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Idiopathic thrombocytopenic purpura in a child with acute poststreptococcal glomerulonephritis

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Summary

Acute poststreptococcal glomerulonephritis (APSGN) is one of the most common causes of hematuria in childhood. The hematological changes are not typical in APSGN except anemia due to hemodilution and mild hemolysis. The concurrent occurence of idiopathic thrombocytopenic purpura (ITP) and APSGN has very rarely been reported. In this article, due to its rarity, we report a 13-year-old boy with APSGN who simultaneously developed ITP. *(Turk Arch Ped 2011; 46: 164-6)*

Key words: Acute poststreptococcal glomerulonephritis, idiopathic thrombocytopenic purpura, childhood

Introduction

Acute poststreptococcal glomerulonephritis (APSGN) is a diffuse inflammatory disease of glomerules which develops after streptococcal infections and occurs via immune mechanisms. It is one of the most common causes of glomerulonephritis in childhood (1). In acute poststreptococcal glomerulonephritis, the presence of macroscopic and/or microscopic hematuria, transient decrease in complement 3 (C3), high blood pressure, edema, oliguria and evidence of prior streptococcal infection are diagnostic (2).

Idiopathic thrombocytopenic purpura (ITP) is a disease characterized by increase in destruction of circulatory platelets and is the most common cause of acquired thrombocytopenia in childhood (3). The diagnosis is made by history, physical examination, complete blood count and by differentiating from other causes of thrombocytopenia (4). Thrombocytopenia, shortening of platelet life spans, presence of antithrombocyte antibodies in plasma and increase in megakariocytes in the bone marrow are typical findings.

As we know, thrombocytopenia may be observed in the course of nephritis caused by systemic diseases (1). However, thrombocytopenia has been reported very rarely in the course of APSGN. According to our investigation association of thrombocytopenia and ITP has been identified in a limited number of cases in literature (4,7-10). We would like to present a 13 year old male subject in whom an association of APSGN and ITP was found and who required careful treatment and follow-up.

Case report

A 13 years old male patient presented to our clinic with complaints including dark-colored urination, swelling in the eyes and rash on the anterior surfaces of both legs. It was learned that the patient had a sore throat 3 weeks ago and his physician started drugs which he could not name with a diagnosis of upper respiratory tract infection. He had no history of chronic disease. Familial history revealed no thrombocytopenia or chronic disease including renal disease. Physical examination revealed the following: weight: 58 kg (75 p), height: 160 cm (50-75), apical heart rate: 96/min, body temperature: 37°C, blood pressure: 150/100 mmHg (>95p/>95p). General state of the

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patient was well and no pathology was found except for pretibial edema (+) and petechiae on the anterior surfaces of both tibiae. Laboratory findings were as follows: white blood cells: 6400/mm3, hemoglobin: 9.4 g/dL, MCV: 82 fL, platelets: 11000/mm3. Peripheral blood smear revealed rare solitary, large, irregular thrombocytes and no finding of hemolysis including helmet cells or fragmented erythrocytes could be found. Reticulocyte count was found to be 1-2%. Urinalysis revealed the following: tea-colored appearance, pH 5, density 1010, protein (+). On microscopic examination of urine, hyaline casts and granular casts were observed along with abundant erythrocytes (80% with deformation). Daily urine output of the patient was calculated to be 0,4 ml/kg/hour. Biochemical tests revealed that urea (110 mg/dL) and creatinine (1.6 mg/dL) levels were increased and serum C3 level was decreased (29 mg/dL; N: 90-180 mg/dL). Other basic biochemical variables were within normal limits (glucose: 104 mg/dL, Na: 141 mmol/L, K: 4.2 mmol/L, ALT: 14 U/L, Ca: 9.3 mg/dL). Erythrocyte sedimentation rate (60 mm/hour) and anti-streptolysin O (ASO: 642 IU/mL; N:<200 IU/mL) were found to be high. Bleeding profile was normal (PT: 14.2 s, aPTT: 28.3 s, INR: 1.1). Throat culture was negative.

APSGN was considered with these clinical and laboratory findings and differential diagnosis for systemic diseases including systemic lupus erythematosus (SLE) and hemolytic uremic syndrome (HUS) because of present thrombocytopenia was planned. Urine output and blood pressure were monitored and treatment with benzathine penicilin (single dose, 1200000 U, IM) and furosemide (two doses, 2 mg/kg/day, IV, two weeks) was started.

Bone marrow examination performed because of thrombocytopenia revealed no pathology except for increase in megakariocyte series. Intravenous immunglobulin treatment (single dose, 1 g/kg/day, IV) was given to the patient who was considered to have ITP with the findings of peripheral blood smear and bone marrow examination. Initially, HUS was not considered in the patient who had no history of diarrhea and whose peripheral blood smear did not reveal findings of hemolysis. Since ANA and Anti-DNA were negative and other clinical findings of lupus were not present in the patient in whom thrombocytopenia accompanied renal pathology, SLE was not considered. Viral markers [EBV IgM and IgG (-), CMV IgM and IgG (-), HSV 1-2 IgM (-), HSV 1 IgG (+), HSV IgG (-), parvovirus B19 IgM and IgG (-), anti-rubella IgM (-), anti-rubella IgG (+)] ordered to find out the etiology of acute glomerulonephritis and thrombocytopenia were found to be negative. Other systemic diseases were excluded and the patient was considered to have an association of APSGN and ITP.

Laboratory values found during the follow-up period of the patient are summarized in Table 1. On the 39th day of follow-up, the patient was discharged, since his general status was well, no active bleeding, petechiae or echymosis were present and diuresis was adequate (≥2 ml/kg/hour). On the sixth month thrombocyte count was found to be 246000/mm3. The case was considered as acute ITP. The patient has been followed up regularly in our outpatient clinic for two years without any problem.

Table 1. Laboratory values of the case

Variable	Baseline	1st week	2nd week	4th week	4th week	6th month
Urea (mg/dL)	110	118	104	73	38	36
Creatinine (mg/dL)	1.6	1.3	1.2	1	0.8	0.7
Thrombocyte (/mm3)	11.000	232.000	182.000	124.000	125.000	246.000
Complement 3 (mg/dL)	28	-	-	-	83	-

Discussion

Observation of other hematologic changes except for a mild anemia is not typical in the picture of APSGN which is one of the most common causes of glomerulonephritis in childhood. However, limited number of case presentations have reported that thrombocytopenia may also be observed during the course of APSGN (4,6). Idiopathic thrombocytopenic purpura (ITP) is a disease characterized by antibody production against thrombocytes. Since no specific criteria are available, the diagnosis is made by excluding other possible causes. Hematuria is being reported rather rarely in the course of this disease (5). In our case, findings including oliguria, azotemia, reduced C3, increased blood pressure, edema and glomerular hematuria suggest acute nephritic syndrome. History of upper respiratory tract infection and finding of increased antistreptolysine-O (ASO) supported APSGN which is the most common glomerulonephritis observed in childhood. Negative throath culture was attributed to antibiotic treatment which the patient received previously.

When we screened the literature, we found that association of APSGN and ITP has been reported in 6 cases before (4, 7-10). While the age of these patients ranged between 4 and 9 years, our case was 13 years old. This older age of our patient in contrast to the literature was attributed to the fact that streptococcal infections are still being observed frequently in our country. In addition, a high rate of streptococcal carrier state probably contributed to the fact that clinical findings appeared at an older age in our case (11).

Muguruma et al.(9) noted that autoantibodies appearing after streptococcal infection may be responsible for thrombocytopenia which occurs during the course of APSGN. These investigators reported that glomerulonephritis found in their case and in the three cases which were reported before had a mild course. The same investigators predicted that this clinical state may

be caused by splenic breakdown of most autoantibodies bound to thrombocytes and a lower number of immun complexes reaching glomerules. However, observation of a more severe picture of glomerulonephritis in the two cases defined subsequently and in our case caused this assumption to be debatable (4, 10).

In the recently reported case from Hawaii (4) and in our case, intravenous immunglobulin (IVIG) treatment instead of steroid was administered in contrast to other cases. Thrombocyte count returned to normal limits with IVIG treatment in our case and renal function improved fully with intravenous furosemide and supportive treatment. In all cases, laboratory and clinical findings except for microscopic hematuria returned to normal in 1-3 months (7-9).

Anthony et al.(4) noted that association of APSGN and ITP may be specific for populations with a high incidence of diseases including acute rheumatic fever (ARA) where immun reaction following streptococcal infection occurs widely. However, the fact that cases in the literature come from different regions including Arabian Peninsula, Canada, Japan, Macedonia, the Philippines and Turkey causes this assumption also to be debatable.

Consequently, the etiology of the association of APSGN and ITP which we defined as different clinical states and for which we planned different treatments remains debatable. However, as the number of cases reported in the literature increases, a distinct clinical state might be defined under the name of association of glomerulonephritis and thrombocytopenia following streptococcal infection.

Conflict of interest: None declared

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