change glomerulonephritis accounted for 23% of all patients, a little higher than other series, a fact of practical importance in view of the good prognosis of this lesion and its satisfactory response to steroids.

As in most series, most of our cases of nephrotic syndrome were of the idiopathic variety. Still a relatively high proportion (one third) were secondary to other diseases, notably amyloidosis.

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