PATTERN OF GLOMERULER DISEASE IN MALAYSIA

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SUMMARY

This paper reviews the pattern of glomeruler disease from 163 renal biopsies performed at the Institute of Urology and Nephrology. Nephrotic syndrome formed the largest group of patients. There is a high prevalence of SLE nephritis in our community. The histopathologic findings in our series were comparable to those from Western countries except for the lower incidence of membranous and membranoproliferative glomerulonephritis.

INTRODUCTION

A definitive histopathologic diagnosis is important for the management of patients suffering from glomerular disease. Since 1975 renal biopsies have been regularly performed on patients suffering from various types of renal disease at the Institute of Urology and Nephrology.However majority of these patients suffered from glomerulonephritis. This paper reviews the result of 163 biopsies performed between September 1978 to December 1979. Only light microscopic findings are presented.

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PATIENTS AND METHOD

Most of the patients were referred from peripheral hospitals throughout the country. Their ages ranged from 7-62 years. There were 89 females (54.6 percent) and 74 males (45.4 percent). Of these 78 (47.9 percent) were Chinese, 68 (41.7 percent) were Malay and 17 (10.4 percent) were Indian. The clinical indications for the biopsies are listed in Table I. Twenty-eight biopsies (17.2 percent) were from patients with proven systemic lupus erythematosus with renal involvement. Only those patients with radiologically normal sized kidneys were considered for biopsy. Renal function at the time of biopsy as measured by serum creatinine ranged from 0.5 mg/100 ml to 22.6 mg/100 ml. 51 patients (31.3 percent) were also hypertensive. All the biopsies, except for 9, were obtained under local anaesthesia by closed percutaneous puncture using a Trucut biopsy needle. The tissue specimens were embedded in paraffin wax and then sectioned 3-4 micron. All sections were routinely stained with H & E., PAS, silver methanamine, Masson trichrome and MSB and when indicated Congo red. These sections were examined by light microscopy. Only specimens with 4 or more glomeruli are included in this review.

TABLE I
PERCENT DISTRIBUTION OF 163 CASES ACCORDING TO CLINICAL INDICATIONS FOR RENAL BIOPSY

Clinical Indications	Number of Patients
Nephrotic Syndrome	91(55.7%)
Acute nephritis	4(2.6%)
Asymptomatic proteinuria and/or haematuria	43(26.4%)
Acute oliguric renal failure	10(6.1%)
Chronic renal failure	15(9.2%)
Total	163(100%)

TABLE II
PERCENT DISTRIBUTION OF 133 SUCCESSFUL RENAL BIOPSIES ACCORDING TO HISTOPATHOLOGIC FINDINGS

Histopathologic Findings		Number of Patients
Minimal change lesion		22(16.5%)
Diffuse glomerular lesion		
a. proliferative	26	
b. membranoproliferative	12	52(39.1%)
c. membranous	14	
Focal glomerular lesion		
a. proliferative	29	36(27.1%)
b. sclerosing	7	
Chronic glomerulonephritis		19(14.3%)
Others:		
interstitial nephritis	1	
amyloidosis	1	4(3.0%)
thrombotic microangiopathy	1	
myeloma kidney	1	
Total		133(100%)

RESULTS

Suitable specimens were obtained in 133 biopsies (81.6 percent). There was no mortality. However 16 patients had macroscopic haematuria after the biopsy. 4 of these required blood transfusion. 2 patients developed "perinephric" infection requiring treatment with antibiotics. Pain arising at the biopsy site was very common but easily relieved with non-narcotic analgesics. Vasovagal attacks due to prolonged abdominal compression occurred in a few patients.

The histopathologic findings are presented in Table II. The classification is modified from that proposed by Habib (1972)

Table III correlates the clinical presentation of those patients suffering from glomerular disease with the histopathologic findings.

MINIMAL CHANGE LESION (22 PATIENTS)

There were 16 males and 6 females representing a relative frequency of 16.5 percent. Nineteen patients presented with the nephrotic syndrome while the reminder had asymptomatic proteinuria. 6 patients had mild renal impairment at the time of biopsy with serum creatinine ranging from 1.5-2.2 mg/100 ml.

DIFFUSE PROLIFERATIVE GLOMERULO NEPHRITIS (26 PATIENTS)

There were 10 males and 16 females in this group representing a relative frequency of 19.5 percent. The commonest mode of clinical presentation was the nephrotic syndrome. This occurred in 13 patients. Persistent proteinuria and/or haematuria was seen in 6 patients, acute nephritis in 2 patients and acute oliguric renal failure in 5 patients of which 4 had more than 80 percent crescents. These 4 patients as expected had a rapidly progressive and fatal course. 12 patients were in renal failure at the time of biopsy.

Out of the 26 patients, four were proven to have systemic lupus erythematosus. Two had evidence of recent streptococcal infection as indicated by a raised anti-streptolysin O titre. No cause could be elucidated in the remainder.

DIFFUSE MEMBRANOPROLIFERATIVE GLOMERULONEPHRITIS (12 PATIENTS)

There were 10 females and 2 males representing a relative frequency of 9.0 percent. 7 patients presented with the nephrotic syndrome, 2 with acute nephritis, 2 with asymptomatic proteinuria and haematuria and one with acute oliguric renal failure. 8 of these patients were previously diagnosed as systemic lupus erythematosus. At the time of biopsy 7 patients were in renal failure.

DIFFUSE MEMBRANOUS GLOMERULONEPHRITIS (14 PATIENTS)

There were 10 females and 4 males in this group giving a relative frequency of 10.6 percent. 10 patients presented with the nephrotic syndrome, 3 with asymptomatic proteinuria and one with chronic renal failure. 7 cases were diagnosed as systemic lupus erythematosus before biopsy.

FOCAL PROLIFERATIVE GLOMERULONEPHRITIS (29 PATIENTS)

There were 17 females and 12 males representing a relative frequency of 21.8 percent. 16 patients presented with the nephrotic syndrome, 7 patients with asymptomatic proteinuria and 6 patients with proteinuria and haematuria. Renal failure was present in only 5 patients all of whom had various degrees of glomerular sclerosis. 4 patients had

TABLE III
CORELATIONSHIP BETWEEN THE CLINICAL PRESENTATION OF 129 PATIENTS* SUFFERING FROM GLOMERULAR DISEASE AND THE HISTOPATHOLOGIC FINDINGS

Clinical Presentation	Histopathologic Findings							Total
	MC	DP	DMP	DM	FP	FS	Cgn	
Nephrotic syndrome	19	13	7	10	16	5	3	73
Acute nephritis	-	2	2	-	-	-	-	4
Asymptomatic proteinuria and/or haematuria	3	6	2	3	13	2	3	32
Acute oliguric renal failure	-	5	1	-	-	-	1	7
Chronic renal failure	-	-	-	1	-	-	12	13
Total	22	26	12	14	29	7	19	129

* this does not include those cases classified as "Others" in Table II/MC = minimal change lesion; DP = diffuse proliferative; DMP = diffuse membranoproliferative; DM = diffuse membranous; PF = focal proliferative; FS = focal sclerosing; Cgn = chronic glomerulonephritis.

proven systemic lupus erythematosus and one had Henoch Schonlein purpura.

FOCAL SCLEROSING GLOMERULONEPHRITIS (7 PATIENTS)

There were 5 males and 2 females in this group giving a relative frequency of 5.3 percent. 5 patients presented with the nephrotic syndrome while 2 had asymptomatic proteinuria. Renal failure was already present in 4 patients at the time of biopsy.

CHRONIC GLOMERULONEPHRITIS (19 PATIENTS)

There were 12 males and 7 females giving a relative frequency of 14.3 percent. 12 patients presented with chronic renal failure, 3 patients with the nephrotic syndrome, 3 patients with asymptomatic proteinuria and one patient with acute on chronic renal failure.

All these patients had severe reduction of renal function at the time of biopsy. In addition 4 patients were positive for HB_sAg.

DISCUSSION

Percutaneous renal biopsy gives an exact morphological evaluation of the disease state during life and when this is correlated to clinical and laboratory data, the natural history of the renal disease is better understood. This is extremely important for assessing prognosis and planning therapy for the patient. Although major advances have been made in the examination of renal tissue specimens, light microscopic examination of renal biopsy specimens still forms the main basis for diagnosis and with experience the pathologist can make an accurate assessment in most cases (Dische and Parsons, 1977). However with the aid of immunofluorescence and electron microscopy much more information can be derived which had hitherto been denied with light microscopy alone. Nevertheless the results of our biopsy findings have often provided us with a useful guide as to how best to treat our patients. It is widely accepted that most forms of glomerulonephritis do not benefit from the use of steroids and cytotoxic drugs. These patients are best treated conservatively until they require dialysis or renal transplantation. The presence of glomerulosclerosis, epithelial crescent formation and severe interstitial involvement usually indicates an irreversible progressive course.

Excluding those cases with demonstrable causes, the relative frequencies of the different types of primary glomerulonephritis seen in the present series is compared to other reported series in Table IV.

The high incidence of diffuse proliferative and focal proliferative glomerulonephritis in this series

may be a reflection of the common occurrence of IgA nephropathy in this region as reported by Sinniah (1979). However in the absence of immunoflorescence we were unable to prove this point but a large number of patients in this group presented with a typical history of recurrent haematuria and at biopsy we were able to demonstrate the presence of large amount of mesangial and paramesangial deposits.

The lower incidence of membranous and membranoproliferative glomerulonephritis is comparable to the findings from Singapore by Sinniah and Khoo (1979). This may suggest a regional characteristic.

The incidence of minimal change lesion in our community is comparable to other reported series. The mild renal impairment seen in 6 of our patients is probably pre-renal in origin due to severe hypoproteinaemia at the time of renal biopsy.

A rather large number of chronic glomerulonephritis was encountered. This may be attributed to a delay in referral as they are commonly treated for long periods in the peripheral hospital without the benefit of a renal biopsy.

Nephrotic syndrome appears to be the largest group of patients subjected to a renal biopsy. This agrees with the findings by Mukherjee and Tang (1971) who reported on the pattern of renal disease in Kuala Lumpur.

Only 4 patients with acute nephritis were biopsied. This does not reflect the true incidence of this disease in our community but rather that we do not routinely biopsy these cases as they are presumed to be due to post-streptococcal infection and are expected to follow a benign course. Only those cases with an atypical clinical course were biopsied.

There was a large number of patients who were biopsied because of asymptomatic urinary abnormalities usually detected while undergoing routine medical examination. In a report by Pwee *et al* (1979) on the clinical course of this type of patients they concluded that those presenting with only asymptomatic proteinuria without significant haematuria is consistent with a fairly good prognosis. Those with proteinuria of more than 1gm/day and haematuria appeared to have the worst prognosis especially if glomerulosclerosis was detected.

Patients who had proven systemic lupus erythematosus involving the kidneys also formed a large pool of our biopsies. This reflects the high prevalence of this disease in our community. Of the 24 biopsies in this group, 12 had diffuse proliferative glomerulonephritis, 7 had diffuse membranous glomerulonephritis, 4 had focal proliferative glomerulonephritis and one had no obvious changes. The importance of a proper histopathological diagnosis in systemic lupus erythematosus with regards to treatment and

TABLE IV
RELATIVE FREQUENCY OF PRIMARY GLOMERULONEPHRITIS AS REPORTED BY VARIOUS AUTHORS

Authors	*MC	DP	FP	FS	DM	DMP	Cgn	IgA
Cameron (1973)	29.0 %	11.6 %	2.1 %	6.4 %	7.8 %	13.3 %	-	-
Churg (1973)	17.3	39.4	7.2	8.6	14.0	8.4	-	-
Morel-Maroger (1973)	20.2	12.8	25.6	7.3	12.2	8.5	-	-
Ng (1979)	20.9	18.1	13.5	14.9	11.2	9.3	-	-
Sinniah (1979)	28.2	7.6	9.8		3.2	2.0	10.3	38.9
Present series (1979)	21.4	20.4	24.5	7.1	7.1	4.2	15.3	-

* MC = minimal change lesion; DP = diffuse proliferative; FP = focal proliferative; FS = focal sclerosing; DM = diffuse membranous; DMP = diffuse membranoproliferative; Cgn = chronic glomerulonephritis; IgA = IgA nephropathy.

prognosis had been emphasized by Pollak *et. al.* (1972).

The pattern of primary glomerular disease in our multi-racial community do not seem to differ greatly from those reported in Western countries except for the lower incidence of membranous and membranoproliferative glomerulonephritis. SLE nephritis formed a substantial proportion of our patients who were subjected to a renal biopsy.

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