



TO STUDY THE CLINICOPATHOLOGICAL PROFILE OF ACUTE GLOMERULONEPHRITIS IN HOSPITALISED PATIENTS - A PROSPECTIVE STUDY

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ABSTRACT

Acute glomerulonephritis refers to a specific set of renal diseases in which an immunologic mechanism triggers inflammation and proloferation of glomerular tissue that can result in damage to the basement membrane, mesangium, or capillary endothelium.

Hippocrates originally described the manifestation of back pain and hematuria, which lead to oliguria or anuria. With the development of the microscope, Langhana was later able to describe these pathophysiologic glomerular changes.

AIMS AND OBJECTIVES:

1. To study the clinical and pathological profile of acute glomerulonephritis in hospitalized patients.
2. To correlate the renal biopsy with the clinical features, diagnosis and prognosis in acute glomerulonephritis.
3. To study the incidence of acute glomerulonephritis in the part of country.

MATERIALS AND METHODS: In this prospective study, we studied the clinical and pathological profile of patients. The study group comprised of "clinicopathological profile of acute Glomerulonephritis in hospitalized patients" from the Department of Nephrology SUPERSPECIALITY HOSPITAL, Government Medical College, Jammu for the period of four years w.e.f MAY 2013 to JUNE 2017.

CONCLUSION: From our study on ACUTE GLOMERULONEPHRITIS, It was concluded that the patients with clinical presentation like edema, haematuria and hypertension had more evidence of Acute glomerulonephritis on histopathological examination. PSAGN was the most common entity among others. Idiopathic MPGN usually presented with nephrotic range proteinuria, although it may present with non nephrotic range proteinuria. PSGN showed better outcome as compared to other enteties if treated aggressively

KEYWORDS : Acute, glomerulonephritis, immunologic, inflammation

INTRODUCTION

Acute glomerulonephritis refers to a specific set of renal diseases in which an immunologic mechanism triggers inflammation and proloferation of glomerular tissue that can result in damage to the basement membrane, mesangium, or capillary endothelium.

Hippocrates originally described the manifestation of back pain and hematuria, which lead to oliguria or anuria. With the development of the microscope, Langhana was later able to describe these pathophysiologic glomerular changes.

Most original research focuses on the poststreptococcal patient. Acute glomerulonephritis is defined as the sudden onset of hematuria, proteinuria, and red blood cell casts. This clinical picture is often accompanied by hypertension, edema, and impaired renal function. As will be discussed, acute glomerulonephritis can be due to a primary renal or systemic disease (Dimitrios et al., feb 4, 2008)

Glomerular lesions in acute glomerulonephritis are the result of glomerular deposition or in situ formation of immune complexes. On gross appearance, the kidneys may be enlarged up to 50%. Histopathologic changes include swelling of the glomerular tufts and infiltration with polymorphonucleocyte. immunofluorescence reveals deposition of immunoglobulins and complement. With the exception of poststreptococcal glomerulonephritis, the exact triggers for the formation of the immune complexes are unclear. In streptococcal infection involvement of derivatives of streptococcal proteins has been reported. A streptococcal neuramidase may alter host immunoglobulin G (IgG). IgG combines with host antibodies.

IgG/anti-IgG immune complexes are formed and then collect in the glomeruli. In addition, elevation of antibody titers to other antigens, such as antistreptolysin O or antihyaluronidase, DNAase-B and streptokinase, provide evidence of a recent streptococcal infection.

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MATERIALS AND METHODS...

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Methods*

All patients were subjected to a detailed history, clinicak examination and laboratory investigations which were recorded in the proforma given in this plan.

Inclusion criteria

- Swelling of feet

Exclusion criteria

- diabetes Mellitus type 2
- Chronic renal failure
- Heart failure
- Cirrhosis

All patients were subjected to ASO titer, CRP, serum complement levels (C3), HIV HBV and HCV serology, ANA, ANCA and Renal Biopsy.

Renal biopsy was performed in the DEPTT. and assisted by the assistances.

The patient lay in the prone position and an area of skin in the right renal

angle and the tissue down to the kidneys were infiltrated with local anaesthetic. The biopsy specimen was obtained with a Bard Magnum Biopsy needle and was placed in the normal saline for 15-30 seconds before fixed in 10% formalin.

The following parameters were assessed while interpretation of renal biopsy:

- 1 No. of glomeruli
- 2 Size of glomeruli
- 3 cellularity of glomeruli

Observations

Table 1 Showing distribution of cases into adults and children (<14 year)

Cases	No of patients	Percentage%
Children	32	12.3
Adult	228	87.7
TOTAL	260	

Out of 260 patients, 32 (12.3%) were children (<14 year).
Out of 260 patients, 228 (87.7%) were adults.

Table 2 showing age and sex distribution of patients under study:

Age group (In year)	Male	Female	Total	Percentage (%)
<15	20	12	32	12.3
16-30	80	60	140	53.8
31-45	36	20	56	21.5
46-60	20	8	25	10.7
>60	4	0	4	1.5
Total	160 (61.5%)	100 (38.5%)	260	

Of the total 260 patients, 160 (61.5%) were males and 100 (38.5%) were female under study. The majority of patients were in the age group of 16-30 years accounting for 140 cases out of 260 cases (53.8%).

Table 3 showing distribution of case according to the duration of illness:

Duration of illness	No. of cases	Percentage (%)
<1 week	48	18.5
1-3	124	47.7
4-8	88	33.8
Total	260	

Both amongst adults and children, the majority of patients i.e. 124 out of 260 (47.7%) presented with a duration of illness of 1-3 weeks.

48 patients presented with a duration of illness less than 1 week and 88 patients presented with 4-8 weeks.

Out of 260 patients, 96 (36.9%) patients showed raised serum level of cholesterol, 16 out of 96 (16.7%) patients were in the age group of childhood and 80 out of 96 (83.3%) were in the age group of adult.

Table 4 showing renal size on Ultrasonography:

USG	Enlarged	CMD After	Enlarged & CMD alter/lost	Normal & CMD alter	Normal	Shrunken	Swollen
Cases	60	24	28	32	100	12	4
Percentage (%)	23.1	9.2	10.8	12.3	38.5	4.6	1.5

Out of 260 patients, 60 (23.1%) patients showed enlarged renal size on USG.

- 24 (9.2%) showed alteration in CMD.
- 28 (10.8%) showed enlarged and CMD alteration.
- 32 (12.3%) showed normal size renal but alteration in CMD.
- 100 (38.5%) showed normal size renal.
- 12 (4.6%) showed shrunken renals and
- 4 (1.5%) showed swollen renals.

Table 5. showing the decreased level of C3 complements in patients

under study:

Cases	Yes & (%)	No & (%)
Children	24 (75)	8 (25)
adult	442 (19.3)	184 (80.7)
Total	68 (26.2)	192 (73.8)

Out of 260 patients, 68 (26.2%) patients showed positively for dsDNA . 24 out of 68 (35.3%) patients were in the age group of childhood and 44 out of 68 (64.7%) were in the age group of adults.

Table 6. Showing ACNA positivity in patients under study:

Cases	Yes & (%)	No & (%)
Children	8 (25)	24 (75)
adult	8 (3.5)	220 (94.5)
Total	24 (6.2)	164 (93.8)

Out of 260 patients, 8 (6.2%) patients showed positively for ANCA. 8 were in the age group of adult (4 male & 4 female) 8 were in the age group of children (8 male). 8 were positive on renal biopsy as PSAGN.

Table 7 Showing distribution of patients responded to medical treatment under study:

Age Group	Children & (%)	Adult & 95)	total
Cases	5 (55.6)	4 (44.4)	9

Out of 260 patients, 36 (13.8%) patients were responded to medical treatment.

20 out of 36 (55.6%) patients were in the age group of childhood (12 male & 8 Female) And 16 out of 36 (44.4%) were in the age group of adults (8 male & 8 female).

Table 8. Showing age and sex distribution of patients responded to medical treatment under study:

Age group in years	Male & (%)	Female & (%)	Total
<15 yrs	12 (60)	8 (40)	20
15-20 yrs	8 (66.7)	4 (33.3)	12
>20 yrs	0	4 (1000)	4
Total	20 (55.6)	16 (44.4)	36

Out of 36 patients, the majority of cases were in the age group of <15 years (55.6%) which were responded to medical treatment.

Table 9. Showing distribution of various lesions on the biopsies as regards the patients age:

Lesions	children & (%)	Adults & (%)	Total & (%)
PSGAN	24 (37.5)	40 (62.5)	64 (28.6)
RPGN	4 (16.7)	20 (83.5)	24 (10.7)
DPGN	8 (50)	8 (50)	16 (7.1)
FSGN	0	8 (100)	8 (3.6)
MGN	4 (12.5)	28 (87.5)	32 (14.3)
Lupus nephritis	0	24 (1000)	24 (10.7)
Idiopathic MPGN	0	56 (100)	56 (25)
Total	40 (17.9%)	184 (82.1)	224

Out of 260 patients, 224 patients underwent for renal biopsy and diagnosed as.

Out of 184 patients: 64 (28.6%) were diagnosed as PSAGN 94 male & 24 Female).

Table 10 Showing distribution of Pathology of glomerulopathies discussed in the present study:

Disease	No. of cases	Light microscopy
PSGAN	64	Hypercellularity of mesangial & endothelial cells, neutrophilic infiltration.
RPGN	24	Crescents on the inside of Bowman's capsule, inflammatory cell in interstitium.
DPGN	16	Diffuse proliferation
FSGN	8	Focal & segment sclerosis

MGN	16	Basement membrane thickening
Idiopathic MPGN	56	Mesangial proliferation, basement membrane thickening.

Lupus Nephritis: 24 patients

Types	Light Microscopy
Type I-mineral mesangial	No abnormality
Type II – mesangial proliferation	Increase no. of mesangial cells
Type III – focal nephritis	Proliferation of endothelial and mesangial cells- focal & segmental
Type IV -Diffuse nephritis	Diffuse Proliferation
Type V – membranous nephritis	Diffuse thickening of glomerular capillary wall
Type VI – sclerotic nephritis	Sclerosed and hyalinised glomeruli

Table11. Showing distribution of various lesions of Acute Glomerulonephritis on the renal biopsies:

Lesions	children & (%)	Adults & (%)	Total & (%)
PSGAN	24 (37.5)	40 (62.5)	64 (34.7)
RPGN	4 (16.7)	20 (83.5)	24 (13.1)
DPGN	8 (50)	8 (50)	16 (8.7)
Lupus nephritis	0	24 (100)	24 (13.1)
MPGN	0	56 (100)	56 (30.4)
Total	36 (19.6)	148 (80.4)	184

Out of 46 patients:

64 (34.7%) were diagnosed as PSGAN.
24 (13.1%) were diagnosed as RPGN.
16 (8.7%) were diagnosed as DPGN.
24 (13.1%) were diagnosed as Lupus nephritis
56 (30.4%) were diagnosed as MPGN.

DISCUSSION

In the present study out of 260 patients 160 (61.5%) were males and 100 (38.5%) were females. Similarly a study by FRANCIS D MURPHY et al. (1934) concluded that out of 94 patients (54.3%) were males and 43 (45.7%) were females which is almost same ie males more than females.

In a study by PARAG et al. (1988) men are affected twice as commonly as women and Afro caribbeans are relatively rarely affected except by crescent SLE. In one study from south africa idiopathic crescentic glomerulonephritis and anti GBM disease were more common in whites than black patients.

In a study by FREDERIC GERARD BURKE et al. (1947) analyse a series of ninety consecutive cases of children with acute glomerulonephritis at the childrens hospital during the past three years (1943 through 1945). It was found that there was only a slight preponderance in the number of male patients with acute glomerulonephritis.

RN Srivastava G Mayekar et al (1975) conducted clinicopathological studies of 206 indian children with nephrotic syndrome showed a primary renal cause in 195 of which 77% were boys.

MSR HUTT et al. (1958) in their study had 73.3% males and 26.7% females. The %age of male patients in a study by EDITH GRISHMAN et al. (1957) was 52.4% and 47.6% were females.

[10/24, 12:03]: In a study by DESHPANDEY GU et al. (2000) a retrospective study was carried out where histopathology records of deptt. Of pathology, ARMED FORCES MEDICAL COLLEGE Pune comprised of 92.6% adults and 7.4% children. 79.7% were males and 20.3% were females.

Patients under this study were divided into two major groups ie adults and children and were subdivided into smaller groups according to age. Majority patients were in age group of 16 to 30 years accounting for 35 cases out of 65 cases (53.8%).

150 cases of glomerulonephritis in the acute stage were studied by FRANCIS D MURPHY and J W RASTETTER (1938) and they observed 70% were under 30 years of age. Of this 39.52 % recovered.

39.04% became chronic and 11.43% died. Of the 45 patients over 30 years of age 48.88% recovered 26.66% became chronic and 24.44% died.

These figures emphasise that acute nephritis in an older group is probably more serious and has a higher mortality rate than in a younger group. The patients were predominantly under 30 years of age but only 17.33% of the total under the age of 10 years.

In a study by FRANCIS D MURPHY et al. (1934) 59 out of 94 (62.7%) patients were in the age group of 10 to 30 years and 35 patient were above 30 years of age.

Similarly in a study by FRADERIC GERARD BURKE et al. (1947), 90 consecutive cases of childre with acute glomerulonephritis were analysed and 52 children out of 90 (57.7%) cases were in the age group of 5 to 12 years.

[10/24, 12:26]: The interval from latent of infection to onset of nephritis in majority of patients ie 31 out of 65 (47.7%) showed a duration of 1 to 3 weeks was observed in our study.

[10/24, 12:29]: Nephritis follows throat infection after a latent period of 1 Or 2 weeks (ANTHONY et al.1969) and in a case of skin infection it is typically 3 to 6 weeks. When impetigo and pharyngitis are present at the same time, the infection in the throat is usually due to contamination from the skin.

In a study M S R HUTT et al. (1958) compared the clinical features with extent of the structural changes observed in 15 patients, 60% patients had a duration of 1 to 3 weeks which is in accordance with our study.

SUMMARY AND CONCLUSION

Out of 260 patients 160(61.5%) were males and 100 (38.5%) were females. Out of 260 patients, 32 (12.3%) were children (< 14 years of age). Out of 260 patients 228 (87.7%) were adults. Majority of patients were in the age group of 16 to 30 years(53.85%). Out of 260 patients 36 (13.8%) responded to medical management. Out of 224 renal biopsies, 184 (84.1%) had features of acute glomerulonephritis.

CONCLUSION :-From our study on ACUTE GLOMERULONEPHRITIS, It was concluded that the patients with clinical presentation like edema, haematuria and hypertension had more evidence of Acute glomerulonephritis on histopathological examination. PSGAN was the most common entity among others. Idiopathic MPGN usually presented with nephrotic range proteinuria, although it may present with non nephrotic range proteinuria. PSGN showed better outcome as compared to other enteties if treated aggressively.

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