
A Case of Glomerulonephritis in a Child with Varicella and Tonsillopharyngitis

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Glomerulonephritis is a rare complication of varicella. Even less common is concurrent appearance of varicella, streptococcal infection and glomerulonephritis. We present a 9-year old boy who developed a typical varicella rash and signs and symptoms of glomerulonephritis simultaneously, followed shortly after by tonsillopharyngitis. The supervenient illness did not aggravate the clinical course of the renal disease and had no detrimental influence on the laboratory findings. Thus, coincidence of varicella and streptococcal infection appears not to change the clinical course and the outcome of glomerulonephritis.

Key words: acute glomerulonephritis, streptococcal infection, varicella

INTRODUCTION

Association between varicella and a renal disease was first described by Henoch in 1884 (1). Several cases of this association were reported afterwards (2–5). Temporal relationships between varicella and nephropathies and the clinical presentations of renal diseases appeared to be various. On the other hand, a coincidence of varicella and streptococcal infection was sometimes observed (2, 4), making it difficult to elucidate the causative role of the varicella-zoster virus. A case of the coincidence is presented here.

CASE REPORT

A 9-year old boy was referred to a regional hospital the next day after a typical varicella rash and dark urine had been noticed. The data on admission: body temperature 38.7 °C, moderate vesicular rash, blood pressure 100/60 mm Hg, no noticeable edema. The laboratory values were as follows: blood leukocyte count $5.1 \times 10^9/l$ with 67% of neutrophils, 27% lymphocytes and 6% monocytes; erythrocytes $4.2 \times 10^{12}/l$, hemoglobin 111 g/l, hematocrit 0.26, platelets $277 \times 10^9/l$. Blood biochemistry: C-reactive protein 9 mg/l, blood urea nitrogen (BUN) 4.1 mmol/l, creatinine 73 $\mu\text{mol}/l$, total protein 60.7 g/l, calcium 2.18 mmol/l, sodium

140.9 mmol/l, potassium 4.38 mmol/l, chloride 106 mmol/l. The results of urinalysis: specific gravity 1.030, protein 1.0 g/l, erythrocytes 40–45 to uncountable per hpf, leukocytes 10–12/hpf. Four days later the fever recurred, a mild sore throat, an enlargement and tenderness of the cervical lymph nodes were noted. The treatment with intravenous benzylpenicillin was introduced for 10 days. The signs and symptoms of tonsillopharyngitis and cervical lymphadenitis subsided; however, a new bout of fever along with vomiting and loose stools occurred a week later and the patient was transferred to the University hospital. On admission, the general state of the patient and the blood pressure were found normal, the skin was moderately covered with small crusts. The fever lasted only one day. Peripheral blood values were normal, the urinalysis showed moderate proteinuria (0.87 g/l) and hematuria (200/ μl). Blood biochemistry: BUN 6.6 mmol/l, creatinine 85 $\mu\text{mol}/l$, total protein 67 g/l, C-reactive protein 11.2 mg/l, complement component C3 < 0.155 g/l, C4 0.132 g/l, ASL-O 387 IU/ml, electrolytes within normal limits. No more examinations were considered to be necessary, no medications were given and the patient was discharged in a good health condition. A month later at a follow-up, the health state of the patient was found to have remained stable, the blood pressure being not elevated and the peripheral blood values normal. The urinalysis: protein 0.5 g/l, erythrocytes 5–7 per hpf. Blood biochemistry: BUN 3.3 mmol/l, creatinine 52 $\mu\text{mol}/l$, C3 1.035 g/l, C4 0.186 g/l, ASL-O 424 IU/ml. Ten months later the health status was good, with the normal blood pressure and urinalysis.

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DISCUSSION

Several reports have been published on the relationship of glomerulonephritis with varicella (2–5) following the first description of such a connection by Henoch (1). In general, renal involvement in varicella appears to be quite a rare event. In an early survey of 2534 cases of varicella, symptoms of nephritis were manifest in only 0.12% of the patients (6). A review of the cases described in the literature shows that there are different links between varicella-zoster infection and glomerulonephritis. In some cases, urine abnormalities were noted either prior to or with the appearance of the chickenpox rash (5, 7, 8). No evidence of recent streptococcal infection was noticeable in the cases presented. The complement level was found to be either normal or depressed (3). Renal biopsy revealed changes characteristic of acute proliferative glomerulonephritis similar to the changes usually seen in the poststreptococcal renal disease. The varicella virus antigen was detected in the glomeruli in some cases (3). The course was usually benign with a complete recovery. Thus, glomerulonephritis related to varicella generally resembles acute poststreptococcal glomerulonephritis excluding its initial stage: GN connected with varicella starts before or concomitantly with the clinical signs of an infectious disease; on the contrary, the first signs and symptoms of poststreptococcal GN appear one to several weeks following streptococcal infection.

A different sequence of the events was described by Fuhrer et al. (2) and Miceli Sopo et al. (4), namely, a flare up of poststreptococcal glomerulonephritis in the course of varicella. The pathogenetic mechanism has not yet been fully understood. It was only speculated that glomerulonephritis might be reactivated by immune complexes containing varicella antigens, or the varicella infection might provoke immunologic changes leading to a new burst of immune complexes containing streptococcal antigens (2).

The third variant with the kidney being involved may be considered as a tertiary complication of varicella, namely, varicella eruptions are complicated by streptococcal or staphylococcal infection with postinfectious glomerulonephritis settling in. A case of such a complication has recently been published by Phuah et al. (9).

Finally, there are anecdotal reports on other types of renal involvement in varicella: a rapidly progressive glomerulonephritis (10), a triad of symptoms resembling Schönlein–Henoch syndrome (11), the nephrotic syndrome, thrombocytopenic purpura, gastrointestinal bleeding, disseminated intravascular coagulation, encephalitis and bronchopneumonia (12).

The case under our observation followed neither the sequence of the events described. It best resembled the Case 2 reported by Miceli Sopo et al. (4), with the exception that the renal disease in our case was noticed at the same time as the varicella rash. There was no evidence of preceding streptococcal infection; the signs and symptoms of tonsillopharyngitis appeared several days following those of varicella and the kidney disease. It was not clear whether it was a simple coincidence or varicella infection having contributed somehow to the streptococcal infection. There are several publications on the invasive streptococcal diseases as complications accompanying varicella (13–15). It is asserted that chickenpox dramatically increases the risk for acquiring an invasive group A streptococcal disease (14). Simple streptococcal infections following varicella deserved no particular attention.

The laboratory findings, the clinical course and the outcome in our case were suggestive of a mild case of glomerulonephritis. This coincides with most cases of varicella-associated glomerulonephritis reported in the literature. Thus, the concurrence of varicella and streptococcal infection appears not to change the clinical course and the outcome of postinfectious glomerulonephritis.

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**VAIKŲ GLOMERULONEFRITAS SERGANT
VĖJARAUPIAIS IR TONZILOFARINGITU**

S a n t r a u k a

Glomerulonefritas yra reta vėjaraupių komplikacija. Dar rečiau vienu metu vaikai serga vėjaraupiais, streptokokiniu tonzilitu ir glomerulonefritu. Šiame straipsnyje aprašyta 9 metų berniuko ligos istorija. Berniukui susirgus tipiškais vėjaraupiais, kartu su bėrimu pastebėta hematurija, o netrukus pasireiškė tonzilofaringito simptomai. Pastaroji liga neapsunkino inkstų ligos eigos ir nepablogino laboratorinių tyrimų rezultatų. Taigi atrodo, kad vienu metu pasireiškiantys vėjaraupiai ir streptokokinė infekcija nekeičia glomerulonefrito eigos ir baigties.

Raktažodžiai: ūminis glomerulonefritas, streptokokinė infekcija, vėjaraupiai