

World Journal of *Clinical Cases*

World J Clin Cases 2023 September 16; 11(26): 6031-6317



Contents

Thrice Monthly Volume 11 Number 26 September 16, 2023

MINIREVIEWS

- 6031 Diabetes among Muslims during Ramadan: A narrative review
Ochani RK, Shaikh A, Batra S, Pikale G, Surani S

ORIGINAL ARTICLE

Retrospective Cohort Study

- 6040 Clinical evaluation of ventilation mode on acute exacerbation of chronic obstructive pulmonary disease with respiratory failure
Wang JJ, Zhou Z, Zhang LY

Retrospective Study

- 6051 Predictive value of preoperative albumin-bilirubin score and other risk factors for short-term outcomes after open pancreatoduodenectomy
Zavrtanik H, Cosola D, Badovinac D, Hadžialjević B, Horvat G, Plevel D, Bogoni S, Tarchi P, de Manzini N, Tomažič A
- 6066 Lyophilized recombinant human brain natriuretic peptide for chronic heart failure: Effects on cardiac function and inflammation
Li F, Li H, Luo R, Pei JB, Yu XY
- 6073 Continuous renal replacement therapy with oXiris® in patients with hematologically malignant septic shock: A retrospective study
Wang J, Wei SR, Ding T, Zhang LP, Weng ZH, Cheng M, Zhou Y, Zhang M, Liu FJ, Yan BB, Wang DF, Sun MW, Cheng WX
- 6083 Serum basic fibroblast growth factor and interleukin-1 β predict the effect of first-line chemotherapy in patients with advanced gastric cancer
Zheng L, Gan LH, Yao L, Li B, Huang YQ, Zhang FB, Kuang MQ, Fang N
- 6091 Multinucleated giant cells of bladder mucosa are modified telocytes: Diagnostic and immunohistochemistry algorithm and relation to PD-L1 expression score
Gulinac M, Velikova T, Dikov D

Clinical Trials Study

- 6105 Comparing the efficacy of regen-cov, remdesivir, and favipiravir in reducing invasive mechanical ventilation need in hospitalized COVID-19 patients
Hegazy SK, Tharwat S, Hassan AH

META-ANALYSIS

- 6122 Risk factors for stroke recurrence in young patients with first-ever ischemic stroke: A meta-analysis
Xia Y, Liu H, Zhu R

SCIENTOMETRICS

- 6132** Unveiling the hidden world of gut health: Exploring cutting-edge research through visualizing randomized controlled trials on the gut microbiota

Zyoud SH, Shakhshir M, Abushanab AS, Koni A, Shahwan M, Jairoun AA, Abu Taha A, Al-Jabi SW

CASE REPORT

- 6147** Rivaroxaban for the treatment of heparin-induced thrombocytopenia with thrombosis in a patient undergoing artificial hip arthroplasty: A case report

Ly FF, Li MY, Qu W, Jiang ZS

- 6154** Mepolizumab induced palmoplantar psoriasis: A case report

Artosi F, Diluvio L, Vultaggio M, Campione E, Bianchi L

- 6159** Early diagnosis of renal pelvis villous adenoma: A case report

Li LL, Song PX, Xing DF, Liu K

- 6165** Identification of the dominant loop of a dual-loop macro-reentry left atrial flutter without prior intervention using high-density mapping technology: A case report

Yu SD, Chu YP

- 6170** Surgery for fibrous dysplasia associated with aneurysmal-bone-cyst-like changes in right proximal femur: A case report

Xie LL, Yuan X, Zhu HX, Pu D

- 6176** Efficacy of abatacept treatment in a patient with enteropathy carrying a variant of unsignificance in *CTLA4* gene: A case report

Musabak U, Erdoğan T, Ceylaner S, Özbek E, Suna N, Özdemir BH

- 6183** Postpartum hemophagocytic lymphohistiocytosis: A case report

An JH, Ahn JH

- 6189** Non-arteritic anterior ischemic optic neuropathy combined with branch retinal vein obstruction: A case report

Gong HX, Xie SY

- 6194** Large colonic lipoma with a laterally spreading tumor treated by endoscopic submucosal dissection: A case report

Bae JY, Kim HK, Kim YJ, Kim SW, Lee Y, Ryu CB, Lee MS

- 6200** T/myeloid mixed-phenotype acute leukemia treated with venetoclax and decitabine: A case report

Park S, Jeong EJ, Kang JH, Lee GW, Go SI, Lee DH, Koh EH

- 6206** Severe inflammatory disorder in trisomy 8 without myelodysplastic syndrome and response to methylprednisolone: A case report

Pan FY, Fan HZ, Zhuang SH, Pan LF, Ye XH, Tong HJ

- 6213** Aggressive variant prostate cancer: A case report and literature review
Weng XT, Lin WL, Pan QM, Chen TF, Li SY, Gu CM
- 6223** Typical Zollinger-Ellison syndrome-atypical location of gastrinoma and absence of hypergastrinemia: A case report and review of literature
Zhang JM, Zheng CW, Li XW, Fang ZY, Yu MX, Shen HY, Ji X
- 6231** Left epigastric isolated tumor fed by the inferior phrenic artery diagnosed as ectopic hepatocellular carcinoma: A case report
Liu HB, Zhao LH, Zhang YJ, Li ZF, Li L, Huang QP
- 6240** Squamous cell carcinoma associated with endometriosis in the uterus and ovaries: A case report
Cai Z, Yang GL, Li Q, Zeng L, Li LX, Song YP, Liu FR
- 6246** Intestinal obstruction due to giant liver cyst: A case report
Küçük A, Mohamed SS, Abdi AM, Ali AY
- 6252** Difficulties in diagnosing angiomatoid fibrous histiocytoma of the head and neck region: A case report
Michcik A, Bieñ M, Wojciechowska B, Polcyn A, Garbacewicz Ł, Kowalski J, Drogozewska B
- 6262** Efficacy of tolvaptan in an infant with syndrome of inappropriate antidiuretic hormone secretion associated with holoprosencephaly: A case report
Mori M, Takeshita S, Nakamura N, Mizuno Y, Tomita A, Aoyama M, Kakita H, Yamada Y
- 6268** Recurrent hemoptysis in pediatric bronchial Dieulafoy's disease with inferior phrenic artery supply: A case report
Wang F, Tang J, Peng M, Huang PJ, Zhao LJ, Zhang YY, Wang T
- 6274** Variant of Guillain-Barré syndrome with anti-sulfatide antibody positivity and spinal cord involvement: A case report
Liu H, Lv HG, Zhang R
- 6280** Secondary pulmonary infection by *Fusarium solani* and *Aspergillus niger* during systemic steroid treatment for COVID-19: A case report
Usuda D, Kato M, Sugawara Y, Shimizu R, Inami T, Tsuge S, Sakurai R, Kawai K, Matsubara S, Tanaka R, Suzuki M, Shimozawa S, Hotchi Y, Osugi I, Katou R, Ito S, Mishima K, Kondo A, Mizuno K, Takami H, Komatsu T, Oba J, Nomura T, Sugita M
- 6289** Collision tumor of primary malignant lymphoma and adenocarcinoma in the colon diagnosed by molecular pathology: A case report and literature review
Jiang M, Yuan XP
- 6298** Successful resolution of gastric perforation caused by a severe complication of pancreatic walled-off necrosis: A case report
Noh BG, Yoon M, Park YM, Seo HI, Kim S, Hong SB, Park JK, Lee MW
- 6304** Bilateral dislocation of the long head of biceps tendon with intact rotator cuff tendon: A case report
Sohn HJ, Cho CH, Kim DH

- 6311** Delayed diagnosis of abdominal Henoch-Schonlein purpura in children: A case report

Guo H, Wang ZL, Tao Z

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Vikram K Mahajan, MD, Professor, Dermatology, Venereology and Leprosy, Dr. Radhakrishnan Government Medical College, Kangra 177001, Himachal Pradesh, India. vkm1@rediffmail.com

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The WJCC is now abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Journal Citation Reports/Science Edition, Current Contents®/Clinical Medicine, PubMed, PubMed Central, Reference Citation Analysis, China National Knowledge Infrastructure, China Science and Technology Journal Database, and Superstar Journals Database. The 2023 Edition of Journal Citation Reports® cites the 2022 impact factor (IF) for WJCC as 1.1; IF without journal self cites: 1.1; 5-year IF: 1.3; Journal Citation Indicator: 0.26; Ranking: 133 among 167 journals in medicine, general and internal; and Quartile category: Q4.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Hua-Ge Yin; Production Department Director: Xu Guo; Editorial Office Director: Jin-Lei Wang.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Bao-Gan Peng, Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati, Ja Hyeon Ku

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

September 16, 2023

COPYRIGHT

© 2023 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



Delayed diagnosis of abdominal Henoch-Schonlein purpura in children: A case report

Hui Guo, Zhi-Ling Wang, Zhu Tao

Specialty type: Gastroenterology and hepatology

Provenance and peer review: Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0
Grade B (Very good): B, B
Grade C (Good): 0
Grade D (Fair): 0
Grade E (Poor): 0

P-Reviewer: Baryshnikova NV, Russia; Ghannam WM, Egypt

Received: July 10, 2023

Peer-review started: July 10, 2023

First decision: July 23, 2023

Revised: August 11, 2023

Article in press: August 11, 2023

Published online: September 16, 2023



Hui Guo, Department of Pediatrics, West China Second University Hospital, Chengdu 610041, Sichuan Province, China

Zhi-Ling Wang, Zhu Tao, Key Laboratory of Birth Defects and Related Diseases of Women and Children, Sichuan University, Chengdu 610000, Sichuan Province, China

Corresponding author: Hui Guo, MD, Doctor, Department of Pediatrics, West China Second University Hospital, No. 20 Section 3, Renmin South Road, Chengdu 610041, Sichuan Province, China. guohui0329@163.com

Abstract

BACKGROUND

For children with abdominal Henoch-Schonlein purpura presenting abdominal pain as an initial symptom and severe clinical manifestations, but without purpura appearance on the skin, the diagnosis and treatment are relatively difficult. This study summarized the characteristics of this group of patients by literature review and provided additional references for further refinement of glucocorticoid therapy in this vasculitis.

CASE SUMMARY

A 6-year-old girl presented mainly with repeated abdominal pain and had received short-term out-of-hospital treatment with hydrocortisone. On day 7 after onset, gastroscopy revealed chronic non-atrophic gastritis and erosive duodenitis without purpuric rash, and no obvious resolution of the abdominal pain was found after treatment against infection and for protection of gastric mucosa. On day 14 the inflammatory indices continued to rise and the pain was relieved after enhanced anti-infective therapy, but without complete resolution. On day 19, the patient presented with aggravated abdominal pain with purplish-red dots on the lower limbs, by which Henoch-Schonlein purpura was confirmed. After 5 d of sequential treatment with methylprednisolone and prednisone, abdominal pain disappeared and she was discharged.

CONCLUSION

Henoch-Schonlein purpura-related rash may appear after long-term abdominal pain, and should be distinguished from acute and chronic gastrointestinal diseases at the early stage without typical rash. For bacterial infection-induced Henoch-Schonlein purpura, glucocorticoid therapy alone without clearing the infection may not relieve symptoms.

Key Words: Henoch-Schonlein purpura; Delayed diagnosis; Rash; Abdominal pain; Gastrointestinal disease; Case report

©The Author(s) 2023. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: Henoch-Schonlein purpura (HSP) is a common vasculitis in children. Abdominal pain is one of its characteristic features, but the presence of gastrointestinal symptoms alone without a rash is easily misdiagnosed. We report a case of HSP with abdominal pain as the first symptom, emphasizing the importance of differential diagnosis to avoid incorrect surgery.

Citation: Guo H, Wang ZL, Tao Z. Delayed diagnosis of abdominal Henoch-Schonlein purpura in children: A case report. *World J Clin Cases* 2023; 11(26): 6311-6317

URL: <https://www.wjgnet.com/2307-8960/full/v11/i26/6311.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v11.i26.6311>

INTRODUCTION

Henoch-Schonlein purpura (HSP) is one of the most common vasculitis in childhood. The main pathogenesis is leukocytoclastic vasculitis and deposition of immunoglobulin A (IgA) immune complexes in small blood vessels[1]. HSP can affect the skin, joints, gastrointestinal tract, and kidney, with skin purpura as the initial symptom in most cases. Abdominal pain is a common symptom of HSP, mostly manifesting after rash[2]. EULAR/PRINTO/PRES 2008 proposed the diagnostic criteria for HSP as palpable purpura or petechia containing at least one of the following four conditions: (1) Acute diffuse abdominal pain; (2) leukocytoclastic vasculitis with IgA deposition revealed by biopsy; (3) arthritis or joint pain; and (4) renal involvement, including proteinuria or hematuria[3]. The rash usually appears on the compressed sites, especially the lower limbs and hip, but is not associated with thrombocytopenia.

Abdominal pain is a common symptom of HSP that presents mostly after the rash and rarely precedes it. Here, we highlighted an unusual case of a pediatric HSP patient with purpuric rash emerging after 19 d of persistent abdominal pain. Given the difficulty of making a clear diagnosis at the early stage when only abdominal pain without rash is present, a misdiagnosis of, for example, surgical acute abdomen or even a recommendation for surgery can result, bringing further pain and anxiety to children. To reduce the misdiagnosis rate of abdominal HSP and increase the clinical diagnostic accuracy, this study analyzed the clinical characteristics of this child in detail and summarized the characteristics of children with delayed abdominal HSP from reports that included a sample size of more than 50 cases published from 2000 to 2022.

CASE PRESENTATION

Chief complaints

A 6-year-old girl presented with intermittent abdominal pain and vomiting for 10 d.

History of present illness

Symptoms started 10 d before presentation with persistent dull pain around the umbilicus and upper abdomen, and non-ejective vomiting (gastric contents) 7-8 times a day with no coffee-like or bloody substances. There were no known sick contacts and no recent travel. The patient was seen at the local hospital and given hydrocortisone, 5 mg/kg/d and cefotaxime, 300 mg/kg/d for 6 d with no obvious remission. Gastroscopy on day 7 revealed chronic non-atrophic gastritis, hyperemia, and edema in the descending mucosa of the duodenum (Figure 1A).

History of past illness

Her past medical history was unremarkable.

Personal and family history

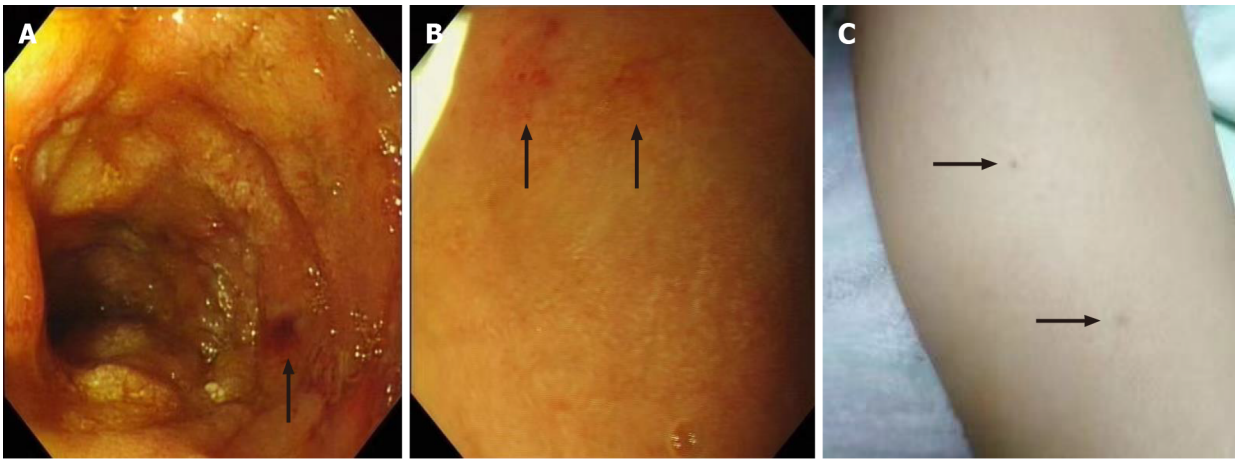
Family history for gastrointestinal diseases or HSP was negative.

Physical examination

On physical examination there was periumbilical tenderness, but no other abnormalities were found. There was no hepatomegaly or splenomegaly; Blumberg and Murphy signs were negative. There was no skin rash at admission.

Laboratory examinations

Blood tests showed increased inflammation indicators and platelets [white blood cells (WBC) $25.6 \times 10^9/L$, neutrophils (N) 81.7%, lymphocytes (L) 11.7%, C-reactive protein (CRP) 38 mg/L, platelets (PLT) $648 \times 10^9/L$]. Erythrocyte



DOI: 10.12998/wjcc.v11.i26.6311 Copyright ©The Author(s) 2023.

Figure 1 Gastroscopy and other symptoms. A and B: Gastroscopy images of the child on the 7th (A) and 17th (B) days after the onset (arrows); C: On the 19th day after the onset, purplish-red hemorrhagic dots appeared on the skin of the child's lower limbs (arrows).

sedimentation rate, procalcitonin, transaminases, total and direct bilirubin, amylase, lipase, coagulation profile were within normal range. Stool culture, testing for rotavirus, adenovirus, aerobic bacteria, clostridium difficile toxin and antigen were negative. Hemocult was negative on three stools specimens. Urinalysis showed increased 24-h urine protein quantification (0.37 g/24 h) and α 1- macroglobulin (6.01 mg/dL). Anti-Saccharomyces cerevisiae antibodies and anti-neutrophil cytoplasmic antibodies, were performed in the workout for inflammatory bowel diseases and resulted negative. Anti-nuclear antibody profile (anti-ds-DNA antibody, anti-SS-A antibody, anti-Ro52 antibody, anti-SS-B antibody, etc.) was negative to differentiate from systemic lupus erythematosus. On the other hand, in the immunological laboratory tests (IgG, IgA, IgM levels, IgG subclasses, and lymphocyte subpopulations), the level of IgA is elevated, while the other levels are normal.

Imaging examinations

An abdominal ultrasound scan showed no intussusception or appendiceal swelling. Abdominal computed tomography (CT) revealed obvious swelling in the wall of the segmental small intestine, peritonitis, and abdominal pelvic effusion.

FINAL DIAGNOSIS

Combined with the results of gastroscopy in another hospital, the diagnosis was as follows: (1) Acute peritonitis; and (2) chronic non-atrophic gastritis. The diagnosis of HSP was confirmed.

TREATMENT

No improvement in abdominal pain after anti-infective treatment with cefoperazone+tazobactam and protection of gastric mucosa with omeprazole and aluminum sulfate gel for 4 d. On day 14 after onset, inflammatory indicators continued to rise (WBC $31.4 \times 10^9/L$, N 86.8%, L 8.1%, CRP 75 mg/L upon routine blood examination). After 3 d of intensive anti-infection treatment with meropenem instead of antibiotics, abdominal pain was significantly relieved but did not completely resolve. Gastroscopy on day 17 after onset revealed chronic non-atrophic gastritis and erosive duodenitis (Figure 1B), and mild to moderate chronic inflammation in the mucosa with erosion, without indication of hemorrhagic rash in the gastric mucosa. On day 19 after onset, the abdominal pain was further aggravated by paroxysmal dull pain around the umbilicus, and purplish-red hemorrhagic dots appeared on the skin mainly on the lower limbs, without pruritus, bleeding, or ulceration (Figure 1C). Platelet count was normal.

After treatment with methylprednisolone, 2 mg/kg/d for 3 d and sequential oral prednisone, 0.75 mg/kg/d for 2 d.

OUTCOME AND FOLLOW-UP

The abdominal pain disappeared. Laboratory tests returned to normal: WBC $9.1 \times 10^9/L$, neutrophils (N) 40.1%, lymphocytes (L) 52.6%, CRP 4.0 mg/L. No abnormalities on fecal examination and urine analysis. The patient made a full recovery and was discharged. She continued to take prednisone, 0.5 mg/kg/d for a further 2 wk. There was no recurrence over 6 mo of follow-up.

DISCUSSION

HSP, also called immunoglobulin A vasculitis, characterized by generalized aseptic inflammation of small blood vessels as a pathological basis, is the most common vasculitis in childhood. The main clinical manifestations include skin purpura, abdominal pain and gastrointestinal hemorrhage, joint swelling and pain, and renal involvement. Rash and abdominal pain are the most common symptoms. Gastrointestinal symptoms, reported in 50%–85% of HSP patients, are possibly attributed as secondary to edema and hemorrhage in the gastrointestinal wall and mesentery, and include nausea and vomiting, vomiting of blood, and bloody stools. Among these gastrointestinal symptoms, 14%–36% occur before the rash appears[4]. We performed retrospective analysis of the literature published between 2000 and 2022 with delayed abdominal HSP with a sample size of more than 50 children in Table 1. In previous studies, the interval between abdominal pain and rash in HSP patients was reported as usually 2–10 d[5,6], the longest interval in patients without glucocorticoids being 28 d and the shortest interval 1 d[7–9]. In 2006, Sato *et al*[10] reported an elderly HSP patient with emergence of rash after 75 d of abdominal pain, but this patient was diagnosed with pancreatitis at an early stage. Thus, it could not be excluded that the early abdominal pain was caused by pancreatitis.

Table 1 Summary of delayed abdominal Henoch-Schonlein purpura in pediatric patients, %

Ref.	Calvo-Río <i>et al</i> [5]	Ji[19]	Chao <i>et al</i> [9]	Calviño <i>et al</i> [11]	Rubino <i>et al</i> [16]
Number	417	218	208	78	118
Sex (male/female)	240/177	140/88	116/92	42/36	66/52
Age (mo, yr)	8 mo–87 yr	2 yr 4 mo–13 yr	9 mo–15 yr	1 yr–13 yr	1 yr–17 yr
Median age	7.5 ry	-	6.4 yr	5.5 yr	7 yr
Etiologic factor	-	-	-	-	-
Infections	38	53	-	28	-
Drug intake	18.50	-	-	18.00	-
Allergy	-	21.10	-	-	-
Abdominal pain as initial manifestation	13.70	16.00	58.00	16.70	-
Time between abdominal pain and purpura (d)	6–15 d	1–12 d	1–13 d	1–10 d	-
Median d	10	-	4.8	3.3 d	-
Use of glucocorticoid	-	-	7.5 ± 2.8	-	-
No use of glucocorticoid	-	-	10.2 ± 3.6	-	-
Leukocytosis was present	36.7	46.8	47.5	52.6	-
Anemia	8.9	11.5	10.5	7.7	10
ESR was present	80.1	16.5	-	63.9	40
Increased IgA serum	31.7	-	-	57.1	27
ANCAs	0	-	-	-	-
Stool occult blood	-	16.10%	52/160 positive	12 positive cases	30 positive cases
CT or X-ray	-	-	42/82 positive	-	18/21 positive
Gastroscopy	-	-	15/27 positive	2/2 positive	3/5 positive
Treatment	-	-	-	-	-
Corticosteroids	35	90	99.50	23.10	68
Cytotoxic drugs	5	Use for some patients with renal impairment (87 patients)	-	Use for two children due to severe renal impairment	Use for one child for steroid resistance
Nonsteroidal anti-inflammatory drugs	14	-	-	-	43
Dialysis	1	-	-	-	-

Outcome		-	-	-	-
Complete resolution	83.20	-	-	88.40	-
		-	-	-	100
Persistent nephropathy (renal sequelae)	7.70	-	-	11.60	-
Reoccurrence	31.90	-	10.10	14.50	21.00

ANCAs: Antineutrophil cytoplasmic antibodies; CT: Computed tomography; ESR: Electron spin resonance; IgA: Immunoglobulin A.

The child presented some specific clinical manifestations. First, gastrointestinal symptoms are reported in 50%–85% of HSP patients, commonly including nausea and vomiting, vomiting blood, bloody stool, and melena. Other rare gastrointestinal symptoms include intussusception, mesenteric ischemia, intestinal perforation, massive gastrointestinal bleeding, acute non-calculous cholecystitis, hemorrhagic ascites with peritonitis, pancreatitis, and biliary cirrhosis[11–16], but an association with chronic gastrointestinal diseases is rarely reported[17,18]. The patient in our study presented with abdominal pain and peritonitis in the early stage, associated with underlying chronic non-atrophic gastritis and erosive duodenitis, a complicated condition reported here for the first time based on our literature review.

Second, skin symptoms in HSP patients usually precede gastrointestinal symptoms, although the opposite occurs in 12%–19% of patients[4]. In a study including 208 HSP patients, Chen *et al*[14] found that 41 patients (25.3%) presented with gastrointestinal symptoms before the appearance of skin lesions, with an average interval of 4.8 d, while 18 patients had abdominal pain more than 1 wk before the skin symptoms[15]. The patient in the present report had abdominal pain that lasted for 19 d before the purpuric rash appeared at the typical site. Currently the longest interval between rash and abdominal pain (rash appearance first) in HSP patients is 75 d, but this patient was diagnosed with pancreatitis at an early stage, thus not excluding that early abdominal pain could have been caused by pancreatitis[10]. According to the literature we searched, the interval in most patients was 2–10 d[5,19]. With the exception of the present report, the longest interval was 12 d and the shortest interval was 1 d[7,8]. Our patient sustained rash onset after 19 d of abdominal pain, the longest interval reported to date.

Treatment with glucocorticoids and antibiotics in another hospital failed to control the disease. After admission to our hospital, CRP (an inflammation indicator) increased progressively, and abdominal pain was significantly relieved after intensive anti-infection treatment. Thus, the poor effect of glucocorticoids might be related to the failure of infection control. In our case, it is possible that a gastrointestinal infection triggered HSP. In fact, HSP commonly occurs after bacterial or viral infections (usually upper respiratory tract or intestinal infections), especially during the autumn season. Therefore, infection may play a role in the etiology of IgA vasculitis. The following hypotheses are proposed[20]: (1) The N-Acetylgalactosamine (GalNAc) present on the surface of the pathogen may contribute to the production of IgA and IgG antibodies that cross-react with Galactose deficient immunoglobulin A1 (Gd-IgA1); (2) Microbes may contain antigenic structures like the vascular wall, leading to the production of cross-reactive autoantibodies; (3) Mucosal infections result in upregulation of IL-6, which may contribute to the development of Gd-IgA1 by altering the glycosylation mechanism.

Currently, glucocorticoids are considered effective for HSP gastrointestinal and joint symptoms, and early initiation can effectively relieve abdominal and joint symptoms, significantly relieve abdominal pain, improve the relief rate within 24 h, as well as reducing the risk of intussusception and intestinal bleeding[19,21–25]. There is no evidence to prove that glucocorticoid therapy is effective in the regression and recurrence of rash[26], but we guess that early use of glucocorticoids may be associated with delayed appearance of rash in HSP. The patient in the present study was treated out of hospital with hydrocortisone, 5 mg/kg/d for 6 d, which may be an important reason for the delayed rash.

CONCLUSION

HSP is a relatively common childhood disorder that may be difficult to diagnose when the typical signs of rash, abdominal pain, arthralgias, and nephritis do not occur simultaneously. Our case serve as a reminder that abdominal pain can appear long before the rash.

FOOTNOTES

Author contributions: Wang ZL analyzed and interpreted the patient data regarding the Henoch-Schonlein purpura and was a major contributor in writing the manuscript; Tao Z collect related literature and complete partial manuscript content; Guo H revised and expanded the manuscript. All authors read and approved the final manuscript.

Supported by the Science and Technology Bureau of Sichuan province, No. 21ZDYF1329.

Informed consent statement: Informed written consent was obtained from the patient's family for publication of this report and any accompanying images.

Conflict-of-interest statement: All the authors declare that they have no conflict of interest to disclose.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <https://creativecommons.org/licenses/by-nc/4.0/>

Country/Territory of origin: China

ORCID number: Hui Guo 0000-0002-0104-5724; Zhi-Ling Wang 0000-0003-3475-3556.

S-Editor: Liu JH

L-Editor: A

P-Editor: Liu JH

REFERENCES

- 1 **Kawasaki Y**, Ono A, Ohara S, Suzuki Y, Suyama K, Suzuki J, Hosoya M. Henoch-Schönlein purpura nephritis in childhood: pathogenesis, prognostic factors and treatment. *Fukushima J Med Sci* 2013; **59**: 15-26 [PMID: 23842510 DOI: 10.5387/fms.59.15]
- 2 **Kanik A**, Kose E, Baran M, Kose SS, Eliacik K, Sayan A, Helvacı M, Aksu N. Henoch-Schönlein purpura in two pediatric patients presenting as terminal ileitis. *Dig Dis Sci* 2015; **60**: 269-271 [PMID: 25052148 DOI: 10.1007/s10620-014-3273-5]
- 3 **Ozen S**, Pistorio A, Iusan SM, Bakaloglu A, Herlin T, Brik R, Buoncompagni A, Lazar C, Bilge I, Uziel Y, Rigante D, Cantarini L, Hilario MO, Silva CA, Alegria M, Norambuena X, Belot A, Berkun Y, Estrella AI, Olivieri AN, Alpighiani MG, Rumba I, Sztajnbock F, Tambic-Bukovac L, Breda L, Al-Mayouf S, Mihaylova D, Chasnyk V, Sengler C, Klein-Gitelman M, Djeddi D, Nuno L, Pruunsild C, Brunner J, Kondi A, Pagava K, Pederzoli S, Martini A, Ruperto N; Paediatric Rheumatology International Trials Organisation (PRINTO). EULAR/PRINTO/PRES criteria for Henoch-Schönlein purpura, childhood polyarteritis nodosa, childhood Wegener granulomatosis and childhood Takayasu arteritis: Ankara 2008. Part II: Final classification criteria. *Ann Rheum Dis* 2010; **69**: 798-806 [PMID: 20413568 DOI: 10.1136/ard.2009.116657]
- 4 **Saulsbury FT**. Clinical update: Henoch-Schönlein purpura. *Lancet* 2007; **369**: 976-978 [PMID: 17382810 DOI: 10.1016/S0140-6736(07)60474-7]
- 5 **Calvo-Río V**, Loricera J, Mata C, Martín L, Ortiz-Sanjuán F, Alvarez L, González-Vela MC, González-Lamuño D, Rueda-Gotor J, Fernández-Llaca H, González-López MA, Armesto S, Peiró E, Arias M, González-Gay MA, Blanco R. Henoch-Schönlein purpura in northern Spain: clinical spectrum of the disease in 417 patients from a single center. *Medicine (Baltimore)* 2014; **93**: 106-113 [PMID: 24646467 DOI: 10.1097/MD.0000000000000019]
- 6 **Fan GZ**, Li RX, Jiang Q, Niu MM, Qiu Z, Chen WX, Liu HH, Ruan JW, Hu P. Streptococcal infection in childhood Henoch-Schönlein purpura: a 5-year retrospective study from a single tertiary medical center in China, 2015-2019. *Pediatr Rheumatol Online J* 2021; **19**: 79 [PMID: 34078391 DOI: 10.1186/s12969-021-00569-3]
- 7 **Dinler G**, Bek K, Açıkgoz Y, Kalayci AG. Acute pancreatitis as a presenting feature of Henoch-Schönlein purpura. *Turk J Pediatr* 2010; **52**: 191-193 [PMID: 20560258]
- 8 **Frigui M**, Lehiyani D, Koubaa M, Bouaziz Z, Abid B, Beyrouti I, Mnif Z, Bahloul Z, Jemaa MB. Acute pancreatitis as initial manifestation of adult Henoch-Schönlein purpura: report of a case and review of literature. *Eur J Gastroenterol Hepatol* 2011; **23**: 189-192 [PMID: 21164347 DOI: 10.1097/MEG.0b013e328342349e]
- 9 **Chao HC**, Kong MS, Lin SJ, Huang JL. Gastrointestinal manifestation and outcome of Henoch-Schönlein purpura in children. *Chang Gung Med J* 2000; **23**: 135-141 [PMID: 15641216]
- 10 **Sato S**, Irisawa A, Shio K, Takagi T, Ohira H. Case of an elderly man with associated Henoch-Schönlein purpura during treatment of acute pancreatitis. *Fukushima J Med Sci* 2006; **52**: 135-142 [PMID: 17427764 DOI: 10.5387/fms.52.135]
- 11 **Calviño MC**, Llorca J, García-Porrúa C, Fernández-Iglesias JL, Rodríguez-Ledo P, González-Gay MA. Henoch-Schönlein purpura in children from northwestern Spain: a 20-year epidemiologic and clinical study. *Medicine (Baltimore)* 2001; **80**: 279-290 [PMID: 11552081 DOI: 10.1097/00005792-200109000-00001]
- 12 **Sohagia AB**, Gunturu SG, Tong TR, Herten HI. Henoch-schönlein purpura-a case report and review of the literature. *Gastroenterol Res Pract* 2010; **2010**: 597648 [PMID: 20508739 DOI: 10.1155/2010/597648]
- 13 **Jeong YK**, Ha HK, Yoon CH, Gong G, Kim PN, Lee MG, Min YI, Auh YH. Gastrointestinal involvement in Henoch-Schönlein syndrome: CT findings. *AJR Am J Roentgenol* 1997; **168**: 965-968 [PMID: 9124151 DOI: 10.2214/ajr.168.4.9124151]
- 14 **Chen MJ**, Chu CH, Lin SC, Shih SC, Wang TE. Eosinophilic gastroenteritis: clinical experience with 15 patients. *World J Gastroenterol* 2003; **9**: 2813-2816 [PMID: 14669340 DOI: 10.3748/wjg.v9.i12.2813]
- 15 **Fan Z**, Tian X, Pan J, Li Y, Zhang Y, Jing H. Terminal ileitis induced by Henoch-Schönlein purpura that presented as acute appendicitis: a case report. *Medicine (Baltimore)* 2015; **94**: e492 [PMID: 25654396 DOI: 10.1097/MD.0000000000000492]
- 16 **Rubino C**, Monacelli C, Marrani E, Paci M, Indolfi G, Simonini G, Trapani S. Gastrointestinal involvement in IgA vasculitis: a single-center 11-year study on a cohort of 118 children. *Clin Rheumatol* 2021; **40**: 5041-5046 [PMID: 34273001 DOI: 10.1007/s10067-021-05863-9]
- 17 **Lerkvaleekul B**, Treepongkaruna S, Saisawat P, Thanachatchairattana P, Angkathunyakul N, Ruangwattanapaisarn N, Vilaiyuk S. Henoch-Schönlein purpura from vasculitis to intestinal perforation: A case report and literature review. *World J Gastroenterol* 2016; **22**: 6089-6094 [PMID: 27468201 DOI: 10.3748/wjg.v22.i26.6089]
- 18 **Rubino C**, Paci M, Resti M, Lionetti P, Trapani S. Late Relapse of Henoch-Schönlein Purpura in an Adolescent Presenting as Severe

- Gastroduodenitis. *Front Pediatr* 2018; **6**: 355 [PMID: 30525016 DOI: 10.3389/fped.2018.00355]
- 19 **Ji C.** Clinical analysis of 218 children with Henoch-Schonlein purpura. *Linchuang erke Zazhi* 2008; **26**: 961-963
- 20 **Heineke MH**, Ballering AV, Jamin A, Ben Mkaddem S, Monteiro RC, Van Egmond M. New insights in the pathogenesis of immunoglobulin A vasculitis (Henoch-Schönlein purpura). *Autoimmun Rev* 2017; **16**: 1246-1253 [PMID: 29037908 DOI: 10.1016/j.autrev.2017.10.009]
- 21 **Reinehr T**, Bürk G, Andler W. Does steroid treatment of abdominal pain prevent renal involvement in Henoch-Schönlein purpura? *J Pediatr Gastroenterol Nutr* 2000; **31**: 323-324 [PMID: 10997386 DOI: 10.1097/00005176-200009000-00028]
- 22 **Weiss PF**, Klink AJ, Localio R, Hall M, Hexem K, Burnham JM, Keren R, Feudtner C. Corticosteroids may improve clinical outcomes during hospitalization for Henoch-Schönlein purpura. *Pediatrics* 2010; **126**: 674-681 [PMID: 20855386 DOI: 10.1542/peds.2009-3348]
- 23 **Weiss PF**, Feinstein JA, Luan X, Burnham JM, Feudtner C. Effects of corticosteroid on Henoch-Schönlein purpura: a systematic review. *Pediatrics* 2007; **120**: 1079-1087 [PMID: 17974746 DOI: 10.1542/peds.2007-0667]
- 24 **Huber AM**, King J, McLaine P, Klassen T, Pothos M. A randomized, placebo-controlled trial of prednisone in early Henoch Schönlein Purpura [ISRCTN85109383]. *BMC Med* 2004; **2**: 7 [PMID: 15059282 DOI: 10.1186/1741-7015-2-7]
- 25 **Jauhola O**, Ronkainen J, Koskimies O, Ala-Houhala M, Arikoski P, Hölttä T, Jahnukainen T, Rajantie J, Ormälä T, Nuutinen M. Clinical course of extrarenal symptoms in Henoch-Schonlein purpura: a 6-month prospective study. *Arch Dis Child* 2010; **95**: 871-876 [PMID: 20371584 DOI: 10.1136/adc.2009.167874]
- 26 **Sunderkötter C**, Bonsmann G, Sindrilaru A, Luger T. Management of leukocytoclastic vasculitis. *J Dermatolog Treat* 2005; **16**: 193-206 [PMID: 16249140 DOI: 10.1080/09546630500277971]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: bpgoffice@wjgnet.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

