CLINICAL PROFILE AND OUTCOME OF ACUTE POST-STREPTOCOCCAL GLOMERULONEPHRITIS IN CHILDREN

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Abstract

Acute glomerulonephritis (AGN) is a common disease of children over 5 years of age. 36 children with acute post-streptococcal glomerulonephritis were studied prospectively in Comilla 250 bed modern hospital from March, 1992 to Feb. 1993. There were 20 (55.5%) male and 16 (44.5%) female subjects. Age of the children were from 4-12 yrs. (mean 7.6 years). Previous or present skin infections accounted for 89% of the cases of AGN. Puffiness of the face, generalized swelling of the body and scanty high coloured urine and fever were the common complaints. Dependent oedema (100%), hypertension (89%), pallor (61%), impetigo (39%), tachypnoea (16.6%) & evidences of heart failure (16.6%) were the important clinical findings. High ASO titre was evident in 16 cases (88.9%) out of 18 cases done. The patients were managed by panicillin, frusemide, antihypertensive, digoxin (when needed) and by restriction of fluid, protein & salt. The duration of hospital stay ranged from 7-19 days (mean 9.5 days). 3 patients died in the hospital: 2 on the same day of hospitalization due to acute left ventricular failure and one at the 10th day due to hypertensive encephalopathy. Other 33 children recovered. None of them showed any complication at the end of 3 months after discharge. Early detection of treatment of skin infection can abort many attacks of AGN in children.

Introduction

Acute post-streptococcal glomerulonephritis (APSGN) is a common disease in children over 5 years of age and is the prototypic disease of AGN.[1] It is seen after both pharyngeal and skin infections with a latency period from infection to presentation of 7-14 days and 14-21 days respectively[2]. APSGN is an immune complex mediated disease and the diagnosis is evident from the history of recent streptococcal infection, High ASO or Anti DNAse B titres, hypocomplementemia & generation of plasma terminal complement complexes (TCC).[3,4]

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The clinical presentations of APSGN is sometimes variable depending on the extent of renal involvement. The disease is usually manifested as puffiness of the face and oedema, hypertension and or its sequale, oligo-anuria, hematuria and sometimes renal failure. The disease is self limited and generally requires supportive therapy but only a few patients show complications. Hypertensions leading to encephalopathy or left ventricular failure, dyselectrolytemia with progressive detarioration of renal functions occur in the rare patients[5-8]. The present study has been undertaken to see the pattern of clinical presentation, aetiological factors and outcome of management.

Materials and Methods

Thirty six children with APSGN admitted into the paediatric ward of Comilla 250 bedded Modern Hospital from March, 1992 to February, 1993 were studied prospectively. Of the 36 children there were 20 (55.5%) male and 16 (44.5%) female. Age of the children ranged from 4-12 yrs. mean 7.6 years (Table I). A detailed history, physical examination and available relevant investigations were done in all cases. ASO titre and serum electrolytes were done in selected cases. These patients were treated by Inj. cryst. panicillin for 10 days. Tab. frusemide. Fluid, protein and salt restricted diet, digoxin & antihypertensive drugs when indicated. The patients were discharged on clinical improvement and laboratory findings.. They were followed by monthly physical examinations, urinalysis and blood urea estimation for a period of 3 months to see any complication.

Results

50% of the patients gave history of recent skin infection which were revealed by healed/healing lessions on the skin. 14 (39%) patients had skin infection at presentation. 4 patients (11.1%) gave history of sorethroat in the preceeding weeks. (Table II).

All the patients (100%) presented with puffiness of the face, generalised swelling of the body and scanty micturition. 25 (69.4%) patients complained of high coloured urine. Fever was noted in 20 (55.5%) cases. Vomiting and respiratory distress each were complained by 6 (16.6%) cases. Abdominal pain, convulsion and unconciousness, each were presented in 2 cases (Table III).

Physical examination revealed dependable oedema in 36 (100%) cases, hypertension in 32 (89%), pallor in 22 (61%), tachycardia in 20 (55.5%) Impetigo/pyoderma in 14 (3%), tachypnoea 6 in (16.6%), enlarged tender liver in 6 (16.6%) cases. Raised Jugular venous pressure, crepitations in lung bases and ascites were found each in 4 (11.1%) cases. Six patients (16.8%) presented with heart failure. 2 (5.5%) patients presented with hypertensive encephalopathy (Table IV).

Laboratory examinations revealed high ESR in 28 (77.7%) cases, leucocytosis in 20 (55.56%) cases, high blood urea in 30 (83%) cases. X-Ray chest done in 29 cases revealed cardiomegally in 10 (34.48%) cases (Table V & VI).

The duration of hospital stay ranged from 7-19 days (Mean 9.5 days). Of the 36 patients, 3 patients died. 2 of them died of acute left ventricular failure on the same day of admission and one on the 10th day of hospitalisation due to hypertensive encephalopaghy. Other 33 (91.7%) patients improved and were discharged (Table-VII). They were advised to report every month for follow up. Only 10 patients were available for followup upto 3 months. None of these patients were found to have any complication.

Discussions

Acute glomerulonephritis is one of the common medical emergencies encountered in the paediatric patients. Although Acute post-streptococcal glomerulonephritis is the common form of AGN in children, there are many other rare causes of AGN eg. other bacteria, virus, multisystem disorders like SLE, Hench Schonlein purpura, Good pasture's syndrome, IGA Nephropathy, Hepatitis B. virus associated glomerulonephritis, Human, immunodificiency virus nephropathy etc.[9-11]

The study revealed streptococcal origin of all the cases from the history of sorethroat, pyoderma and high ASO titre. The age of the children in this study was observed to be between of 4-12 years (mean 7.6 yrs.). The peak age incidence was 4-9 years (80%). This is almost similar to the earlier studies done in Bangladesh[15-16]. Although male preponderance has been discribed in most studies, no significant difference in the occurence of this desease in this study could be revealed. Skin infection in this study is almost similar in incidence to those of earlier studies in Bangladesh but contrasts with studies done in other countries where infection of the upper respiratory tract had been claimed to be the antecedent illness. But Blumbug & Feldman in their observation noticed skin infection in 30-80% cases as the etiologic factor for AGN[21].

High ASO titre noted in 16 out of 18 cases done, showed the evidence of previous streptococcal infection. Hypertension was seen in 9 (32%) cases. It was presumably due to delayed hospitalisation of these children. The other clinical presentation were somewhat similar to those of earlier studies done in and out side Bangladesh. Clinical recovery was observed at the end of the1st week in most of the patients. Of the 36 children, 3 died. The deaths were presumed to be due to delayed hospitalisation. 10 patients who were followed upto 3 months, did not show any complication of the dsease which reflected a good prognosis of Acute post-streptococcal glomerulonephritis.

This study revealed skin infection as a common antecedent event for the development of AGN. We suggest early detection and treatment of skin infection to abort an attack of AGN in our children. Moreover fatal complication of AGN can be minimized to a significant extent by early hospitalization and meticulous treatment. Although this study sample is small, yet it reflects the magnitude of the problem in a peripheral hospital. Studies with larger samples and long term followup is waranted to give a clear picture of the clinical presentation, etiological factors, course and prognosis of this disease.

Table-I

AGE INCIDENCE (n-36)

AGE IN YEARS	No. of patients	Percentage
4-6 years	10	27.78%
7-9 years	19	52.78%
10-12 years	7	19.44%

Table-II

Evidence of previous streptococcal infection

	No. of patients	Percentage
Past history of skin infection (Pyoderma impetigo).	18	50%
Pyoderma/Impetigo at presentation.	14	39%
Preceeding sorethroat	4	11.1%

Table-III

Presenting symptoms

	Nol. of patients	Percentage
1. Puffiness of the face	36	100%
2. Generalized Swelling of the body	36	100%
3. Scanty micturition	36	100%
4. High coloured urine	25	69.4%
5. Fever	20	55.5%
6. Vomiting	6	16.6%
7. Respiratory distress	6	16.6%
8. Abdominal pain	2	5.5%
9. Unconciousness	2	5.5%
10. Convulsion	2	5.5%

Table-IV

Presenting symptoms

	No. of patients	Percentage
Dependent oedema	36	100%
Hypertension	32	89%
Pallor	22	61%
Tachycardia	20	55.5%
Impetigo	14	39%
Tachypnoea	6	16.6%
Enlarged tender liver	6	16.6%
Raised jagular venous pressure	4	11.1%
Crepitations in lung bases	4	11.1%
Ascites	4	11.1%

Table-V

Laboratory Results (n = 36)

	No. of patients	Percentage
Leucocytosis	20	55.5%
High ESR	28	77.7%
High Blood urea	30	83.3%
A.S.O. Titre (done on 18 patients)		
Normal	2	5.5%
High	16	44.4%
Urine examination :		
Protein (mild to moderate)	36	100%
Microscopic haematuria	36	100%
Hyaline & granular casts	10	27.78%
Pus cells	19	52.78%

Table-VI

X-RAY FINDING (n = 29)

	No. of patients	Percentage
X-RAY CHEST : Normal	19	65.52%
Cardiomegally	10	34.48%

Table-VII

Outcome of Treatment

No. of patient	Outcome	Percentage	Cause of Death (N =36)
33	Improved	91.7%	
3	Expired	8.3%	Hypertensive encephalopathy-1 Acute left ventricular failure-2

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