

Acute Poststreptococcal Glomerulonephritis and Acute Rheumatic Fever in the Same Patient: a Case Report and Review of the Literature

Serdar Kula, MD, Arda Saygılı, MD, F. Sedef Tunaoğlu, MD, Rana Olgunturk, MD,
Gazi University Medical School, Department of Pediatric Cardiology, Ankara, Türkiye

Introduction

Acute poststreptococcal glomerulonephritis (APSGN) and acute rheumatic fever (ARF) are both separately well-recognized nonsuppurative sequelae of group A beta hemolytic streptococcus infections. Their occurrence in the same patient concurrently is exceptional and poorly documented in the literature. Also, the coincident occurrence of these two diseases has been described (1-7). We present two interesting cases with ARF and APSGN at the same time which is a rare condition.

Case 1

A 12 year-old boy was healthy until he developed fever and sore throat lasting for 1 week. No diagnosis or treatment was established. Two weeks later he developed fever, arthralgia affecting the right knee, nausea and vomiting. When he was admitted to the hospital with these symptoms, he had also palpebral and pretibial oedema. He was referred to our pediatric cardiology unit with this features.

On his examination he had arthritis on his right knee, palpebral and pretibial oedema, and mild dyspnea. Persistent sinus tachycardia (102 bpm) with the classical murmurs of mitral insufficiency were detected. His blood pressure was 130/90 mm Hg. There was a mild increase of PR interval on his ECG (0.18 sec).

Two-dimensional and Doppler echocardiography demonstrated enlarged left atrium and mitral regurgitation with normal heart function. Laboratory investigations revealed increased blood urea nitrogen (38 mg/dl) and creatinine (2.8 mg/dl) levels and a decreased serum C3 level (0.38 g/l). Urine analysis

showed 2+ proteinuria and microscopic hematuria with numerous red blood cell casts. The antistreptolysin O (ASO) titer was high at 695 Todd Units. C reactive protein (CRP) was higher than normal limits (96 mg/dl) and erythrocyte sedimentation rate (ESR) was 68 mm/h. Anti-nuclear and Anti-DNAse B antibodies were not detected. The diagnosis of APSGN was based on these laboratory and clinical findings. Also, since the patients' clinical and laboratory findings satisfied Jones' criteria for the diagnosis of acute rheumatic fever, salicylate and furosemide therapy and benzathine penicilline prophylaxis were started. After 4 weeks of treatment all his symptoms subsided except for the persistent mitral valve insufficiency.

Case 2

The patient, a 14-year-old girl, developed arthralgia, nausea and vomiting 1 week ago. She was treated for 10 days with oral amoxicillin for her upper respiratory tract infection two weeks before presenting symptoms. She was referred to our hospital with these symptoms.

On admission, her blood pressure 130/90 mm Hg, pulse rate was 100 bpm. She had a mild dyspnea and oedema in palpebral and pretibial regions. Her left knee was warm and tender with full range of motion. She had a grade 1/6 systolic ejection murmur at apical region.

Laboratory evaluations revealed the following: ESR 57 mm/h, CRP 64 mg/dl, ASO 1600 Todd Units, anti-DNAse B and anti-nuclear antigen were negative. Blood urea-nitrogen (33 mg/dl) and serum creatinine (3,4 mg/dl) levels were high. Also, we have found that serum C3 levels (0.44 g/l) was

decreased. Urinalysis showed 2+ proteinuria with 20-30 red blood cells. PR interval was 0.16 sec on her ECG. Echocardiogram revealed mitral insufficiency and LV enlargement with normal left ventricular systolic function.

She had been diagnosed APSGN and rheumatic fever based on these clinical and laboratory findings. She was given salicylate and furosemid therapy, and benzathine penicilline prophylaxis. She was discharged from hospital in good condition with remaining mitral insufficiency.

Discussion

While various renal pathologies have been described in acute rheumatic fever, and referred to as "rheumatic nephritis", these are often non-specific and considered only a transient component of the acute illness of rheumatic fever (8).

Most of the previously reported cases of this condition were adults. Only nine cases in childhood have been reported in English literature in last four decades (Table 1). Five male and 4 female, aged 3.5-16 years (mean 11.27 ± 1.42 years) (1-7). None of the patients had history of previous heart disease. The diagnosis was confirmed by echocardiography in all patients. Echocardiographic findings were thrombi in 1 patient (4), mitral insufficiency in

6 patients (1,2,4,6,7) and aortic insufficiency in 2 patients (6,7), decreased myocardial functions in 1 patient (4) and normal cardiac function in the other. All patients were treated with diuretics and salicylate and benzathine penicillin prophylaxis. In 4 of the reported cases of co-existent acute glomerulonephritis and acute rheumatic fever (1,3,6,7), acute rheumatic fever was the initial feature which was followed by glomerulonephritis. The glomerulonephritis is the initial feature in the remaining of the case reports as seems to be our cases. However, some of these cases had longer intermittent period between the both features (1,3,5,6). In spite of these, to the best of our knowledge our patients were the first cases in the literature because of their symptoms for both APSGN and acute rheumatic fever present at the same time.

Coincidental ARF and APSGN are rarely seen, and there is no explanation yet for this interesting occurrence. It might be explained that some of the streptococcal strains had both nephritogenic and rheumatogenic features (9). We think that this condition is not rare as seem as it reported. Because, mitral insufficiency is the most frequently condition in the patients with APSGN (10). Consequently, physicians should be careful for this interesting condition to obtain adequate prophylaxis in these patients.

Table 1. Characteristics of the patients in the literature.

References	Age	Sex	Initial feature	Intermittent Period	Last feature	Echocardiographic findings
1	10	F	Arthritis	2 months	Carditis	Mitral insufficiency
2	14	M	APSGN	5 days	Carditis	Mitral insufficiency
3	8	F	Arthritis	20 days	Chorea	Normal
4	16	M	APSGN	Unknown	Carditis	Mitral insufficiency and decreased myocardial functions
5	16	F	APSGN	19 days	Arthritis	Normal
6	15	M	Arthritis	1 month	Carditis	Mitral insufficiency and Aortic insufficiency
7	9	M	APSGN	4 days	Carditis	Mitral insufficiency and Aortic insufficiency
7	10	F	Arthritis	Unknown	Carditis	Mitral insufficiency
7	3.5	M	APSGN	2 weeks	Arthritis	Normal
Our case	12	M	APSGN	-	Carditis	Mitral insufficiency
Our case	14	M	APSGN	-	Carditis	Mitral insufficiency

References

1. Matsell DG, Baldree LA, DiSessa TG, Gaber LS, Stapleton FB. Acute poststreptococcal glomerulonephritis and acute rheumatic fever: occurrence in the same patient. *Child Nephrol Urol* 1990;10:112-4.
2. Oner A, Atalay S, Karademir S, Pekuz O. Acute poststreptococcal glomerulonephritis followed by acute rheumatic carditis: an unusual case. *Pediatr Nephrol* 1993;7:592-3.
3. Kujala GA, Doshi H, Brick JE. Rheumatic fever and poststreptococcal glomerulonephritis: a case report. *Arthritis Rheum* 1989;32:236-9.
4. Sieck JO, Awad M, Saour J, Ali H, Qunibi W, Mercer E. Concurrent post-streptococcal carditis and glomerulonephritis: serial echocardiographic diagnosis and follow-up. *Eur Heart J* 1992;13:1720-3.
5. Kwong YL, Chan KW, Chan MK. Acute post-streptococcal glomerulonephritis followed shortly by acute rheumatic fever. *Postgrad Med J* 1987;63:209-10.
6. Castillejos G, Padilla L, Lerma A, Gonzalez S, Reyes P. Coincidence of acute rheumatic fever and acute post streptococcal glomerulonephritis. *J Rheumatol* 1985;12:587-9.
7. Chandrasekhara MK, Cornfeld D. Concomittant rheumatic fever and acute glomerulonephritis. *Clin Pediatrics* 1969;8:110-4.
8. Grishman E, Cohen S, Salomon MD, Churg J. Renal lesions in acute rheumatic fever. *Am J Pathol* 1967;51:1045-61.
9. Potter E, Svartman M, Mohammed I. Tropical acute rheumatic fever and associated streptococcal infection compare with concurrent acute glomerulonephritis. *J Pediatr* 1978;92:325-33.
10. Vardi P, Markiewicz W, Levy J, Adler O, Riss E, Benderley A. The heart in acute glomerulonephritis: an echocardiographic study. *Pediatrics* 1979, 63;782-7.



Doç.Dr. Serap Işıksöy

Osmangazi Üniversitesi
Patoloji Bölümü