Journal of Renal and Hepatic Disorders

CODON PUBLICATIONS

ORIGINAL ARTICLE: NEPHROLOGY

Clinicopathologic Spectrum of Nephrotic Syndrome in the Elderly

Sheikh Zubair[1], Junaid Ahmed[1], Syed Mubashir Nissar[2], Muzamil Rashid Pala[1], Aabid Hussain[2], Murtaza Rashid Pala[2], Muzamil Latief[2]

[1]Department of General Medicine Government Medical College Srinagar India; [2]Nephrology and Kidney Transplant Division, Superspecialty Hospital, Government Medical College, Srinagar, India

Abstract

The elderly population is affected by a wide range of kidney diseases like young adult patients. However, their clinical course and morphological manifestations are affected by aging. Recognition, diagnosis, and management of glomerular disease in elderly persons have several unique challenges. We aimed to study the clinicopathologic spectrum of elderly patients with nephrotic syndrome (NS). In this retrospective study, we looked at 234 patients of adult NS who were biopsied during the last 5 years. Among them, 31 patients were above the age of 60 years (Elderly). Mean age in elderly patients was 67.48 ± 6.11 years, with age range from 60 to 86 years. Elderly NS patients constituted 13.2% of total adult NS patients. Nineteen patients (61.2%) were males and 12 (38.7%) were females. Hematuria was observed in 19% and hypertension in 48% patients. Mean serum albumin was 2.79 ± 0.39 g/dl and mean 24 h urinary protein was 3.77 ± 0.8 grams. Membranous nephropathy (MN) followed by minimal change disease (MCD) was the most common diagnosis. No major complication with biopsy was reported in our study as has been the case with most studies.

Keywords: elderly; nephrotic syndrome; kidney biopsy, Membranous nephropathy, MCD, FSGS

Received: 23 March 2023; *Accepted after revision*: 13 April 2023; *Published*: 24 April 2023

Author for correspondence: Muzamil Latief, Nephrology and Kidney Transplant Division, Superspecialty Hospital, Government Medical College, Srinagar, 190011 Kashmir, India. Email: muzamillatief.b@gmail.com

How to cite: Zubair S, et al. Clinicopathologic Spectrum of Nephrotic Syndrome in the Elderly. J Ren Hepat Disord. 2023 7 (1): 34–37.

Doi: https://doi.org/10.15586/jrenhep.v7i1.162

Introduction

As the healthcare services improve throughout the world, people tend to live longer and healthier. Studies reveal that around 11% of the world population is above the age of 60 years. This proportion is seen to increase to 22% by 2050. India being the second most populous country in the world, adults above 60 years comprises about 10–13% of the total population. The elderly population is affected by a wide range of kidney diseases like young adult patients. However, their clinical course and morphological manifestations are affected by aging (1–3). The elderly tend to have a lower glomerular filtration rate (GFR) because of aging-related decrease in GFR of approximately 0.8–1.7 mL/min/year (4). Glomerular diseases contribute as much as 25% of cases of renal failure in the elderly (3, 5). Nephrotic syndrome (NS) is characterized by massive proteinuria, hypoalbuminemia, and edema, and it is a common syndrome seen in nephrology practice, both in adults and children. It is seen frequently in

the elderly population. Although there was inertia in subjecting elderly patients to invasive procedures like kidney biopsy, this is being overcome by more and more data regarding the benefits of histopathological diagnosis and effective treatment strategies (1). Recognition, diagnosis, and management of glomerular disease in elderly persons have several unique challenges. Renal biopsy continues to play an essential role in the clinical assessment of hematuria, proteinuria, and kidney failure. Despite the frequency of urinary abnormalities and reductions in GFR among elderly individuals, only a small proportion of patients who are over the age of 65 and still fewer over the age of 75 years are subjected to renal biopsies (1). As a result, very few data are available that inform our understanding of Glomerulonephritis (GN) in elderly individuals. Elderly persons who are treated respond almost similarly to younger individuals. Published studies of biopsy in elderly subjects show a low rate of complications and identification of treatable forms of kidney disease. However, rates of biopsy in elderly individuals continue to be low. We aimed to study the clinicopathologic spectrum of elderly patients with NS at our center.

Materials and Methods

In this retrospective study, we looked at 234 patients of adult NS who were biopsied during the last 5 years. Among them, 31 patients were above the age of 60 years (Elderly). Mean age in elderly patients was 67.48 ± 6.11 years with age range from 60 to 86 years. Diabetic patients were not included in this study. The clinicopathologic profile of the elderly population was studied.

Results

Elderly NS patients constituted 13.2% of the total adult NS patients. Nineteen patients (61.2%) were males and 12 (38.7%) were females. Hematuria was observed in 19% and hypertension in 48% patients. Table 1 shows biochemical and urinary parameters of patients. Table 2 shows the biopsy spectrum of elderly NS. Table 3 shows the comparison of biopsy in male and female patients. Table 4 and Figure 1 show a comparison of the biopsy spectrum of the elderly and overall NS patients.

Discussion

NS in the elderly is defined based on the same criteria as used for young adults. The main diagnostic features used in NS in people over 65 is proteinuria ≥3.5 g/24 h and/or proteinuria/urine creatinine ratio ≥3.5 g/g associated with hypoalbuminemia <30 g/L (6). NS is a common clinical presentation of glomerular diseases in the elderly. The prevalence of NS in this population ranges from 30 to 62.5% in elderly patients

Table 1: Biochemical parameters.

Parameter	Mean	Std Dev
Hemoglobin	12.48	1.06
Serum Albumin	2.79	0.39
Triglyceride	142.19	64.87
LDL Cholesterol	187.52	67.34
Creatinine	1.33	0.19
Proteinuria	3.77	0.8

LDL, Low density lipoprotein; FSGS, Focal Segmental glomerulosclerosis; IgA N, IgA nephropathy; MPGN, Membranoproliferative glomerulonephritis; DPGN, Diffuse proliferative glomerulonephritis; IGAN, IgA Nephropathy; DM, Diabetes Mellitus; LUPUS, Lupus Nephritis; AL, AL amyloidosis; AA, Amyloid A.

Table 2: Biopsy spectrum of nephrotic syndrome in the elderly.

Diagnosis	N (%)
MN	11 (35.4)
MCD	5 (16.1)
FSGS	4 (12.9)
IgA N	4 (12.9)
MPGN	2 (6.4)
Amyloidosis	2 (6.4)
DPGN	2 (6.4)
Immunotactoid GN	1 (3.2)

MN, Membranous nephropathy; MCD, minimal change disease.

Table 3: Comparison of the biopsy spectrum of males and females in the elderly.

Diagnosis	M (n)	F (n)
MN	6	5
MCD	3	2
FSGS	3	1
DPGN	1	1
MPGN	1	1
Amyloidosis	1	1

MN, Membranous nephropathy; MCD, minimal change disease.

with glomerular disease who underwent kidney biopsy (7, 8). Clinical presentations of older patients with NS are similar to younger adults. However, the age-related decline of kidney function, the frequency of comorbidities, and the interaction of medications do contribute to treatment response and outcomes. Moreover, the higher prevalence of hypertension and DM and acute kidney injury in old age contribute to mortality and morbidity in old age (9). In our study, nearly half of the patients were hypertensive and 19% had hematuria. Renal histopathology helps in diagnosis, treatment, and prognostication. Varying frequency of glomerular diseases has been reported in different studies. MN being the most frequently reported diagnosis including our study finding (7–9). Amyloidosis was seen as the cause of NS in the elderly in 10–15% with a predominance of the AL type (10). In a study from India, 35.6% had AA amyloidosis, which was attributed to high prevalence of tuberculosis in this region. Although MN is reported as the most common cause in majority of the studies in the elderly population, the spectrum of the rest of the diseases is varying. In a relatively large study of 317 patients over 60 years of age presenting with the NS, MN was seen in 36.6%, MCD in 11.0%, and renal amyloid in 10.7% (11), whereas in our study following MN and MCD, FSGS and IgA were the third most frequent diagnosis. Another study looking at very elderly patients (>85 years) reported MN as the most common etiology of NS followed by amyloidosis (12). In our study, we had only patient above the age of 85 years who had MN. Similarly, studies by Koshy et al. (8) and Sato et al. (13) have reported MN as the commonest etiology of NS in elderly patients. In a recent study that included patients above the age of 65 years, 45 patients underwent kidney biopsy and it was observed that NS was due to amyloidosis in 35.6%, whereas MN was observed in 9.5% (14). However, this study had included diabetic patients unlike our study. No major complication with biopsy was reported in our study as has been the case with most studies.

Table 4: Comparison of the biopsy spectrum of elderly and overall nephrotic syndrome.

Diagnosis	Overall (%)	Elderly (%)
MN	25.6	35.4
MCD	23.07	16.1
FSGS	18.3	12.9
IGAN	5.12	12.9
MPGN	5.9	6.4
DPGN	5.12	6.4
Immunotactoid GN	0.4	3.2
C1Q	1.2	0
Amyloidosis	0.8	6.4
LUPUS	18.3	0

Conclusion

NS patients in young adults need kidney biopsy for definitive diagnosis, treatment, and prognostication, so is the case with elderly patients. Elderly NS patients have similar clinicopathologic spectrum as seen in young adults on kidney biopsy. In our study, the most common diagnosis was MN.

Conflict of Interest

The authors declare no potential conflicts of interest with respect to research, authorship, and/or publication of this article.

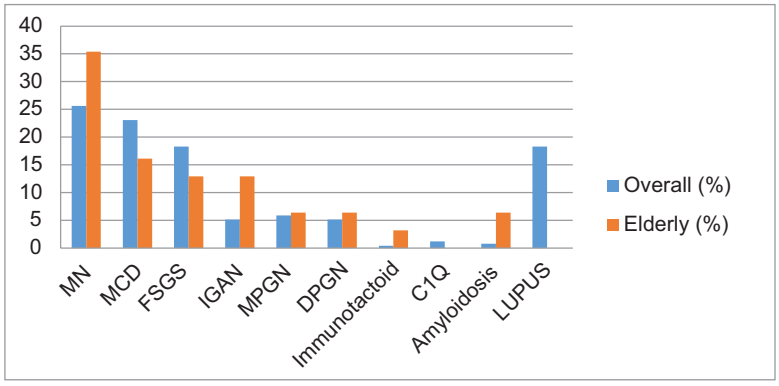

Figure 1: Comparison of the biopsy spectrum of the elderly and overall nephrotic syndrome.

References

1. Rosner M, Abdel-Rahman E, Williams ME, for the ASN Advisory Group on Geriatric Nephrology. Geriatric nephrology: Responding to a growing challenge. Clin J Am Soc Nephrol. 2010;5(5):936–42. http://dx.doi.org/10.2215/CJN.08731209
2. Kanasi E, Ayilavarapu S, Jones J. The aging population: Demographics and the biology of aging. Periodontol 2000. 2016;72:13–18. http://dx.doi.org/10.1111/prd.12126
3. Prakash J, Saxena RK, Sharma OP, Usha. Spectrum of renal diseases in the elderly: Single center experience from a developing country. Int Urol Nephrol. 2001;33:227–33. http://dx.doi.org/10.1023/A:1015279619491
4. Denic A, Glassock RJ, Rule AD. Structural and functional changes with the aging kidney. Adv Chronic Kidney Dis. 2016;23:19–28. http://dx.doi.org/10.1053/j.ackd.2015.08.004
5. Zech P, Colon S, Pointet P, Deteix P, Labeeuw M, Leitienne P. The nephrotic syndrome in adults aged over 60: Etiology, evolution and treatment of 76 cases. Clin Nephrol. 1982;17(5):232–6.
6. Yokoyama H, Sugiyama H, Narita I, et al. Outcomes of primary nephrotic syndrome in elderly Japanese: Retrospective analysis of the Japan Renal Biopsy Registry (J-RBR). Clin Exp Nephrol. 2015;19:496–505. http://dx.doi.org/10.1007/s10157-014-1022-x
7. Chen Y, Li P, Cui C, Yuan A, Zhang K, Yu C. Biopsy-proven kidney diseases in the elderly: Clinical characteristics, renal histopathological spectrum and prognostic factors. J Int Med Res. 2016;44:1092–102. http://dx.doi.org/10.1177/0300060516660247
8. Koshy PJ, Parthsarathy R, Mathew M, Prabakaran R, Kuruvilla S, Abraham G. Interpretation of kidney biopsy in Indian patients older than 60 years: A tertiary care experience. Indian J Nephrol. 2018;28:198–202. http://dx.doi.org/10.4103/ijn.IJN_158_17
9. Tse KC, Lam MF, Yip PS, et al. Idiopathic minimal change nephrotic syndrome in older adults: Steroid responsiveness and pattern of relapses. Nephrol Dial Transplant. 2003;18:1316–20. http://dx.doi.org/10.1093/ndt/gfg134
10. Glassock RJ. An update on glomerular disease in the elderly. Clin Geriatr Med. 2013;29:579–91. http://dx.doi.org/10.1016/j.cger.2013.05.007
11. Johnston PA, Brown JS, Davison AM. The nephrotic syndrome in the elderly: Clinico-pathological correlations in 317 patients. Geriatric Nephrol Urol. 1992;2:85–90. http://dx.doi.org/10.1007/BF00451670
12. Moutzouris DA, Herlitz L, Appel GB, Markowitz GS, Freudenthal B, Radhakrishnan J, et al. Renal biopsy in the very elderly. Clin J Am Soc Nephrol. 2009 Jun;4(6):1073–82. http://dx.doi.org/10.2215/CJN.00990209
13. Sato H, Saito T, Furuyama T, Yoshinaga K. Histologic studies on the nephrotic syndrome in the elderly. Tohoku J Exp Med. 1987 Nov;153(3):259–64. http://dx.doi.org/10.1620/tjem.153.259
14. Gorsane I, Ayed TB, Hajji M, Barbouch S, Abdallah TB. Nephrotic syndrome in elderly: Etiologies, management, and prognosis. Saudi J Kidney Dis Transpl. 2021;32(5):1388–96. http://dx.doi.org/10.4103/1319-2442.344759