Rare Post Streptococcal Glomerulonephritis presentations include back pain and constipation

Paniz Pourpashang[1], Fatemeh nili[1], Masoumeh Mohkam[1], and Arefeh Zahmatkesh[1]

[1]Affiliation not available

December 5, 2022

Rare Post Streptococcal Glomerulonephritis presentations include back pain and constipation.

Paniz Pourpashang,[1] Fatemeh Nili,[2] Masoumeh Mohkam,[3] Arefeh Zahmatkesh[4]

[1] *Department of pediatric nephrology, Shahid Beheshti Medical University, Tehran, Iran*

[2] *Department of pathology, Imam Khomeini hospital complex, Tehran university of medical sciences*

[3] *Pediatric Nephrology Research Center, Research Institute for Children's Health, Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[4] *School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran*

Correspondence should be addressed to Arefeh Zahmatkesh; arefeh.zhmtksh@gmail.com

Abstract:

Background: Post-streptococcal glomerulonephritis (PSGN) is a common disease that occurs after pharyngitis or dermatitis involvement with streptococcus. This disease is self-limiting. Although the disease has some common symptoms like hypertension, oliguria or anuria, and neurological defects, there have been no reports of a child having severe back pain or constipation up until this point. ***Case presentation:*** Here, we represent a child with severe back pain and constipation that was diagnosed as PSGN. ***Conclusion:*** Despite several studies on PSGN, attention to different associated symptoms could help practitioners with accurate diagnoses. In addition, made us investigate the disease entity. ***Keywords:*** Post-streptococcal glomerulonephritis, back-pain, constipation

Introduction

The most common cause of acute glomerulonephritis in children is post-streptococcal glomerulonephritis (PSGN), which typically affects children between the ages of 3 and 12 years and is uncommon in children under the age of 3. Hematuria, oliguria, edema, and hypertension are the most typical symptoms of PSGN. [1, 2] The severity of PSGN can vary, and patients may present with subclinical symptoms or require dialysis, and the majority of cases follow pharyngitis caused by streptococci infections.[3, 4] There are many different PSGN manifestations, but back pain and constipation have not yet received much attention. In this study, we described a 10-year-old boy who complained of back pain and constipation and was ultimately diagnosed with PSGN.

Case presentation

A 10-year-old boy was referred to our clinic complaining of severe constipation, oliguria, and edema. He had previously undergone evaluations and had a raised serum creatinine level. He also had a history of visiting a crowded area and later experiencing fever and other flu-like symptoms. The symptoms were treated with conservative treatment. In his past medical history, he had been completely healthy, had no medical or familial disorders, and had completed his series of vaccinations.

He was referred to our clinic with peri-orbital edema, congestion during a chest exam, hypertension, and anuria. His parents also reported that he had normal urination in the previous two days before a sudden onset of low-volume urination. He was given Lasix with normal saline, but he did not respond to this treatment, and laboratory tests revealed elevated creatinine levels. **Table 1** . Large kidneys were seen during an abdominal ultrasound study, and as a result of his high creatinine level, anuria, and lack of response to Lasix therapy, the patient underwent sessions of emergent dialysis.

On the second day of hospitalization, the patient started experiencing severe low back pain, which persisted throughout dialysis. Considering the laboratory results and the requirement for daily dialysis, a kidney biopsy was performed to confirm PSGN**(Figure 1)** ; however, the biopsy report revealed PSGN without crescentic features. The patient had a seizure on the third day of his hospital stay, which was managed with phenytoin and carbamazepine. He also received rasburicase for hyperuricemia, adjusted doses of ciprofloxacin, meropenem, and cefazoline, as well as five doses of methylprednisolone for the treatment of PSGN. Following the methylprednisolone prescription, the patient's symptoms improved noticeably, and PSGN therapy was used to treat the patient's back pain and constipation.

The patient was given a clean bill of health and was referred for follow-up exams. At the most recent checkup, his kidney size and creatinine level were both within normal ranges.

Discussion and conclusion

Post streptococcal glomerulonephritis (PSGN) is known as the rapid deterioration of kidney functions because of an inflammatory process that included type III hypersensitivity reaction after streptococcal infection. This condition is primarily caused by a beta-hemolytic streptococcus known as nephrogenic streptococci, which affects the glomeruli of the kidneys and small blood vessels. PSGN typically appears in children 1–2 weeks after a sore throat.[4, 5] In our case, a 10-year-old boy had edema, hypertension, and other typical PSGN presentations after experiencing the flu-like symptom. The most frequent side effect of PSGN is hypertension, which has a presentation rate of about 64%. After receiving full treatment, hypertension may recur in 3 to 6% of PSGN patients. [6, 7]Additionally, a study by Gunasekaran et al. discovered that 21.5% of kids with PSGN required treatment for emergent hypertension in an intensive care unit.[8] Children with PSGN involvement may exhibit abnormal neurological symptoms like generalized seizures because of severe hypertension, which affects about 30 to 35 percent of children with PSGN. [4, 9] Despite the fact that the child in our case had one seizure, which was stopped by carbamazepine, pediatricians must be aware of the seizure occurrence in kids with PSGN because it can negatively affect neurological function.

Although reports on the association between back pain and PSGN in children are limited, some studies reported back pain presentation with different glomerulonephritis diagnoses in adults after infections. A Study by Kadapia et al. reported back pain in a 39-year-old man with post-infectious glomerulonephritis, who well responded to corticosteroid therapy. [10] Another study showed Minimal change nephrotic syndrome (MCNS) after B-type influenza in a 50-years-man with progressive back pain, which spontaneous remission accrued without corticosteroid therapy.[11] However, in our study back pain resolved after corticosteroid administrations, because of less information, more case reports and studies need to investigate the treatment. Even though constipation is highly frequent among patients with chronic kidney disease and uremic toxin could affect intestinal motility, [12] there is no report on constipation in PSGN, therefor more studies are needed.

The predictors of poor long-term prognosis of PSGN include the presence of nephrotic syndrome, crescent formation on biopsy findings, and renal insufficiency at the onset. [13] Wong et al. evaluated 27 PSGN patients who required renal biopsies due to acute severe glomerulonephritis, anuric renal failure, and nephrotic

nephritic syndrome. They found that 12 patients required acute dialysis and that 11 patients had crescents that were higher than 50% on the biopsies, and that patients with crescentic glomerulonephritis had a greater need for acute dialysis.[3] Kidney damage may persist years after PSGN because of secondary inflammation after infection due to the nephron's damage.[14] However, our patient was anuric and underwent daily dialysis, the pathology specimen didn't report crescentic and his symptoms start regretting.

In most cases, PSGN is a self-limiting condition, so supportive treatment for managing the effects of overload like edema and hypertension should be carried out. Only symptomatic treatment is advised. [13] Antihypertensive medications in cases with uncontrolled blood pressure, the use of calcium channel blockers, angiotensin-converting enzyme inhibitors (ACEI), angiotensin receptor blockers (ARBs) are recommended. There is no evidence to support the use of immunosuppressive medications in PSGN patients, but they may be helpful in those with progressive renal failure. [15] Immunosuppressive and antihypertensive medications were used to control the disease in our patient, and with these medications, all patient manifestations were resolved. In fact, after receiving methylprednisolone, all patient manifestations regressed.

In conclusion, PSGN is a self-limiting disease that can manifest as hypertension and neurological disorders. Since back pain and constipation were not previously reported in studies, pediatricians and physicians should be aware of these manifestations in PSGN. If there is any doubt about PSGN and the patient exhibits either of these symptoms, PSGN treatment should be initiated. If constipation or back pain persists, doctors should be evaluated.

References

1. Kari, J.A., A. Bamagai, and S.M. Jalalah, *Severe acute post-streptococcal glomerulonephritis in an infant.* Saudi Journal of Kidney Diseases and Transplantation, 2013. **24** (3): p. 546.

2. Demircioglu Kılıc, B., et al., *Pediatric post-streptococcal glomerulonephritis: Clinical and laboratory data.* Pediatrics International, 2018. **60** (7): p. 645-650.

3. Wong, W., M.C. Morris, and J. Zwi, *Outcome of severe acute post-streptococcal glomerulonephritis in New Zealand children.*Pediatric nephrology, 2009. **24** (5): p. 1021-1026.

4. Eison, T.M., et al., *Post-streptococcal acute glomerulonephritis in children: clinical features and pathogenesis.*Pediatric Nephrology, 2011. **26** (2): p. 165-180.

5. Rawla, P., S.A. Padala, and D. Ludhwani, *Poststreptococcal Glomerulonephritis.* 2019.

6. Ong, L.T., *Management and outcomes of acute post-streptococcal glomerulonephritis in children.* World Journal of Nephrology, 2022.**11** (5): p. 139-145.

7. White, A.V., W.E. Hoy, and D.A. McCredie, *Childhood post-streptococcal glomerulonephritis as a risk factor for chronic renal disease in later life.* Medical Journal of Australia, 2001.**174** (10): p. 492-496.

8. Gunasekaran, K., et al., *Clinical characteristics and outcome of post-infectious glomerulonephritis in children in southern India: a prospective study.* The Indian Journal of Pediatrics, 2015.**82** (10): p. 896-903.

9. Wong, W., et al., *Prospective population-based study on the burden of disease from post-streptococcal glomerulonephritis of hospitalised children in N ew Z ealand: Epidemiology, clinical features and complications.* Journal of paediatrics and child health, 2013.**49** (10): p. 850-855.

10. Kapadia, A., M. Panda, and A. Fogo, *Postinfectious glomerulonephritis: Is there a role for steroids?* Indian journal of nephrology, 2011. **21** (2): p. 116.

11. Haruki, A., et al., *Spontaneous remission of adult-onset minimal change nephrotic syndrome associated with influenza B infection: a case report.* BMC nephrology, 2018. **19** (1): p. 1-5.

12. Ikee, R., K. Yano, and T. Tsuru, *Constipation in chronic kidney disease: It is time to reconsider.* Renal Replacement Therapy, 2019. **5** (1): p. 1-10.

13. VanDeVoorde 3rd, R.G., *Acute poststreptococcal glomerulonephritis: the most common acute glomerulonephritis.*Pediatrics in review, 2015. **36** (1): p. 3-12; quiz 13.

14. Pinto, S.W.L., G. Mastroianni-Kirsztajn, and R. Sesso, *Ten-year follow-up of patients with epidemic post infectious glomerulonephritis.* PLoS One, 2015. **10** (5): p. e0125313.

15. Yang, T.J., et al., *Role of steroids in post-streptococcal glomerulonephritis without crescents on renal biopsy.* Cureus, 2018.**10** (8).

Figure 1: pathology findings.

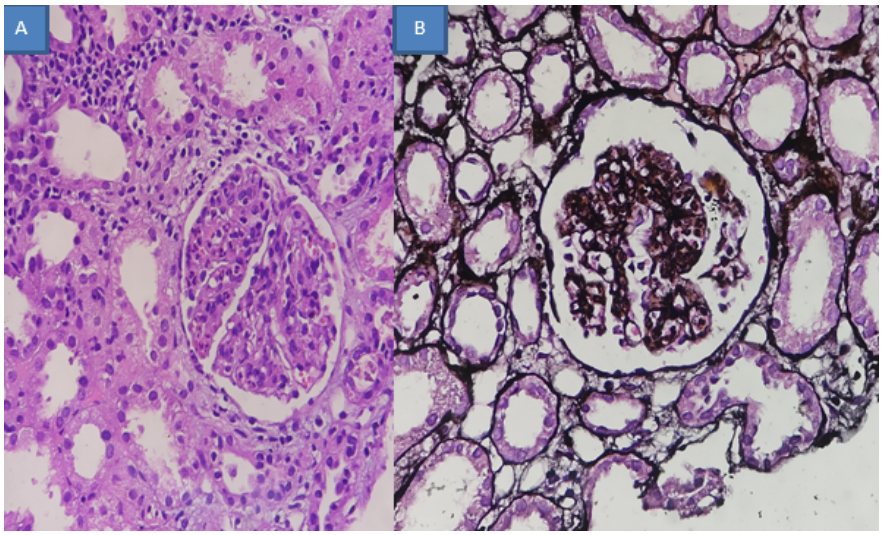
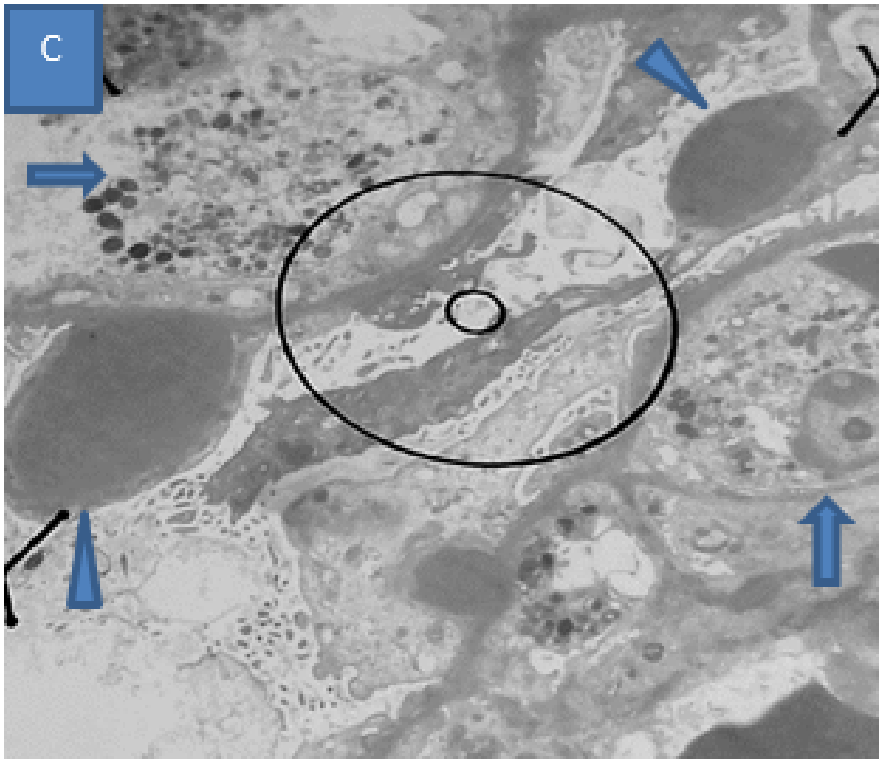


Figure 1: A) Hematoxylin and Eosin sections show dense infiltration of polymorph nuclear leukocytes within the glomeruli. B) Jone's stain shows mesangial matrix expansion and normal thickness of GBM (400X)



C) Electron microscopy study reveals numerous sub epithelial humps (arrows) and intra capillary PMNs (arrowheads)

Table1. Laboratory findings

Hosted file

`Test.docx` available at https://authorea.com/users/562925/articles/610166-rare-post-streptococcal-glomerulonephritis-presentations-include-back-pain-and-constipation

Table 1: BUN, Blood Urea Nitrogen.Cr,Creatinin.WBC,White Blood Count.RBC,Red Blood Count.U/A,Urine Analysis.U/C,Urine Culture.ASO,Antistreptolysin.