Post-infectious glomerulonephritis in children over two decades– factors associated with clinical diversity

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Introduction:

The incidence of post-infectious glomerulonephritis (PIGN) has decreased over the last decades (1-4);
Therefore recent epidemiological data from industrialized countries is scarce (4).
We evaluated current patterns of PIGN and detected possible predictors of disease severity.

Objectives:

To evaluate demographic, clinical and laboratory characteristics of PIGN and to track changes in patterns of its course over recent decades

Methods:

Medical records of all patients diagnosed with PIGN who were admitted to Schneider Children's Medical Center during period 17 years (1994-2011) were retrospectively reviewed.

Inclusion criteria:

- Hematuria and\or proteinuria or other features of nephritic syndrome
- Hypocomplementemia and/or
- Evidence of streptococcal infection: positive throat culture or elevated anti-streptolysin O (ASLO) titers.
- Normalization of complement levels after resolution of the acute phase of illness

Exclusion criteria:

- Evidence of other disease

Data on demographics, presenting symptoms and signs, infectious diseases which proceeded the onset of glomerulonephritis, clinical course of the disease and laboratory tests during hospital stay was collected.

Results:

125 patients matched study criteria. Mean age was 5.8 ±3.3 years, 16% were younger than 3 years. 87 (70.2%) patients had abnormal renal function, 51 (41.1%) had nephritic syndrome, 40 (32.5%) had nephrotic syndrome, 20 (16.4%) had both nephritic and nephrotic syndromes. 49 (40%) patients had fever. Clinical features Are presented in Table 1. C-reactive protein (CRP) was elevated in 74 (80.4%). Laboratory findings are presented in Table 2. Significant association was found between nephritic syndrome, low C3 (OR 0.73, CI 0.60-0.88) and older age (OR 1.24, CI 1.08-1.43) (Table 3). Nephrotic syndrome was associated with low C3 (OR 1.19, CI 1.05-1.385), female gender (OR 2.65, CI 1.03-6.8) and younger age (OR 0.84, CI 0.71-0.98).

Table 1. Clinical features of patients at presentation

Clinical features	No. of patients (%)
Nephrotic syndrome	40 (32.5%)
Nephritic syndrome	51 (41.1%)
Nephritic and Nephrotic	20 (16.4%)
Isolated macrohematuria	21 (16.8%)
Oliguria	42 (33.6%)
Hypertension	103 (82.4%)
Fever	49 (40.2%)
Edema	74 (59.2%)

Table 2. Laboratory Findings

Laboratory findings	No. of patients (%)
Abnormal renal function	87 (64.5%)
Proteinuria	116 (92.8%)
Nephrotic range proteinuria	40 (32.5%)
Hypoalbuminemia	60 (48.8%)
Elevated CRP	75 (81.5%)
Low C3	110 (89%)
Low C4	29 (23.8%)
Anemia	98 (79%)
Hyperkalemia	36 (28.8%)

Table 3. Association between nephritic syndrome and C3 levels

	Nephritic Syndrome	Without Nephritic Syndrome	P - value
Low C3	50 (100%)	59 (84.3%)	0.002
Normal C3	0 (0%)	11 (15.7%)	

Conclusions:

- PIGN remains an important cause of glomerular disease in children and may affect very young patients.
- Nephrotic syndrome seems more common than previously appreciated.
- Fever and elevated CRP may accompany the acute phase.
- Depressed C3 levels are associated with a more severe disease.

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