Long-Term Follow-Up Study of IgM Associated Nephrotic Syndrome Patients : Clinical Outcome and Prognostic Indicators

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Abstract

Rationale : Even though it is the most common primary glomerular disease, the natural history and prognosis of IgM associated nephrotic syndrome have not been well established.

Objectives : To determine the (1) responsiveness to prednisolone therapy, (2) long-term clinical and laboratory outcomes, and (3) prognostic indicators to prednisolone therapy in patients with IgM associated nephrotic syndrome.

Study design : Clinical descriptive, longitudinal study.

Subjects : Seventy two biopsy-proved IgM associated nephrotic syndrome patients, diagnosed between 1978-1996 at Vajira Hospital, Bangkok, were included in the study.

Method : Clinical parameters with age, sex, duration of edema, blood pressure and laboratory findings such as hematuria, BUN, creatinine, albumin, and cholesterol, 24-hour urine protein, and stool examination, were collected pre-renal biopsy. Each patient was treated with 45-60 mg of prednisolone according to body weight, for up to 8 weeks. Each patient was followed-up every 4-weeks for clinical and laboratory evaluations, and for adjusting the steroid dosage. Clinical responses were stratified into 3 groups as steroid responsive (SRP), steroid dependent (SD), and steroid resistant (SRS).

Main outcome measures : (1) Frequency and types of steroid responsiveness. (2) Incidence of hypertension, hematuria, renal insufficiency, end-stage renal disease, and survival during the follow-up. (3) Prognostic indicators for initial clinical response to prednisolone, and for long-term morbidity and mortality.

Results : Forty eight of the 72 patients (66.67%) were responsive to prednisolone at 8-weeks, the 24 remaining patients (33.33%) were nonresponsive. High proteinuria of 7.66 ± 4.14 g/D was the only good prognostic indicator to initial prednisolone therapy ($p < 0.03$). During the follow-up, 42(58.33%), 26(36.11%), and 4(5.56%) patients were SRP, SD, and SRS, respectively. There were no prognostic indicators associated with long-term steroid responsiveness. Of the 60 patients followed-up for more than one year; 34, 15 and 11 patients were followed-up for 1-5,

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>5-10 and >10 years, respectively. Hematuria and proteinuria were more frequent among the SRS group ($p < 0.01$ and 0.02, respectively) during the follow-up. Only one patient, initially in the SD group, and later on became SRS, died.

Conclusion : Patients with IgM associated nephrotic syndrome had very good response to prednisolone therapy. It had a very slow progressive course, with low morbidity and mortality.

Key word : IgM Associated Nephrotic Syndrome, Long-term Follow-up, Steroid Responsiveness, Prognostic Indicators

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IgM nephropathy is the most common primary glomerular disease in Thailand[1,2]. IgM nephropathy was first reported independently in 1978 by Cohen et al[3], and Bhasin et al[4]. Histologically, IgM nephropathy is characterized by generalized and diffuse deposition of immunoglobulin M (IgM) more prominently than any other type of immunoglobulin in the renal mesangium. There may or may be no associated staining with C3. Diagnosis of IgM nephropathy is established by examination of renal-biopsy tissue with light microscopy and with immunofluorescent stain. Clinically, IgM nephropathy may be associated with edema (as found in patients with nephrotic syndrome) or without edema. There are controversies whether IgM nephropathy is a new entity[5] as reported by Cohen et al, and Bhasin et al, or it is merely an intermediate stage of minimal change disease and focal segmental glomerulosclerosis[6]. There were reports of finding IgM deposits in the renal mesangium of normal persons; others attached it to progressive glomerular disease[7]. There were reports of the effects of mesangial IgM deposits on the clinical features, on response to corticosteroid, and on prognosis[5,7,8]. Other reports showed no evidence of the specific role of IgM in mesangial proliferation[9,10].

In Thailand, clinical studies on adult idiopathic or primary nephrotic syndrome (PNS) revealed IgM nephropathy is the most common cause of PNS[11-14], while in the West, membranous nephropathy is the most common cause of PNS[15]. The etiology and pathogenesis of IgM nephropathy remain unknown. There have been a few reports on the clinical course and prognosis of IgM nephropathy[16-18]. There have been reports of a high incidence of renal failure when IgM nephropathy was associated with hypertension[16], or when it was resistant to corticosteroid therapy[17,18]. In some reports, the presence of hematuria had no effect on the prognosis, and subsequent renal failure in patients with IgM nephropathy[7,8,17]. However, in one report[17], when it was associated with renal insufficiency, IgM nephropathy responded poorly to therapy, and progressed to renal failure.

The purposes of this long-term follow-up study were to determine the (1) responsiveness to prednisolone therapy, (2) long-term clinical and laboratory outcomes, and (3) prognostic indicators to prednisolone therapy of IgM associated PNS patients.

PATIENTS AND METHOD

All patients diagnosed as IgM associated PNS, and follow-up at Vajira Hospital from 1978 to 1996, were included in this study.

Inclusion criteria

Patients with PNS associated with (1) proteinuria > 3 g/D, (2) serum albumin < 3 g/dl, (3) edema, (4) renal-biopsy proved IgM nephropathy, and (5) follow-up for more than 3-consecutive months were included in the study.

Exclusion criteria

Patients with PNS who (1) were < 15 years old, or (2) had no renal biopsy, or (3) received no prednisolone treatment, or (4) were followed-up for less than 3 months after prednisolone therapy, were excluded from the study.

Method of Study

Medical history, physical findings, results of laboratory tests, and data from subsequent visits of each patient were collected in a specially designed form. Prior to the renal biopsy, laboratory tests were performed at least twice, one on the first visit and another just prior to the renal biopsy. The laboratory tests included CBC; urinalysis; serum albumin, BUN, creatinine, cholesterol, FBS, 24-hour urine protein; creatinine clearance; stool examination; chest X-ray, and intravenous pyelography (IVP). Renal biopsy was performed when the patient had proteinuria > 3 g/D, serum albumin < 3 g/dl, and normal IVP. From 1978 to 1979, all the renal biopsies were examined under light microscopy and with immunofluorescent stain, at the Department of Pathology, Ramathibodi Hospital. Later on, light microscopic examination of the biopsy specimens was performed at the Department of Pathology, Vajira Hospital; and examination of immunofluorescent stain specimens was performed at the Patho-biology Department, Faculty of Science, Mahidol University.

In patients whose renal biopsy was consistent with IgM nephropathy, when there was no contraindication to corticosteroid treatment such as the presence of pulmonary tuberculosis, *S. Stercoralis* larva in the feces, or history of psychotic disorder; prednisolone was given 45 mg/D orally in a single dose for patients who weighed 45 kg or less, and 60 mg/D for those who weighed more than 45 kg. The patient was then followed-up every 4 weeks. During the follow-up, B.P. and body weight were recorded; urine was examined for proteinuria and sediments; blood was collected for serum albumin, BUN, creatinine, and FBS. When edema and proteinuria subsided, and serum albumin improved, prednisolone dosage was decreased 10 mg/D during the following 4 weeks. When edema or proteinuria persisted, the same dosage of prednisolone was prescribed. The long-term responses to prednisolone therapy were classified into steroid responsive, steroid dependent, and steroid resistant. (Details see below)

Terminology Used in This Study

Nephrotic syndrome : Presence of edema, proteinuria > 3 g/D, serum albumin < 3 g/dl.

IgM nephropathy : generalized and diffuse deposition of immunoglobulin, predominantly IgM in the mesangial area with mesangial cell proliferation, with or without C3 staining along arteriolar wall.

Tubulo-interstitial change : mononuclear cells infiltration in the renal interstitium with or without interstitial fibrosis.

Hematuria : RBC > 5/HPF in the urine

Hypertension : BP > 140/90 mmHg

Renal insufficiency : serum creatinine > 1.5 mg/dl (N. 0.8-1.4 mg/dl)

Steroid responsive (SRP) : edema, and proteinuria disappeared within 8 weeks after the therapy, and there was no recurrence after prednisolone was discontinued.

Steroid dependent (SD) : edema or proteinuria recurred while prednisolone was being tapered off; or edema, or proteinuria recurred 4 weeks after prednisolone was discontinued; or edema, or proteinuria recurred more than twice annually.

Steroid resistant (SRS) : persistant proteinuria in spite of prednisolone treatment.

Remission : no edema, or proteinuria, in spite of discontinuation of prednisolone treatment.

Statistical analysis

Quantitative data were expressed as mean ± standard deviation; and differences were compared, when appropriate, by two-tailed paired and Student's *t*-test, and analysis of variance (ANOVA). Categorical variables were analyzed using the Chi-square test. The SPSS version 7.5 computer software was employed for all statistical analysis. A p value of < 0.05 was taken to be statistically significant.

RESULTS

Between January 1, 1978, and December 31, 1996, there were 72 patients with biopsy-proved IgM associated nephrotic syndrome treated and followed-up at Vajira Hospital. Of the 72 patients, 37 were males, and 35 females. The mean age was 24.49 ± 8.67 years (range 15-50). More than one-third of the patients (28 or 38.89%) were in the 20-29 age group; the great majority (54 or 75%) were in the 15-29 age group. (Fig. 1)

The duration from the onset of edema to the time of renal biopsies varied from one week to 182 months (mean 16.84 ± 35.31 months). The long duration was attributed to occurrence of edema during childhood in some patients, and some patients had been treated at another hospital without renal biopsies.

Table 1. Demographic and selected clinical and laboratory data on 72 patients with IgM associated nephrotic syndrome.

Clinical data	Findings
Number of patients	72
Age (years, mean ± SD)	24.49 ± 8.67
Sex ratio male : female	1.06 : 1
Duration of edema before biopsy (mos , mean ± SD)	16.84 ± 35.31
Blood pressure (mmHg, mean ± SD)	
- systolic	121.67 ± 13.94
- diastolic	81.81 ±13.04
Hypertension no. (%)	7 (9.72)
Hematuria no. (%)	13 (18.06)
Serum BUN (mg/dl, mean ± SD)	17.49 ± 9.75
Serum creatinine (mg/dl, mean ± SD)	1.29 ± 0.64
Renal insufficiency (Cr > 1.5 mg/dl) no. (%)	15 (20.83)
Serum albumin (g/dl, mean ± SD)	1.85 ± 0.44
Serum cholesterol (mg/dl, mean ± SD)	518.06 ± 188.67
Proteinuria (g/D, mean ± SD)	6.59 ± 3.61
Stool examination positive for intestinal parasite no. (%)	19/54 (35.19)

Table 2. Univariate analysis of responder and nonresponder to 8-week of prednisolone therapy.

Clinical data	Prednisolone for 8 wks.		p value
	responsive	non responsive	
Number of patients (%)	48 (66.67)	24 (33.33)	-
Age (years, mean ± SD)	23.43 ± 7.02	25.44 ± 9.73	NS
Duration of edema before biopsy (mos, mean ± SD)	18.35 ± 36.29	16.12 ± 35.34	NS
Blood pressure (mmHg, mean ± SD)			
- systolic	124.33 ± 13.82	119.76 ± 14.05	NS
- diastolic	83.33 ± 12.41	80.73 ± 13.67	NS
Hematuria no. (%)	8 (16.67)	5 (20.83)	NS
Serum BUN (mg/dl, mean ± SD)	17.07 ± 7.72	17.88 ± 11.18	NS
Serum creatinine (mg/dl, mean ± SD)	1.30 ± 0.83	1.28 ± 0.50	NS
Serum albumin (g/dl, mean ± SD)	1.75 ± 0.45	1.94 ± 0.42	NS
Serum cholesterol (mg/dl, mean ± SD)	513.93 ± 174.65	514.85 ± 198.87	NS
Proteinuria (g/D, mean ± SD)	7.66 ± 4.14	5.74 ± 2.86	0.03
Tubulointerstitial change no. (%)	14 (29.17)	21 (87.50)	NS

NS = non significant at $p > 0.05$

The demographic, clinical, and laboratory findings, are shown in Table 1. Intestinal parasites detected in the feces of 19 patients included hook worms, strongyloid larva, *Giardia lamblia*, and *Opisthorchis viverrini*.

Following 8 weeks of initial prednisolone therapy, edema and proteinuria disappeared in 48 patients (66.67%), in another 24 patients (33.33%) edema and proteinuria persisted. Table 2 compares the clinical and laboratory findings among the two groups; only a higher level of proteinuria i.e. 7.66 ± 4.14 g/D, was more common among the steroid responsive than among the nonresponsive groups ($p \leq 0.03$).

During the subsequent follow-up, 42 patients became SRP (all were responsive to 8 weeks of initial prednisolone therapy), 26 were SD, and 4 were SRS. As shown in Table 3, there were no significant prognostic indicators to prednisolone therapy among the 3 groups. Following prednisolone therapy, there was a decrease in the incidence of hypertension, hematuria, and renal insuffi-

Table 3. Prognostic indicator to steroid responsiveness in 72 patients with IgM associated nephrotic syndrome.

Clinical data	Types of response			p value
	SRP	SD	SRS	
Number of patients (%)	42 (58.33)	26 (36.11)	4 (5.56)	-
Age (years, mean ± SD)	25.09 ± 8.89	23.08 ± 7.41	26.50 ± 15.60	NS
Sex ratio male : female	23 : 19	12 : 14	1: 3	NS
Duration of edema before biopsy (mos, mean ± SD)	17.21 ± 33.93	19.63 ± 41.61	4.31 ± 6.50	NS
Blood pressure (mmHg, mean ± SD)				
- systolic	120.95 ± 13.94	121.67 ± 13.73	120.00 ± 14.12	NS
- diastolic	82.62 ± 12.89	80.42 ± 13.34	75.00 ± 5.77	NS
Hypertension no. (%)	5 (11.90)	2 (7.69)	0	NS
Hematuria no. (%)	6 (14.29)	5 (19.23)	2 (50.00)	NS
Serum BUN (mg/dl, mean ± SD)	17.71 ± 10.68	17.67 ± 8.82	16.50 ± 8.66	NS
Serum creatinine (mg/dl, mean ± SD)	1.21 ± 48	1.44 ±0.92	1.43 ± 0.15	NS
Renal insufficiency no. (%)	7 (16.67)	7 (26.92)	1 (25.00)	NS
Serum albumin (g/dl, mean ± SD)	1.86 ± 0.44	1.81 ± 0.48	1.88 ± 0.41	NS
Serum cholesterol (mg/dl, mean ± SD)	499.70±175.56	535.96 ± 223.16	578.0 ± 165.82	NS
Proteinuria (g/D, mean ± SD)	6.29 ± 3.48	7.24 ± 4.01	6.45 ± 3.92	NS
Tubulointerstitial change no. (%)	20 (47.62)	13 (50.00)	2 (50.00)	NS

NS = non significant at $p > 0.5$

Table 4. Incidence of hypertension, hematuria, and renal insufficiency, among 72 IgM associated nephrotic syndrome patients, stratified into 3 steroid responsive groups before and after prednisolone therapy.

Clinical features	Types of patients					
	SRP		SD		SRS	
	Pre treatment	Post treatment	Pre treatment	Post treatment	Pre treatment	Post treatment
No. of patients	42	42	26	26	4	3*
Hypertension no. (%)	5 (11.90)	1 (2.50)	2 (7.69)	1 (5.88)	0	1 (33.33)
Hematuria no. (%)	6 (14.29)	1 (2.50)	5 (19.23)	3 (17.65)	2 (50.00)	2 (66.67)
Renal insufficiency no.(%)	7 (16.67)	0	7 (26.92)	0	1 (25.00)	1 (33.33)

* one patient died

ciency in the SRP and SD, but not in the SRS, groups. However, only the decrease in renal insufficiency was of statistical significance (Table 4). In the 72 patients, the mean duration of follow-up was 60.13 ± 62.07 months (range 3 – 245 months), of which 12(16.67%), 34(47.22%), 15(20.83%), and 11 (15.28%) patients were followed-up for less than 1 year, 1-5 years, between 5-10 years, and more than 10 years, respectively (Table 5).

The 60 patients, followed-up for more than one year, were stratified into three sub-groups according to the duration of follow-up for (Table 6). As might be expected, the patients who were followed-up longer, i.e. more than 10 years, were older than those who were followed-up for 1-5

Table 5. Duration of follow-up.

Duration of (years)	No. of patients (%)
< 1	12 (16.67)
1 – 5	34 (47.22)
> 5 – 10	15 (20.83)
> 10	11 (15.28)

Table 6. Clinical outcomes stratified according to duration of follow-up.

Clinical data	Duration of follow-up (yrs)		
	1 - 5	> 5 - 10	> 10
Number of patients (%)	34 (56.67)	15 (25.00)	11 (18.33)
Age (yr, mean ± SD)	28.06±9.95	32.87 ± 9.61	40.36 ± 7.23
Sex ratio male : female	17 :17	9:6	4:7
Hypertension no. (%)	1 (2.94)	0	2 (18.18)
Hematuria no. (%)	4 (11.76)	1 (6.67)	1 (9.09)
Renal insufficiency no. (%)	0	0	1 (9.09)
Proteinuria no. (%)			
Negative	24 (70.59)	11 (73.33)	6 (54.54)
Positive	10 (29.41)	4 (26.67)	5 (45.46)
End-stage renal failure no. (%)	0	0	1 (9.09)
Death no. (%)	0	0	1 (9.09)

Table 7. Clinical outcomes stratified according to steroid responsiveness.

Clinical data	Types of response		
	SRP	SD	SRS
Number of patients (%)	40 (66.67)	17 (28.33)	3 (5.00)
Duration of follow-up (mos, mean ± SD)	74.36 ± 65.53	36.42 ± 38.36	71.75 ± 98.62
Hypertension no. (%)	1 (2.50)	1 (5.88)	1 (33.33)
Hematuria no. (%)	1 (2.50)	3 (17.65)	2 (66.67)
Renal insufficiency no. (%)	0	0	1 (33.33)
Proteinuria no. (%)			
Negative	31 (77.50)	10 (58.80)	0
Positive	9 (22.50)	7 (41.18)	3 (100.00)
Number of survival (%)	40 (100.00)	17 (100.00)	2 (66.67)

years, and > 5-10 years. The last group had more females than males; the incidence of hypertension, renal insufficiency, proteinuria, end-stage renal failure, and death were higher in the last group, however, none of these differences were statistically significant (Table 6).

Of the 60 patients, before receiving prednisolone, 6, 10, and 13 had hypertension, hematuria, and renal insufficiency, respectively. After prednisolone therapy, hypertension, hematuria, and renal insufficiency disappeared in 3(50%), 4(40%), and 12 (92.31%) patients, respectively. Table 7 stratifies the 60 patients, who were followed-up for more than one year, according to steroid responsiveness. Among the 3 subgroups, the incidence of hypertension, hematuria, and renal insufficiency, proteinuria, and death, were more common in the SRS patients. However, only hematuria and proteinuria were significantly higher among the SRS than those among the SRP groups.

During the follow-up, all of the 72 patients, except one, survived. The mortality rate was 1.39 per cent. In the patient who died, her renal biopsy contained 18 glomeruli, of which one glomerulus was obsolescent; the remaining showed mild mesangial cellular proliferation with local tubulointerstitial inflammation. Immunofluorescent stain revealed traces of IgM and β_1C deposits in some mesangial areas and along the arteriolar wall. During the first year of therapy she was in the SD group. Later on, she became steroid resistant. However, with continuous 10-30 mg of prednisolone daily, she did fairly well for another 13 years. There was no deterioration in her renal function; BUN was 10

mg/dl, and creatinine was 0.9 mg/dl. Then she was lost to follow-up, allegedly she was taking the same amount of prednisolone she bought from pharmacists for 5 more years. When she returned, the renal function had deteriorated, i.e. BUN was 47 mg/dl, creatinine was 4.1 mg/dl. Again she was given prednisolone 20 mg/day plus low protein diet for another year until end stage renal failure occurred. Finally, she received hemodialysis and died 15 months later (20 years after she first came to Vajira Hospital).

DISCUSSION

IgM nephropathy is the most common cause of PNS in Thailand, with an incidence of 41 per cent, 76.4 per cent, 49.4 per cent, and 25.85 per cent, reported from Ramathibodi Hospital[11], Siriraj Hospital[12], Vajira Hospital[13], and Srinakarin Hospital, Khon Kaen[14], respectively. The very high incidence of IgM nephropathy reported from Siriraj Hospital is attributed to the inclusion of focal segmental change with IgM deposit and interstitial fibrosis.

The clinical features of IgM nephropathy in this report are similar to those reported previously from Thailand and abroad[7]. Fifty-four of the 72 patients (75%) were in the 15-29 age group. Males and females were equally affected (Fig. 1). Hypertension, hematuria, and renal insufficiency were found in 10 per cent - 20 per cent of the patients on presentation (Table 1). It should be noted that, 20 of the 37 males patients (54.05%) were in the 15-19 age group, while 20 of the 35 female patients (57.14%) were in the 20-29 age group (Fig. 1). We have no explanation for this discrepancy.

In this study, the great majority of IgM associated PNS patients responded very well to prednisolone therapy. Of the 72 patients treated, 42(58.33%), 26(36.11%), and 4 patients (5.56%) were SRP, SD, and SRS, respectively (Table 3). Unlike one previous report which suggested renal insufficiency[17] as poor prognostic indicators to corticosteroid therapy, our study suggested only a high level of proteinuria, but no other clinical or laboratory parameters, as a good prognostic indicator to prednisolone therapy ($p < 0.03$) (Table 2). We could provide no explanation for this paradoxical finding.

The study from Siriraj Hospital[19] suggested male gender, and the presence of hypertension, high serum creatinine, proteinuria, and renal interstitial fibrosis as bad prognostic indicators to prednisolone therapy. The discrepancies between our report and the report from Siriraj Hospital could be attributed to the differences in patient selection, and in the type of renal histological findings. Our study involved only patients with PNS whose renal biopsy revealed IgM deposit in the renal mesangium with minimal or no tubulo-interstitial changes. The study from Siriraj included patients with edema, (i.e. PNS) and without edema, but presented with hematuria with or without proteinuria. The study from Siriraj also included patients whose renal biopsies revealed focal segmental changes with interstitial fibrosis of variable degree.

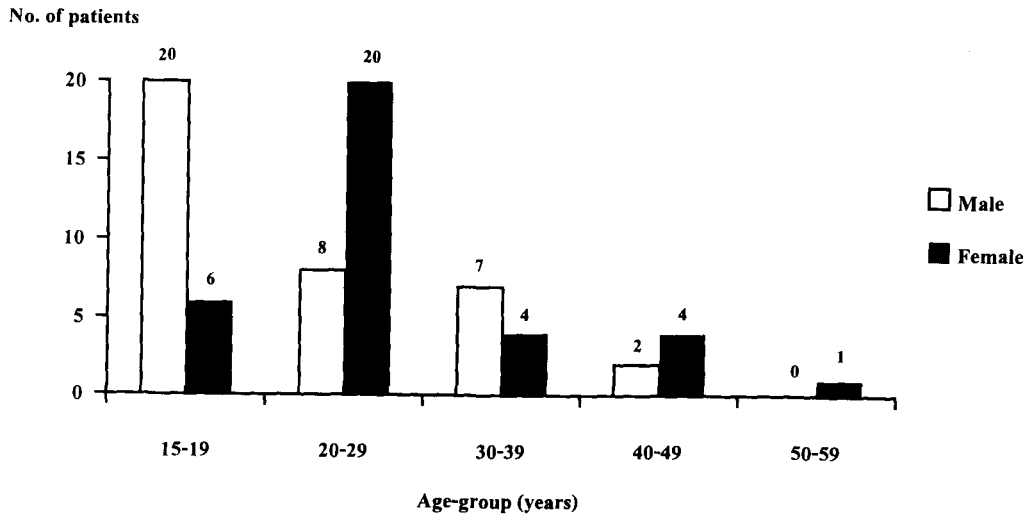

Fig. 1. Age-group and sex distribution of 72 IgM associated nephrotic syndrome patients.

In this study, the incidence of hypertension, hematuria, and renal insufficiency decreased with prednisolone therapy in the SRP, and SD groups. However, only the decrease in renal insufficiency was statistically significant (Table 4). In the SRS group, there were no significant changes in the incidence of hypertension, hematuria, and renal insufficiency, before and after prednisolone therapy (Table 4).

During the long-term follow-up, there was an increase in the incidence of hypertension, proteinuria, renal insufficiency, and end-stage renal failure. However, none of these changes were statistically significant (Table 6). In addition, when long-term clinical outcomes were stratified according to steroid responsiveness, the incidence of hypertension, hematuria, renal insufficiency, and proteinuria, were highest among the SRS group. The increase was statistically significant for hematuria, and proteinuria, respectively (Table 7). The only patient who died was initially in the SD group, and later on became SRS. Despite steroid resistance, this patient was maintained on prednisolone 10-30 mg daily. With treatment, she survived for 20 years, and died at the age of 46. She had no renal replacement therapy, until the last two years, when she received hemodialysis.

From this study we conclude that patients with IgM associated nephrotic syndrome responded very well to prednisolone therapy. Although the clinical and laboratory outcomes are correlated, to some extent, to steroid responsiveness. However, regardless of their steroid unresponsiveness, with proper care and treatment, the morbidity and mortality were very low.

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การศึกษาผลการรักษาระยะยาวและปัจจัยในการพยากรณ์กลุ่มอาการเนโฟรติกที่สัมพันธ์กับไอจีเอ็ม

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วัตถุประสงค์ : เพื่อศึกษา (1) ผลการตอบสนองต่อการรักษาด้วยเพร็ดนิโซโลน (2) ผลการรักษาในระยะยาว และ (3) หาปัจจัยในการพยากรณ์กลุ่มอาการเนโฟรติกที่สัมพันธ์กับไอจีเอ็ม

รูปแบบการวิจัย : การวิจัยเชิงพรรณา แบบการศึกษาระยะยาว

กลุ่มตัวอย่าง : ผู้ป่วยกลุ่มอาการเนโฟรติกที่สัมพันธ์กับไอจีเอ็มที่ได้รับการตรวจยืนยันทางพยาธิวิทยาแล้ว จำนวน 72 ราย มารับการรักษาที่หน่วยโรคไต กลุ่มงานอายุรกรรม วชิรพยาบาล ระหว่าง พ.ศ. 2521-2539

วิธีดำเนินการวิจัย : ผู้ป่วยทุกรายได้รับการตรวจร่างกาย และบันทึกข้อมูลเกี่ยวกับอายุ เพศ อาการทางคลินิก ความดันโลหิต และผลการตรวจทางห้องปฏิบัติการที่เกี่ยวข้องทั้งหมดก่อนที่จะทำการเจาะไต เอาชิ้นเนื้อมาตรวจทางพยาธิวิทยาเพื่อยืนยันการวินิจฉัย ผู้ป่วยทุกรายได้รับการรักษาด้วยเพร็ดนิโซโลน ขนาด 45-60 มก. ตามน้ำหนักตัวนานอย่างน้อย 8 สัปดาห์ และตรวจติดตามผลการรักษาทางคลินิกและผลการตรวจทางห้องปฏิบัติการ ทุก 4 สัปดาห์ ประเมินผลการตอบสนองต่อการรักษาในเบื้องต้น หลังจากนั้นเป็นการติดตามผลในระยะยาว โดยจะแบ่งการตอบสนองต่อการรักษาเป็น 3 กลุ่ม คือ steroid responsive (SRP), steroid dependent (SD) และ steroid resistant (SRS)

ตัววัดที่สำคัญ : (1) อัตราการตอบสนองต่อการรักษาด้วยเพร็ดนิโซโลน ในกลุ่มต่าง ๆ (2) อุบัติการณ์ของการเกิดความดันโลหิตสูง ปัสสาวะเป็นเลือด และ renal insufficiency (3) ปัจจัยในการพยากรณ์โรคในการตอบสนองต่อยาในระยะแรกและระยะยาว

ผลการรักษา : เมื่อให้เพร็ดนิโซโลนจนครบ 8 สัปดาห์ พบว่าผู้ป่วยตอบสนองต่อยาร้อยละ 66.67 ไม่ตอบสนองต่อยาร้อยละ 33.33 และมีปัจจัยในการพยากรณ์โรคเพียงอย่างเดียว คือ การมีโปรตีนในปัสสาวะสูง ($P < 0.05$) สำหรับการติดตามผลระยะยาวพบว่าการตอบสนองเป็นแบบ SRP, SD และ SRS เท่ากับร้อยละ 58.33, 36.11 และ 5.56 ตามลำดับ และไม่พบว่ามีปัจจัยใดที่ช่วยในการพยากรณ์โรค ผู้ป่วยทั้ง 72 คน สามารถติดตามระยะยาวเกิน 1 ปี ได้ 60 คน (ร้อยละ 83.33) เมื่อแบ่งระยะเวลาที่ติดตามการรักษา 1-5 ปี 34 คน (ร้อยละ 56.67), > 5-10 ปี 15 คน (ร้อยละ 25.00) และ > 10 ปี 11 คน (ร้อยละ 18.33) ในกลุ่มที่ติดตาม 1-5 ปี พบความดันโลหิตสูงร้อยละ 2.94 hematuria ร้อยละ 11.76 แต่ไม่พบ renal insufficiency ในกลุ่มที่ติดตาม 5-10 ปี ไม่พบความดันโลหิตสูง และ renal insufficiency แต่พบ hematuria ร้อยละ 6.67 ในกลุ่มติดตามมากกว่า 10 ปี พบความดันโลหิตสูงร้อยละ 18.18 hematuria ร้อยละ 9.09 และ renal insufficiency ร้อยละ 9.09 ซึ่งไม่พบว่ามีปัจจัยพยากรณ์โรคแตกต่างกันอย่างมีนัยสำคัญ ($P > 0.05$) แต่เมื่อแบ่งการติดตามเป็นกลุ่ม SRP, SD, SRS พบว่าการมีปัสสาวะเป็นเลือดและการมีโปรตีนในปัสสาวะ เป็นปัจจัยพยากรณ์โรคที่พบได้บ่อยในกลุ่ม SRP ($P < 0.01$ และ 0.02 ตามลำดับ)

สรุป : ผู้ป่วยกลุ่มอาการเนโฟรติกที่สัมพันธ์กับไอจีเอ็มตอบสนองดีต่อการรักษาด้วยเพร็ดนิโซโลน การติดตามผลระยะยาวพบว่ามีการดำเนินโรคช้า มีอัตราทุพพลภาพและอัตราตายต่ำ ซึ่งพบเฉพาะในกลุ่ม SRS การศึกษานี้ไม่พบปัจจัยพยากรณ์โรคที่ชัดเจน

คำสำคัญ : กลุ่มอาการเนโฟรติกที่สัมพันธ์กับไอจีเอ็ม, การติดตามผลการรักษาระยะยาว, การตอบสนองต่อสเตอรอยด์, ปัจจัยพยากรณ์โรค

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