VOLUME - 12, ISSUE - 08, AUGUST - 2023 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Nephrology

STEROID RESPONSIVENESS IN PRIMARY FSGS IN ADULTS: EXPERIENCE FROM A TERTIARY CARE CENTER IN EASTERN UTTAR PRADESH

Akshay Zalavadiya	Senior resident, Department of Nephrology IMS BHU Varanasi, UP
Shivendra Singh	Professor and Head, Department of Nephrology IMS BHU Varanasi, UP
Mohit Mishra	Senior resident, Department of Nephrology IMS BHU Varanasi, UP
Uttam Kumar Singh	Senior resident, Department of Nephrology IMS BHU Varanasi, UP
Nikhil Chaudhary	Senior resident, Department of Nephrology IMS BHU Varanasi, UP

ABSTRACT

Background: Over the last two decades, Primary FSGS has emerged as one of the most common primary glomerular disease in adults, with its incidence increasing as almost equal to that of IgA nephropathy.(1) Primary FSGS is a clinicopathological entity characterized by Nephrotic range proteinuria (with or without nephrotic syndrome) with typical Light Microscopic appearance and diffuse podocyte foot process effacement by Electron Microscopy(2). Corticosteroids remains the mainstay of the treatment reaching remission rate from 40-60%. Need of our research arise from paucity of data from India regarding responsiveness of steroids in EM proven primary FSGS. **Materials And Methods:** We retrospectively analyzed data from January 2019 to January 2023. Patients with FSGS with EM showing diffuse (>70%) podocyte effacement who completed atleast 16 weeks of steroids were included in the study. Patients were carefully searched for secondary and genetic causes and was ruled out if found any. We studied clinicopathological parameters and steroid responsiveness in patients of Primary FSGS. Response was defined according to KDIGO guidelines.(3) **Results:** In our study we evaluated records of 135 patients with FSGS on Light Microscopy, of these 91 patients met the inclusion criteria. In our study cohort Mean age of was 31.34 +/- 12.5 years, with slight male predominance. Most common histological pattern was NOS 75.82%. Out of 91 patients, 52.75% patients achieved complete remission; 34.07% achieved partial remission and 13.19% patients did not achieve any remission as per KDIGO definition. The presence of microhematuria and hypertension were seen in 28 and 27 patients, respectively. Amongst the non-responders hypertension was seen in 50% and microhematuria was seen in 33.3% patients however, there was no statistical significant difference in different response group with degree of hematuria and hypertension. Baseline proteinuria was seen significantly higher in nonresponders compared to responders (P<0.05). **Conclusion:** Primary FSGS has been increasingly seen in biopsies done for Nephrotic syndrome especially in young adults. Complete remission with corticosteroids seen in almost half of the patients only. Presence of high baseline proteinuria (>7000mg/day) was seen more commonly in non responders. Significant proportion of EM proven primary FSGS having partial to no response to corticosteroids calls for a low threshold for genetic testing in this population.

KEYWORDS :

INTRODUCTION

Over the last two decades, Primary FSGS has emerged as one of the most common primary glomerular disease in adults, with its incidence increasing as almost equal to that of IgA nephropathy. (1) FSGS is type of podoctopathy. Primary FSGS is a clinicopathological entity characterized by Nephrotic range proteinuria (with or without nephrotic syndrome) with typical Light Microscopic appearance and diffuse podocyte foot process effacement by Electron Microscopy(2),(4). Corticosteroids remains the mainstay of the treatment reaching remission rate from 40-60%(5). Need of our research arise from paucity of data from India regarding responsiveness of steroids in EM proven primary FSGS in adults.

AIMS AND OBJECTIVES

In our study we aimed to assess the response of steroid in biopsy proven primary FSGS and factors affecting nature of response received.

MATERIAL AND METHODS

Study was done in nephrology department (OPD/IPD) and included all the patients with biopsy proven primary FSGS.We retrospectively analyzed data from January 2019 to January 2023. Patients with FSGS with EM showing diffuse (>80%) podocyte effacement who completed atleast 16 weeks of steroids and age >12 years were included in the study. Patients were carefully searched for secondary and genetic causes and was ruled out if found any.We studied clinicopathological parameters and steroid responsiveness in patients of Primary FSGS. Response was defined according to KDIGO guidelines.(3)

Table 1: Definition of response.

Complete Remission
Reduction of proteinuria to <0.3 g/d or PCR <300 mg/g (or <30 mg/mmol), stable serum creatinine and serum albumin >3.5 g/dl.
Partial Remission
Reduction of proteinuria to 0.3-3.5 g/d or PCR 300-3500 mg/g (or 30-350 mg/mmol) and a decrease >50% from baseline

After taking into consideration inclusion and exclusion criteria, all the patients of primary FSGS in regular follow up between January 2019 to January 2023 were included. We retrospectively analysed response to steroid at 16 weeks as per KIDGO guidelines. For which baseline 24 hr urinary protein , Serum albumin and serum creatinine taken into consideration and values were repeated at 16 weeks and response was defined(into complete,partial or no response).

Data was entered in Microsoft excel spread sheet, cleaned for errors and was analysed using SPSS version 25. Continuous variables are presented as Means ± Standard deviations and categorical variables as frequencies and their 95% Confidence Intervals. Data is represented using appropriate charts, tables and graphs.

Baseline Characteristics

In our study we evaluated records of 135 patients with FSGS on Light Microscopy, of these 91 patients met the inclusion criteria.In our study population of 91 patients there is slight male predominance, 48 males and 43 females. In our study cohort Mean age of was 31.34 +/- 12.5 years.The presence of microhematuria and hypertension were seen in 30.77%and

29.67% patients, respectively.Most common histological pattern was NOS 75.82%, followed by Tip 23.08% and collapsing variant 1.1%. Out of 21 patients having tip variant,microhematuria and hypertension was seen in 7 patients. Out of 69 patients with NOS, 20 had hypertension and 21 had microhematuria.

Table 2:Summary of baseline characterstics.

CHARACTERSTIC	MEAN
AGE	31.34+/- 12.51 years
HEMOGLOBIN	11.91+/-1.73 gm%
S.CREAT	1.37+/-0.75 mg/dl
S.ALBUMIN	1.92+/-.474 mg/dl
UP_24HR	7462.28+/-4087.28mg

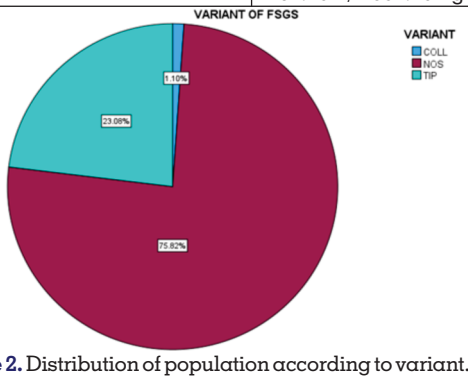

Figure 2. Distribution of population according to variant.

RESULTS

Out of 91 patients, 52.75% patients achieved complete remission; 34.07% achieved partial remission and 13.19% patients did not achieve any remission as per KDIGO definition.

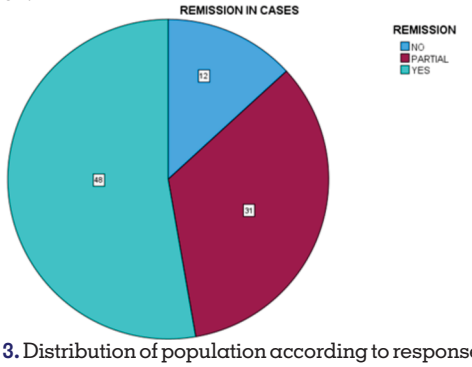

Figure 3. Distribution of population according to response.

Amongst the non-responders hypertension was seen in 50% and microhematuria was seen in 33.3% patients however, there was no statistical significant difference in different response group with degree of hematuria and hypertension.

Table 3: Remission rate according to variant

	No remission	Partial remission	Complete remission		Total
VARIANT	COLL	0	1	0	1
	NOS	11	23	35	69
	TIP	1	7	13	21
Total		12	31	48	91

p-0.425

Table 4: Remission rate according to presence of microhematuria

		No remission	Partial remission	Complete remission	Total
microhematuria	NO	8	24	31	63
	YES	4	7	17	28
Total		12	31	48	91
p-0.472.					

Table 5: Remission rate according to presence of hypertension

		No remission	Partial remission	Complete remission	Total
hypertension	NO	6	22	36	64
	YES	6	9	12	27
Total	12	31	48	91	

p-0.236

Baseline proteinuria was seen significantly higher in non-responders compared to responders (P<0.05) determined using Independent-Samples Kruskal-Wallis Test.

DISCUSSION

FSGS is emerging as one of the most common cause of glomerular disease causing ESRD in adults(6)

Achieving even partial reduction has shown to improve outcomes in patients with primary podocytopathy(7). Most of the studies has combined adult and paediatric populations when assessing steroid responsiveness in nephrotic syndrome.In our study all enrolled patients had age>12 years.

Mean age in our study population was 31.34+/- 12.51 years which was comparatively younger than global average but similar to those of other studies from India.(8),(9).Presence of microhematuria and hypertension were seen in 30.77% and 29.67% patients which is in accordance with previously reported frequencies(8). However, in contrast to previous studies which has showed relatively less prevalence of hypertension and microscopic hematuria in tip variant, there was no difference in occurrence of hypertension and microhematuria across the variants in our study population.(10)

In our study population, most common histological variant was NOS followed by tip, which was similar to other studies done previously. (9),(8),(10),(11). In our study population, 52.75% patients achieved complete remission; 34.07% achieved partial remission and 13.19% did not remit after 16 weeks of steroid therapy. Response rates were similar to the observed rates in a retrospective study done by Bagchi et al.(8). Complete response in tip variant was seen in 61.9% patients and in NOS only 50.72% achieved complete remission. However, this difference did not reach statistical significance in our study.

Previous studies were unable to find clinical parameters that could predict responsiveness to steroids(12),(13). In our study, microscopic hematuria and hypertension was seen more commonly amongst non responders compared to responders, but this finding could not reach statistical significance. However, high baseline proteinuria (>7000mg/day) at presentations was seen significantly higher in non responder group (p<0.05).

CONCLUSION:

Primary FSGS has been increasingly seen in biopsies done for Nephrotic syndrome especially in young adults. Complete remission with corticosteroids seen in almost half of the patients only. Presence of high baseline proteinuria (>7000mg/day) was seen more commonly in non responders .

REFERENCES

1. Korbet SM. Treatment of Primary FSGS in Adults. J Am Soc Nephrol. 2012 Nov;23(11):1769–76.
2. D'Agati VD, Fogo AB, Bruijn JA, Jennette JC. Pathologic classification of focal segmental glomerulosclerosis: a working proposal. Am J Kidney Dis. 2004 Feb;43(2):368–82.
3. Rovin BH, Adler SG, Barratt J, Bridoux F, Burdge KA, Chan TM, et al. KDIGO 2021 Clinical Practice Guideline for the Management of Glomerular Diseases. Kidney Int. 2021 Oct;100(4):S1–276.
4. Sethi S, Glassock RJ, Fervenza FC. Focal segmental glomerulosclerosis:

towards a better understanding for the practicing nephrologist. Nephrol Dial Transplant. 2015 Mar 1;30(3):375–84.
5. Beer A, Mayer G, Kronbichler A. Treatment Strategies of Adult Primary Focal Segmental Glomerulosclerosis: A Systematic Review Focusing on the Last Two Decades. BioMed Res Int. 2016;2016:1–9.
6. O'Shaughnessy MM, Montez-Rath ME, Lafayette RA, Winkelmayer WC. Patient Characteristics and Outcomes by GN Subtype in ESRD. Clin J Am Soc Nephrol. 2015 Jul;10(7):1170–8.
7. Chun MJ, Korbet SM, Schwartz MM, Lewis EJ. Focal Segmental Glomerulosclerosis in Nephrotic Adults: Presentation, Prognosis, and Response to Therapy of the Histologic Variants. J Am Soc Nephrol. 2004 Aug;15(8):2169–77.
8. Bagchi S, Agarwal S, Kalaivani M, Bhowmik D, Singh G, Mahajan S, et al. Primary FSGS in Nephrotic Adults: Clinical Profile, Response to Immunosuppression and Outcome. Nephron. 2016;132(2):81–5.
9. Tang X, Xu F, Chen DM, Zeng CH, Liu ZH. The clinical course and long-term outcome of primary focal segmental glomerulosclerosis in Chinese adults. Clin Nephrol. 2013 Aug 1;80(08):130–9.
10. Trivedi M, Pasari A, Chowdhury AR, Abraham-Kurien A, Pandey R. The Spectrum of Focal Segmental Glomerulosclerosis from Eastern India: Is It Different? Indian J Nephrol. 2018 May-Jun;28(3):215-219. doi: 10.4103/ijn.IJN_115_17. PMID: 29962672; PMCID: PMC5998723.
11. Nada R, Kharbanda JK, Bhatti A, Minz RW, Sakhuja V, Joshi K. Primary focal segmental glomerulosclerosis in adults: is the Indian cohort different? Nephrol Dial Transplant. 2009 Dec 1;24(12):3701–7.
12. Rydel JJ, Korbet SM, Borok RZ, Schwartz MM. Focal segmental glomerular sclerosis in adults: Presentation, course, and response to treatment. Am J Kidney Dis. 1995 Apr;25(4):534–42.
13. Agarwal SK, Dash SC, Tiwari SC, Bhuyan UN. Idiopathic Adult Focal Segmental Glomerulosclerosis: A Clinicopathological Study and Response to Steroid. Nephron. 1993;63(2):168–71.