Nephrotic Syndrome in Elderly Patients: Three Years Experience at Siriraj Hospital

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Background: *The population age is being high and nephotic syndrome is a common renal disease.*
Objective: *To find the etiology and clinical manifestations of nephrotic syndrome in the elderly patients who underwent renal biopsy at Siriraj hospital including management and outcome.*
Material and Method: *Retrospective study in 76 nephrotic patients whose age ≥ 50 years and underwent renal biopsy between 2005-2007.*
Results: *Seventy six nephrotic patients with age ranged from 50-84 years were analysed. Primary glomerulonephritis diseases were found more than secondary causes (5:2). The two most common glomerulonephritis were membranous GN and focal/segmental glomerulosclerosis. The etiology of common secondary GN was lupus nephtitis 11.84% following by diabetic nephropathy and amyloidosis. The patients received immunosuppressive drugs and complete response was found in 51%, partial response 10.2%, no response was 2% and no immunosuppressive therapy 36.7%. There was 1 patient died of septicaemia.*
Conclusion: *Nephrotic syndrome in the elderly patients were not uncommon. The causes should be identified for prompt management and excellent outcome.*

Keywords: *Nephrotic syndrome, Renal biopsy, Elderly*

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Nephrotic syndrome is a clinical sign of glomerular disease that exhibits protein loss in urine of more than 3.5 grams per 1.73 square meter[1] or 3 grams per day in Thai patient[2]. There will be no signs or symptoms in some cases until the patient becomes very sick, which may lead to acute renal failure or chronic renal failure[3,4] that requires very expensive treatment. The survey in Thailand by the Thai Transplantation Society found that 80% of chronic renal failure patients who have received renal transplantation the cause was glomerular disease. Today, medical practice can cure glomerular disease or slow down the course if the patient is diagnosed and treated correctly[5-9]. Causes of nephrotic syndrome can be divided into 2 groups[10] as follows:

1. Primary nephrotic syndrome such as minimal change disease, focal segmental glomerulosclerosis, IgM nephropathy, membranoproliferative, membranous nephropathy, IgA nephropathy.

2. Secondary nephrotic syndrome such as diabetic glomerulosclerosis, amyloidosis, Non-Hodgkin's lymphoma, HIV-associated nephropathy, lupus nephritis.

The major differential diagnosis of nephrotic syndrome is the studying of pathology, which is extremely different depend on age, race and geographical location of the patients[11-17]. There are many nephrotic syndrome study in Thailand for both children and adults[18-21] but only a few in elderly. There was a study report from Chulalongkorn University[20] that studied 47 nephrotic syndrome patients, who were more than 50 years old in 2001 to 2004, which found that they were primary nephrotic syndrome (76.6%), in which the most, or 29.8%, were focal segmental

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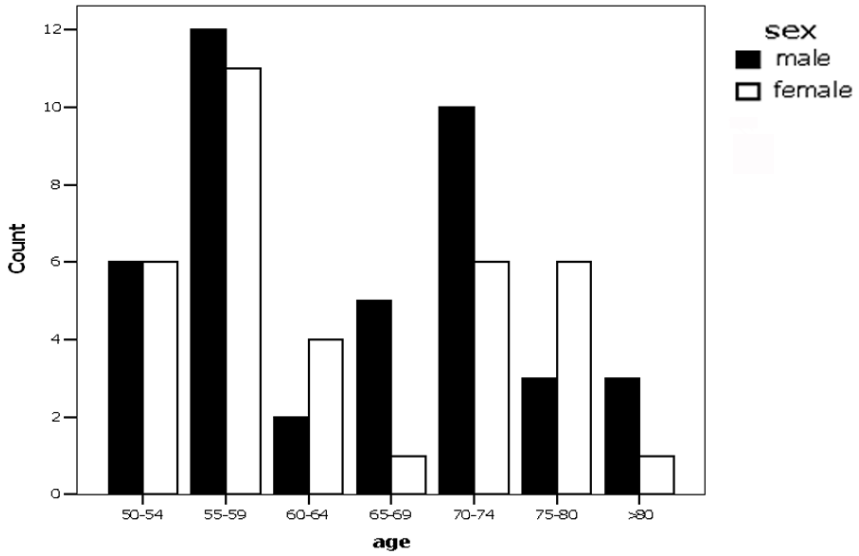

Fig. 1 Age and sex distribution of nephrotic syndrome patient

glomerulosclerosis and IgM nephropathy (14.9%). Secondary nephrotic syndrome was 19.1%. Nowadays, people live longer and using high technology in investigation which makes the incidence of nephrotic syndrome appear to be increasing but there is no nationwide registry in Thailand. Because of that reason, the researcher is interested in studying information about nephrotic syndrome in elderly to discover how to use that information to treat the elderly with nephrotic syndrome patients.

Meterial and Method

To study causes, clinical signs, kidney pathology and disease progression including treatments and outcome of treatments for aging nephrotic patients who were 50 years old or more that were admitted in Siriraj Hospital and were confirmed by renal biopsy.

Subjects

The 76 patients who were diagnosed as nephrotic syndrome and were 50 years old or older in the year 2005 to 2007.

Inclusion criteria

Nephrotic patients who were 50 years old or older that were treated in Siriraj Hospital

Exclusion criteria

Other glomerular disease that was not nephrotic syndrome.

Collecting Data

To identify sex, age, weight, height, race, underlying disease, clinical signs, physical examination of vital signs, renal and extrarenal manifestation, laboratory investigation (CBC, fasting blood sugar, BUN, creatinine, serum albumin, cholesterol, triglyceride, 24 hr urine protein, creatinine clearance, urine protein/ creatinine ratio), pathology, diagnosis, treatment, outcome and progression until the patient was discharged.

Statistical analysis

Quantitative data such as age ,weight and height were described using mean and standard deviation.

Qualitative data such as sex, race, underlying disease and diagnosis were described using percentage

Results

This study collected the patients' data from January 2005 to December 2007. There were 76 aging nephrotic syndrome patients. Age varied from 50 to 84 years old. There were 41 male or 53%, for which the mean age was 64.3 (SD = 9.5) and 36 female cases or 47%, for which the mean age was 63.6 (SD = 9.8). Table 1 showed the 44 cases or 58% of those with NS had associated diseases. HT was found 40.3% and found in men (70%) more than women (44.5%). DM was found 26.3% and found in men (30%). SLE was found only in women (5.3%). Infections such as viral hepatitis B or C also found in men (10%). Other diseases, such as

cirrhosis, were found in 5.3%. Table 2 showed laboratory data of all elderly nephrotic syndrome patients. Table 3 showed the pathology of elderly patients with nephrotic syndrome. The ratio between primary nephrotic syndrome and secondary nephrotic syndrome was 5:2. Primary nephrotic syndrome was found in 72.22%. Membranous nephropathy and focal/segmental glomerulosclerosis were found with equal frequency. Membranous nephropathy was found in men more than women in 5:1 ratio. In secondary nephrotic syndrome, lupus nephritis was the most often found at 11.84% then diabetic nephropathy and amyloidosis, respectively. There was one case of pauci-immune. The rest could not be precisely diagnosed from the pathological specimens.

Table 4 showed the response to treatment for nephrotic syndrome by immunosuppressive drug. The outcome shows that the elderly with nephrotic syndrome had complete responses 51.1%, partial response 10.2% and no response 2%. One of the patients died due to septicemia. There was no report of complication from renal biopsy.

Table 1. Associated diseases of the patients

	all	male
Associated diseases		
Hypertension (20)	40.3%	70%
Diabetes mellitus (14)	26.3%	30%
Systemic lupus erythematus (3)	5.3%	0%
Infection (4)	7%	10%
Others (3)	5.3%	3.4%

Discussion

In this study, the highest age was 84 years old. The cause of nephrotic syndrome was primary nephrotic syndrome more than secondary nephrotic syndrome in 5:2 ratio.

The often found renal pathology in primary nephrotic syndrome were membranous nephropathy and focal/segmental glomerulosclerosis. Interestingly,

Table 2. Laboratory data of the patients (mean ± SD)

	All	Male	Female
Creatinine (mg/dL)	2.00 ± 1.71	1.88 ± 1.24	2.15 ± 2.14
Hemoglobin (gm/dl)	10.83 ± 2.32	10.60 ± 2.29	11.10 ± 2.35
Fasting blood sugar (mg/dl)	107.78 ± 73.48	94.55 ± 36.33	119.70 ± 94.51
Cholesterol (mg/dl)	325.28 ± 131.92	289.47 ± 108.30	367.27 ± 146.04
Triglyceride (mg/dl)	206.65 ± 115.64	180.33 ± 84.72	237.68 ± 139.16
Albumin (gm/dl)	2.25 ± 0.62	2.26 ± 0.59	2.24 ± 0.65
Urine protein 24 hour (gm/day)	8.78 ± 8.95	6.73 ± 5.61	11.49 ± 11.66
Creatinine clearance (ml/min/1.73m^2)	41.32 ± 28.62	42.07 ± 30.81	40.40 ± 26.08

Table 3. Renal pathology of elderly nephtotic syndrome patients

	All	Male	Female
Primary glomerular disease			
Minimal change	5 (6.58%)	3 (7.32%)	2 (5.72%)
Membranous nephropathy	12 (15.79%)	10 (24.39%)	2 (5.72%)
Focal/segmental glomerulosclerosis	12 (15.79%)	6 (17.15%)	6 (17.15%)
Membranoproliferative GN	7 (9.21%)	2 (4.88%)	5 (14.29%)
Mesangial proliferative GN	6 (7.89%)	4 (11.44%)	2 (4.88%)
Ig A nephropathy	4 (5.26%)	2 (5.72%)	2 (5.72%)
Ig M nephropathy	5 (14.29%)	1 (2.44%)	4 (5.26%)
Cresentic glomerulonephritis	1 (1.33%)	1 (2.44%)	0
Secondary glomerular disease			
Diabetic nephropathy	7 (9.21%)	3 (7.31%)	4 (11.44%)
Lupus nephritis	9 (11.84%)	2 (4.88%)	7 (20%)
Amyloidosis	4 (5.26%)	3 (7.32%)	1 (1.33%)
Pauci-immune crescentic GN	1 (2.44%)	1 (2.44%)	0
Non diagnostic	3 (7.31%)	3 (7.31%)	0

membranous nephropathy was found in men more than in women in 5:1 ratio; the cause of relationship is still not known. The most frequently found renal pathologies in secondary nephrotic syndrome were lupus nephritis, diabetic nephropathy and amyloidosis, respectively.

When compared to other studies about pathological finding[14,25-28], the findings were similar, in which primary nephrotic syndrome was found more often than secondary nephrotic syndrome and found both membranous nephropathy and focal/segmental glomerulosclerosis but the study from Japan[24] found membranous nephropathy 1 in three to a half of elderly with nephrotic syndrome.

Table 4. Response to steroid/immunosuppressive therapy

	CR	PR	NR	ND
Primary glomerular disease				
Minimal change	1	0	0	3
Membranous nephropathy	4	0	0	4
Focal/segmental glomerulosclerosis	5	3	1	4
Membranoproliferative GN	3	0	0	4
Mesangial proliferative GN	2	1	0	1
Ig A nephropathy	1	0	0	1
Ig M nephropathy	1	0	0	1
Cresentic glomerulonephritis	1	0	0	0
Secondary glomerular disease				
Lupus nephritis	6	1	0	2
Amyloidosis	1	0	0	1
Total (49)	25	5	1	18
Percent of response	51.1	10.2	2	36.7

CR: complete response, PR: partial response, NR: no response, ND: no immunosuppressive therapy

Conclusion

Elderly patients with nephrotic syndrome should get proper diagnosis and treatment to achieve good outcomes.

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Table 5. Review of literature on renal pathology of the elderly patients presenting with nephrotic syndrome

	Shin 2001[25]	Rivera 2004[17]	Nair 2004[27]	Uezono 2006[14]	Talerngsak 2005[20]	This study
Number of patients	75	725	33	27	47	76
Age	≥ 60	≥ 65	≥ 80	≥ 65	≥ 50	≥ 50
Mean age □ SD (yr)	64.5 ± 4.4	ND	83.3 ± 2.8	72.8 ± 5.2	ND	64.3 ± 9.6
Primary glomerular disease	81.3%	64.8%	42.4%	63.0%	86.6%	72.2%
Minimal change	26.2%	13.2%	18.2%	18.5%	10.6%	6.6%
Focal/segmental glomerulosclerosis	ND	9.7%	15.2%	22.2%	29.8%	15.8%
Membranous nephropathy	44.3%	28.0%	6.1%	14.8%	14.9%	15.8%
Membranoproliferative glomerulonephritis	ND	7.2%	0%	0%	4.3%	9.2%
Mesangial proliferative glomerulonephritis	ND	5.9%	3.0%	7.4%	ND	7.9%
Others	ND	ND	ND	ND	ND	ND
Secondary glomerular disease	18.7%	35.2%	57.6%	37.0%	23.4%	27.8%
Diabetic glomerulopathy	ND	1.7%	3.0%	11.1%	2.1%	9.2%
Benign nephrosclerosis	ND	ND	42.4%	7.4%	ND	ND
Primary amyloidosis	ND	17.2%	9.1%	7.4%	ND	5.3%
Lupus nephritis	ND	1.4%	0%	0%	8.5%	11.8%
Hepatitis B- associated glomerulopathy	42.9%	ND	0%	0%	ND	ND
Others	ND	ND	3.0%	3.7%	2.1%	1.3%

ND: not done

Potential conflicts of interest

None.

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ภาวะเนโฟรติค ซินโดรม ที่พบในผู้ป่วยสูงอายุในโรงพยาบาลศิริราช จำนวน 76 ราย

มนัสชนก จิรัฐวงศ์, อรรถพงศ์ วงศ์วิวัฒน์, เกรียงศักดิ์ วารีแสงทิพย์, สมเกียรติ วสุวัฏฏกุล, ทวี ชาญชัยรุจิรา, ไพศาล ปาริชาติกานนท์, บุณยฤทธิ์ ชื่นสุชน, ธัญญารัตน์ ธีรพรเลิศรัฐ

***ภูมิหลัง**: ในปัจจุบันพบว่ามีผู้ป่วย nephrotic syndrome ในประเทศไทยมากขึ้นในกลุ่มสูงอายุ ซึ่งสาเหตุของภาวะ nephrotic syndrome ก็มีการรักษาที่ต่างกันไป จึงเป็นที่มาของการศึกษานี้เพื่อประโยชน์ในการดูแลรักษาผู้ป่วยสูงอายุในระยะยาว เพื่อให้การวินิจฉัยที่ถูกต้อง เพื่อเพิ่มอัตราการรอดชีวิต รวมทั้งคุณภาพชีวิตของผู้ป่วยให้ดียิ่งขึ้น*

***วัตถุประสงค์**: เพื่อให้ทราบถึงสาเหตุ ลักษณะทางคลินิก ผลพยาธิสภาพทางไต รวมทั้งการรักษาตลอดจนถึงการดำเนินโรค และผลการรักษาภาวะ nephrotic syndrome ของผู้ป่วยสูงอายุ ที่มีอายุมากกว่าหรือเท่ากับ 50 ปี ที่รับการรักษาในภาควิชาอายุรศาสตร์ โรงพยาบาลศิริราช โดยยืนยันการวินิจฉัยด้วยผล renal biopsy*

***วัสดุและวิธีการ**: เป็น retrospective study โดยศึกษาข้อมูลของผู้ป่วยที่ได้รับการวินิจฉัยว่าเป็น nephrotic syndrome ที่มีอายุมากกว่าหรือเท่ากับ 50 ปีที่โรงพยาบาลศิริราช ในช่วงระหว่างปี พ.ศ. 2548 ถึง พ.ศ. 2550 จำนวน 76 ราย โดยรวบรวมจากเวชระเบียนผู้ป่วยนอกและใน*

***ผลการศึกษา**: ผู้ป่วย nephritic syndrome 76 ราย อายุตั้งแต่ 50-84 ปี เฉลี่ย 64 ปี พบ primary glomerular disease มากกว่า secondary glomerular disease คิดเป็นอัตราส่วน 5:2 โดยผลพยาธิสภาพทางไตที่พบมากที่สุดคือ membranous nephropathy และ focal/segmental glomerulosclerosis สำหรับ membranous nephropathy พบในผู้ชายมากกว่าผู้หญิง อัตราส่วน 5:1 รองลงมาคือ membranoproliferative GN และ mesangial proliferative GN ตามลำดับส่วนใน secondary glomerular disease พบ lupus nephritis มากที่สุด 11.84% รองลงมาคือ diabetic nephropathy และ amyloidosis ตามลำดับอื่น ๆ คือ Pauci-immune crescentic glomerulonephritis พบ 1 ราย และไม่สามารถวินิจฉัยจากชิ้นเนื้อ 3 ราย ผู้ป่วยที่ได้รับการรักษาด้วย immunosuppressive agent/steroid ส่วนใหญ่ตอบสนองกับการรักษาค่อนข้างดี จากการศึกษามีผู้เสียชีวิต 1 ราย เป็น focal/segmental glomerulosclerosis ไม่ตอบสนองต่อการรักษา สาเหตุการเสียชีวิต คือ การติดเชื้อในกระแสเลือด*

***สรุป**: เมื่อพบผู้ป่วยสูงอายุที่มาด้วยภาวะ nephrotic syndrome ควรให้การวินิจฉัยที่ถูกต้อง และให้การรักษาที่เหมาะสมเนื่องจากมีผลการรักษาที่ดี*