Journal of Vessels and Circulation
Qom University of Medical Sciences

Summer 2023. Volume 4. Number 3

Research Paper

Frequency of Renal Involvement and Its Characteristics in Patients With Henoch-Schönlein Purpura

Mohammad Reza Razavi[1], Bahareh Mehrabi[1*], Mohsen Akhavan Sepahi[1], Mohammad Aghaali[2], Shahima Ghasemi[3]

1. Department of Pediatrics, School of Medicine, Hazrat-e Fateme Masoume Hospital, Qom University of Medical Sciences, Qom, Iran.
2. Department of Family and Community Medicine, Neuroscience Research Center, School of Medicine, Qom University of Medical Sciences, Qom, Iran.
3. Department of Pediatrics, Faculty of Medicine, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran.

Use your device to scan and read the article online

Please cite this article as Razavi MR, Mehrabi B, Akhavan Sepahi M, Aghaali M, Ghasemi Sh. Frequency of Renal Involvement and Its Characteristics in Patients With Henoch-Schönlein Purpura. J Vessel Circ. 2023; 4(3):117-122. http://dx.doi.org/10.32598/JVC.4.3.150.1

http://dx.doi.org/10.32598/JVC.4.3.150.1

Article info:
Received: 17 Feb 2023
Accepted: 16 May 2023
Publish: 01 Jul 2023

Keywords:
Henoch-Schönlein purpura, Chronic kidney disease, Vasculitis

ABSTRACT

Background and Aim: This study investigated the frequency of renal involvement and its characteristics in patients with Henoch-Schönlein purpura who were referred to Hazrat Masoumeh Hospital in Qom City, Iran.

Materials and Methods: In this retrospective study, the files of 49 patients with Henoch-Schönlein purpura were reviewed. All clinical and paraclinical findings of the patients were reviewed, and the prevalence of renal complications in these patients was evaluated.

Results: In this study, 28 boys (57.1%) and 21 girls (42.9%) with an mean age of 53.7±35.3 months were examined. Three patients (6.1%) had underlying diseases, three patients (6.1%) had edema, 18 patients (36.7%) had arthritis, nine patients (18.4%) had petechiae, ten patients (20.4%) had abdominal pain, seven patients (14.3%) had leukocyturia, nine patients (18.4%) had microhematuria and hematuria, and three patients (6.1%) had proteinuria. The average creatinine and average blood urea levels were 0.6±0.1 and 25.4±11.1, respectively. Creatinine levels were elevated in 5 cases (10.2%) at the time of diagnosis and in 3 cases (6.1%) during the second week. Eight patients (16.3%) had kidney failure, and in three of these patients, there was an increase in proteinuria at the time of diagnosis. Additionally, three patients showed recovery, with improvement noted in two of these patients two weeks later and in one patient after the next six months. We observed disease recurrence in one patient (2%), nephrotic syndrome in one patient (2%), and proteinuria in two patients. In 33 cases (67.3%), no treatment was needed; ten cases were treated with non-steroidal anti-inflammatory drugs, three cases (6.1%) with Lasix, and the same number of cases were treated with corticosteroids. Also, among the patients who received treatment, one patient (3%) did not respond to the treatment.

Conclusion: Considering the kidney complications associated with this disease and the need for long-term follow-up for timely diagnosis, if any child is diagnosed with similar conditions, the follow-up of patients can help control and prevent these issues to a large extent.

*** Corresponding Author:**
Bahareh Mehrabi, MD.
Address: *Department of Pediatrics, School of Medicine, Hazrat-e Fateme Masoume Hospital, Qom University of Medical Sciences, Qom, Iran.*
Phone: *+98 (912) 9252201*
E-mail: *Baharemehrabi@gmail.com*

Journal of Vessels and Circulation
Qom University of Medical Sciences

Introduction

Henoch-Schönlein purpura is an acute generalized aseptic vasculitis and the most common form of vasculitis in children, which leads to diffuse small vessel occlusion and involves the blood vessels of most body organs [1, 2]. Light microscope observations reveal neutrophil infiltration, remnants and fragments of neutrophil nuclei, bleeding, and fibrin deposition in the walls of necrotic vessels. Immunofluorescence microscopy shows the deposition of immune complexes, complement, and fibrin in the capillary walls [3]. Henoch- Schönlein purpura mostly occurs in children, usually following an upper respiratory tract infection in winter. Half of the patients are under six years old, and 90% are under ten years old. The incidence of this disease is twice as high in boys as in girls, with a prevalence of 20 cases per 100,000 children each year [4]. Its etiology is not exactly known, but immune system disorders may be contributing factors.

In more than 75% of cases, there is either an upper respiratory infection or a previous digestive tract infection at the onset of the disease. Occasionally, the disease occurs after insect bites or as a result of using certain medications such as quinine, ampicillin, erythromycin, and penicillin [5]. The clinical characteristics of this syndrome include prominent and palpable purpura, edema, urticaria, and hemorrhagic bullae on the skin, along with non-destructive inflammation in the joints, abdominal pain, and gastrointestinal bleeding. Arthralgia or arthritis and nervous system involvement are also observed in this syndrome. Another clinical symptom is kidney involvement, which manifests as increased urea and creatinine levels and elevated arterial blood pressure in some patients [6]. Nephritis and chronic kidney failure are also seen in these patients [7]. Long-term complications of this disease result from kidney involvement [8].

The risk of severe renal impairment increases with age in adult patients. Most patients with kidney involvement are more than four years old, and symptoms of kidney involvement are rarely observed in patients under two years of age. After four years, more than 50% of affected patients no longer exhibit kidney complications. The three diagnostic symptoms—joint lesions, skin lesions, and abdominal colic pain—are present in almost 80% of patients. Joint problems are more common in large joints, such as knees and wrists. Typically, skin lesions appear in all known patients and are visible on the lower limbs. Gastrointestinal symptoms are observed in most affected children, with the most common complaint being abdominal colic pain, often accompanied by vomiting. Blood may be present in the feces, either in hidden or obvious forms or as hematemesis [9]. The treatment of this disease includes supportive, symptomatic, and other interventions to reduce the complications in each case. Corticosteroids may increase the likelihood of kidney complications. Approximately 47% of patients exhibited kidney complications in a report involving 194 cases of children with Henoch-Schönlein purpura. Moradinejad et al. also showed kidney involvement in 38% of patients with this syndrome [10]. However, Heidarian et al.'s study at Mashhad University of Medical Sciences did not find any renal involvement in patients [11].

Considering the importance of proper and timely diagnosis and treatment in these patients to prevent permanent complications, this descriptive study aimed to evaluate the clinical symptoms of this disease in children from Qom City, Iran.

Materials and Methods

This retrospective study was done on patients with Henoch-Schönlein purpura who were admitted to Hazrat Masoumeh Hospital between 2015 and 2022. The minimum sample size was determined to be 49 patients based on the study by Sano et al., considering a prevalence of kidney complications of 0.49, a type I error of 0.05, and an accuracy of 0.14 [12]. A convenience sampling method was used to select the study participants.

In the re-examination of these patients during the follow-up conducted in 2013 and later, children who had previously been diagnosed with Henoch-Schönlein purpura were evaluated at the nephrology clinic of the Children's Medical Center. Their medical history and complete clinical examinations were assessed. Urinalysis and blood pressure measurements were obtained to check for the occurrence of new symptoms or complications related to their disease. Cases that did not have secondary follow-up after discharge were excluded from the study. The information of each patient was recorded in a checklist, including the child's age, gender, frequency of relapses, length of hospitalization, symptoms at the onset of the disease, symptoms and complications observed during follow-up, severity of symptoms in the acute phase, type of treatment, and response to the treatment.

It should be noted that patients diagnosed with Henoch-Schönlein purpura presented with skin symptoms, such as petechiae, purpura, arthritis, arthralgia, and abdominal colic pain. Generally, these symptoms appeared after an upper respiratory tract infection or gastroenteritis was

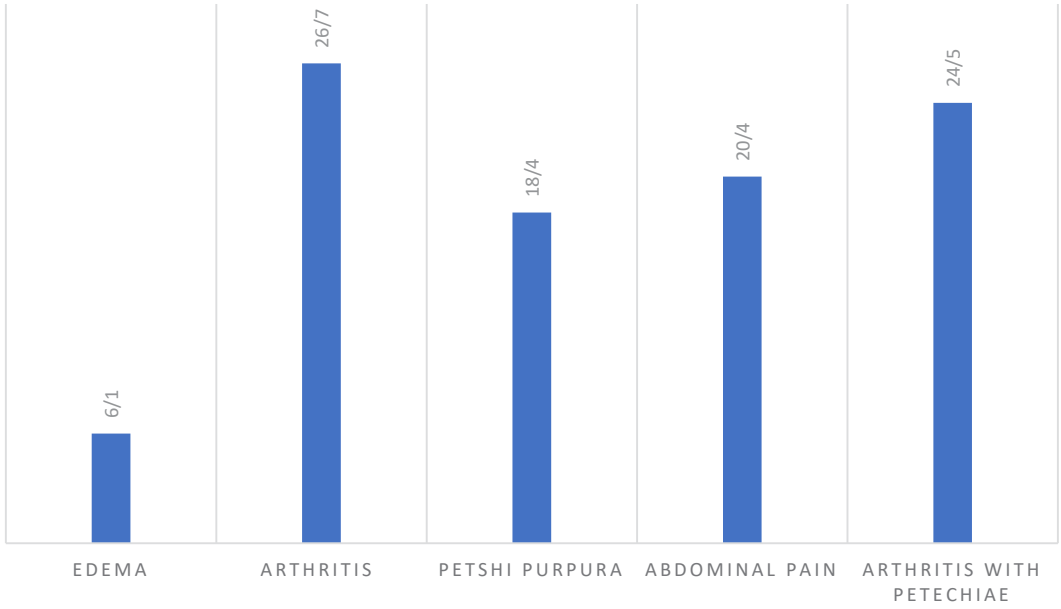

Figure 1. Frequency of clinical symptoms in patients

diagnosed clinically. Follow-up of patients with Henoch-Schönlein purpura for mortality due to kidney involvement, which is very rare, was done for two years. Patients were monitored for kidney involvement caused by this disease up to one year after hospitalization. Typically, secondary kidney involvement after the diagnosis of Henoch-Schönlein purpura was not confused with other kidney diseases but was excluded based on the patient's history, clinical symptoms, and laboratory markers.

Data were analyzed by SPSS software, version 22, and the results were reported using Mean±SD, frequency tables, and graphs.

Results

In this study, 28 boys (57.1%) and 21 girls (42.9%) with a mean age of 53.7±35.3 months were examined. Three cases (6.1%) had an underlying disease, while the rest (46 [93.9%]) did not have an underlying disease. The clinical symptoms of the patients are presented in Figure 1.

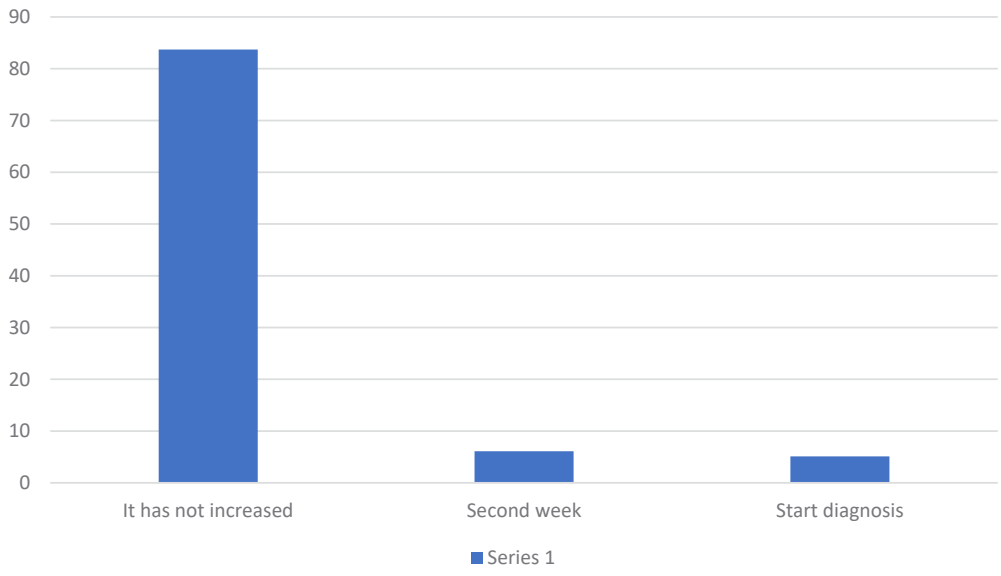

Figure 2. Frequency of the time of creatinine increase in patients

Table 1. Frequency of laboratory findings in patients

Variables		No. (%)/Mean±SD
Leukocyturia	Yes	7(14.3)
	No	42(85.7)
Microhematuria	Yes	9(18.4)
	No	40(81.6)
Proteinuria	Yes	3(6.1)
	No	46(93.9)
Hematuria	Yes	9(18.4)
	No	40(81.6)
Creatinine (mg/dl)	-	0.61±0.1
Urea (mg/dl)	-	25.4±11.1

Journal of Vessels and Circulation
Qom University of Medical Sciences

The laboratory findings are presented in Table 1. Seven patients (14.3%) had leukocyturia, nine patients (18.4%) had microhematuria and hematuria, and three patients (6.1%) had proteinuria. The mean creatinine and the blood urea levels were 0.6±0.1 and 25.4±11.1 mg/dl, respectively.

Creatinine levels increased in five cases (10.2%) at the time of diagnosis and in three cases (6.1%) by the second week (Figure 2).

Eight patients had kidney failure (16.3%) with an increase in proteinuria at the beginning of the diagnosis. Recovery occurred within two weeks for two of these patients, while one patient experienced recovery six months later. Additionally, disease recurrence was observed in 1 patient (2%), nephrotic syndrome in one patient (2%), and proteinuria in two patients (Table 2).

There was no need for treatment in 33 cases (67.3%). Ten cases were treated with non-steroidal anti-inflammatory drugs (NSAIDs), three cases (6.1%) were treated with Lasix, and the same number received corticosteroids. Finally, among the patients who received treatment, one patient (3%) did not respond to treatment (Table 3).

Discussion

Given the significant importance of kidney involvement in Henoch-Schönlein disease, patients diagnosed with the disease should be monitored to prevent kidney failure. In this study, kidney involvement was relatively low. In the study by Sano et al., 49% of patients with Henoch-Schönlein purpura had symptoms of kidney involvement, and 19% had moderate to severe proteinuria [12]. In our study, kidney failure occurred in eight patients (16.3%), and there was an increase in proteinuria

Table 2. Frequency of the disease recurrence and its renal complications in patients

Variables		No. (%)
Disease recurrence	Yes	1(2)
	No	48(98)
Long-term complications of the disease	No	41(83.7)
	Nephrotic syndrome	1(2)
	Proteinuria	2(4.1)

Journal of Vessels and Circulation
Qom University of Medical Sciences

Table 3. Frequency of the type of treatment in patients

Variables		No. (%)
Treatment	No need for treatment	33(67.3)
	Treatment with non-steroidal anti-inflammatory drugs	10(20.4)
	Treatment with Lasix	3(6.1)
	Treatment with corticosteroids	3(6.1)
Response to treatment	Yes	1(3)
	No	32(97)

Journal of Vessels and Circulation
Qom University of Medical Sciences

at the time of the diagnosis in three patients. Recovery occurred in two of those three patients within the next two weeks, while one patient recovered within the following six months.

The number of complications was relatively low in our study, possibly due to the lower sample size. Schinzel et al. found that nephritis caused by IgA vasculitis usually has a benign course and resolves spontaneously or after a course of treatment with a low dose of glucocorticoid. However, in cases where non-glucocorticoid immunosuppressors are needed, Azathioprine can yield favorable results [13]. In our study, the recurrence of the disease was much lower, and the patients treated with glucocorticoid had a better response to the treatment. Kim et al. found that the female gender and an increased neutrophil/lymphocyte ratio raised the risk of Henoch-Schönlein purpura [14]. In our study, the ratio of males to females was higher. Although some studies have reported a higher prevalence in boys, the lack of similarity in the results of our study may be attributed to the type of study and its methodology.

Hahn et al.'s review showed no reliable source on the positive effect of prednisolone and antiplatelet on the prevention of chronic kidney disease in children with Henoch-Schönlein purpura among randomized controlled trials [15]. In our study, patients who received corticosteroids and NSAIDs showed a high response to treatment. The incidence of chronic kidney disease in the study by Mortazavi et al. was higher than in other studies, possibly due to the longer duration of follow-up by the patients [16]. In our study, patients were followed for one year. Therefore, a relatively good comparison cannot be made in this area.

In Assar et al.'s study, proteinuria was reported in 6.3% of patients at the level of nephrotic syndrome [17]. In our study, two patients had proteinuria and one patient had nephrotic syndrome. Therefore, the follow-up of these patients is very important and necessary to prevent these complications.

In conclusion, it can be stated that because the patients' data were extracted from their files and it was not possible to fully investigate causal relationships due to the lack of long-term follow-up, more complete and comprehensive data on their complications should be obtained. Also, since the diagnosis of the disease is primarily clinical, it is essential to take a more detailed history of the patients. In this study, various factors were investigated, and the clinical symptoms of the disease were examined in different dimensions, highlighting the importance of focusing on the clinical aspects of disease diagnosis.

Conclusion

Considering the high prevalence of Henoch-Schönlein purpura and its common age of onset, the need to investigate and pay more attention to children who develop skin, digestive, and musculoskeletal symptoms is quite clear. In addition, due to the kidney complications associated with this disease and the need for long-term follow-up for timely diagnosis, if children are diagnosed with similar conditions and monitored closely, this disease can be controlled and prevented to a large extent.

Suggestions

Considering the prevalence of digestive symptoms, such as abdominal pain, if a child presents abdominal pain, it can be considered one of the important differential diagnoses for Henoch-Schönlein purpura. Therefore, abdominal pain, when presented as the first symptom

and accompanied by skin symptoms, should be carefully investigated to avoid performing surgery on the patient without proper indication.

Finally, since the manifestations of this disease vary significantly across different studies, more extensive research and investigations are needed to reach a definitive conclusion due to the contradictions in the available information and the limited number of patients.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of Qom University of Medical Sciences (Code: IR.MUQ.REC.1402.062).

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interests.

Acknowledgments

The authors would like to thank the Vice-Chancellor for Research and Technology of Qom University of Medical Sciences, the Vice Chancellor for Research, School of Medicine, and the Clinical Research Development Unit of Kamkar Hospital in Qom, Iran.

References

[1] Saulsbury FT. Clinical update: Henoch-schönlein purpura. The Lancet. 2007; 369(9566):976-8. [DOI:10.1016/S0140-6736(07)60474-7] [PMID]

[2] Razavi SMR, Azadegan M, Rezvan S, Noori E. A case report of kawasaki disease with manifestations of acute renal. J Vessel Circ. 2020; 1(2):17-20. [DOI:10.29252/jvesselcirc.1.2.17]

[3] Pillebout E, Thervet E, Hill G, Alberti C, Vanhille P, Nochy D. Henoch-Schönlein Purpura in adults: Outcome and prognostic factors. J Am Soc Nephrol. 2002; 13(5):1271-8. [DOI:10.1097/01.ASN.0000013883.99976.22] [PMID]

[4] Chen O, Zhu XB, Ren P, Wang YB, Sun RP, Wei DE. Henoch Schonlein Purpura in children: Clinical analysis of 120 cases. Afr Health Sci. 2013; 13(1):94-9. [DOI:10.4314/ahs.v13i1.26]

[5] Dolezalová P, Telekesová P, Nemcová D, Hoza J. Incidence of vasculitis in children in the Czech Republic: 2-year prospective epidemiology survey. J Rheumatol. 2004; 31(11):2295-9. [PMID]

[6] Yang YH, Yu HH, Chiang BL. The diagnosis and classification of Henoch-Schönlein purpura: An updated review. Autoimmun Rev. 2014; 13(4-5):355-8. [DOI:10.1016/j.autrev.2014.01.031] [PMID]

[7] Kawasaki Y, Ono A, Ohara S, Suzuki Y, Suyama K, Suzuki J, et al. Henoch-Schönlein purpura nephritis in childhood: Pathogenesis, prognostic factors, and treatment. Fukushima J Med Sci. 2013; 59(1):15-26. [DOI:10.5387/fms.59.15] [PMID]

[8] Sileikiene R, Tamakauskiene E, Baksiene D. [Henoch-Schönlein purpura - one of the most common types of systemic vasculitis in childhood (Lithuanian)]. Medicina (Kaunas). 2003; 39(5):476-9. [PMID]

[9] Calvo-Río V, Loricera J, Mata C, Martín L, Ortiz-Sanjuán F, Alvarez L, et al. Henoch-Schönlein purpura in northern Spain: Clinical spectrum of the disease in 417 patients from a single center. Medicine. 2014; 93(2):106-113. [DOI:10.1097/MD.0000000000000019] [PMID]

[10] Moradinejad MH, Ziaee V, Marashi SM, Nasri Nasrabadi Z. [Survey of clinical manifestations in Henoch Schönlein purpura in follow up (Persian)]. Med J Mashhad Univ Med Sci. 2014; 57(7):829-34. [DOI:10.22038/mjms.2014.3606]

[11] Heidarian F, Saraf M, Hashemzadeh A. [Clinical and laboratory findings in henoch-schoenlein purpura (Persian)]. Iran J Pediatr. 2006; 16(2):227-9. [Link]

[12] Sano H, Izumida M, Shimizu H, Ogawa Y. Risk factors of renal involvement and significant proteinuria in Henoch-Schönlein purpura. Eur J Pediatr. 2002; 161(4):196-201. [DOI:10.1007/s00431-002-0922-z] [PMID]

[13] Schinzel V, Fernandez JD, Clemente G, Fraga MM, Andrade MC, Len CA, et al. The profile and clinical outcomes of patients with renal involvement due to IgA vasculitis: Is azathioprine a good option for treatment? Adv Rheumatol. 2019; 59(1):21. [PMID]

[14] Kim WK, Kim CJ, Yang EM. Risk factors for renal involvement in Henoch-Schönlein purpura. J Pediatr (Rio J). 2021; 97(6):646-50. [DOI:10.1016/j.jped.2021.01.008] [PMID]

[15] Hahn D, Hodson EM, Willis NS, Craig JC. Interventions for preventing and treating kidney disease in Henoch-Schönlein Purpura (HSP). Cochrane Database Syst Rev. 2015; 2015(8):Cd005128. [DOI:10.1002/14651858.CD005128.pub3]

[16] Mortazavi F, Sadeghi Shabestari M. [Clinical features and long term outcome of henoch-schonlein purpura in children admitted to children's hospital of Tabriz From 2001-2007 (Persian)]. Med J Tabriz Univ Med Sci. 2011; 33(3):68-73. [Link]

[17] Assar S, Ahmadzadeh A, Ashornia P. Study on epidemiological, clinical and laboratory characteristics of children with Henoch-Schoenlein Purpura. Jundishapur Sci Med J. 2011; 10(3 (72)):262-9. [Link]