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# Endoscopic and microscopic findings of gastrointestinal tract in Henoch–Schönlein purpura

## Single institute experience with review of literature

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**Abstract**

Asia has the highest incidence of Henoch–Schönlein purpura (HSP). Although 50% to 75% of patients with HSP manifest gastrointestinal (GI) symptoms, endoscopic, and pathologic findings of HSP have been rarely reviewed in Asia.

Patients diagnosed with HSP who had undergone endoscopic biopsy from GI tract (GIT) in Soonchunhyang University Seoul Hospital from 2000 to 2018 were evaluated and 25 cases with 44 biopsies from upper GI tract (U-GIT) or lower GI tract (L-GIT) were enrolled. Their clinical and endoscopic findings and histologic findings of endoscopic biopsy were reviewed.

Of the 25 patients, 15 were males and 10 were females. There were 6 children and 19 adults. The most common GI symptom was abdominal pain (20/25), followed by loose stool or diarrhea (9/25). Biopsied sites included 19 from U-GIT (9 stomach and 10 duodenum) and 25 from L-GIT (7 terminal ileum, 1 cecum, 4 ascending, 1 transverse, 2 descending, 7 sigmoid, and 3 rectum). Erythema/petechia was the most common endoscopic finding in U-GIT, while erosion/ulceration was the most common one in L-GIT. In U-GIT, extravasted red blood cell (RBC) (14/19) was the most common histologic finding, while leukocytoclastic vasculitis (LCV)/capillarities were identified in 7 specimens, including 5 duodenum samples. In endoscopic investigations of L-GIT, erosion/ulceration (9/14) was predominantly identified. The most common histologic finding was also extravasted RBC (22/25), while LCV/capillarities were noted in 10 specimens, including 5 specimens from terminal ileum.

The HSP commonly involves GIT. Histologic findings of our cases were not significantly different from results of previous studies in Western countries. However, endoscopic and pathologic characteristics of HSP have been rarely reviewed in Asia. Herein, we share experience of endoscopic biopsy of GIT in patients with HSP.

**Abbreviations:** EGD = esophagogastroduodenoscopy, EULAR = European League Against Rheumatism, GI = gastrointestinal, GIT = gastrointestinal tract, HSP = Henoch–Schönlein purpura, LCV = leukocytoclastic vasculitis, L-GIT = lower gastrointestinal tract, U-GIT = upper gastrointestinal tract.

**Keywords:** endoscopy, Henoch–Schonlein purpura, histology, leukocytoclastic vasculitis

## 1. Introduction

Henoch–Schonlein purpura (HSP) is a small-vessel vasculitis that affects both children and adults. It involves small vessels of the skin, joints, gastrointestinal tract (GIT), and kidney. Diagnosis of HSP is made when patients complain purpura or petechiae of the skin with at least one of the following criteria: abdominal pain, histopathologically proven IgA vasculitis, arthritis or arthralgia, and renal involvement according to 2010 European League Against Rheumatism (EULAR) criteria.[1] GI symptoms can occur in 50% to 85% of patients with HSP.[2] Although GI symptoms include acute abdominal pain, nausea, vomiting, hematochezia or melena, and diarrhea, not every HSP patient receives endoscopic evaluation. Endoscopic evaluations are performed when patients complain severe GI symptoms or when the GI manifestations are suspicious of infectious/inflammatory etiology or when patients are suspected of HSP without skin manifestations.

Despite high incidence of HSP in Asia,[3] the study for endoscopic and pathologic characteristics of HSP have been rarely reviewed in Asia. Therefore, we share our experience for endoscopic and its pathologic findings of GIT in patients with HSP.

## 2. Materials and methods

We retrieved 25 cases of HSP with 44 GIT endoscopic biopsies from archives of the Department of Pathology and Gastroenterology at Soonchunhyang University Seoul Hospital from January

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**Table 1**

**Summarization of demographic characteristics of patients with Henoch–Schönlein purpura involving gastrointestinal tract.**

| | No. of patients (%) |
|---|---|
| Age, yr | |
| Children (≤18) | 6 (24%) |
| Adults (>18) | 19 (76%) |
| Sex | |
| Male | 15 (60%) |
| Female | 10 (40%) |
| Endoscopy | |
| Upper gastrointestinal tract | 17 (68%) |
| Lower gastrointestinal tract | 14 (56%) |
| Kidney biopsy | 6 (24%) |
| Leukocytoclastic vasculitis or Proliferative glomerulonephritis with IgA deposit | 6 |
| Skin biopsy | 13 (52%) |
| Leukocytoclastic vasculitis | 12 |
| Others | 1 |
| Total | 25 (100%) |

1, 2000 to May 5, 2018. Search terms of "HSP," "IgA vasculitis," "esophagogastroduodenoscopy (EGD)," "colonoscopy," and "biopsy" were used. A total of 44 biopsied specimens from these 25 patients with HSP were collected. Their clinical data such as age, sex, symptoms, and endoscopic findings were obtained from electronic medical records. Microscopic findings of biopsied slides were also reviewed. The Research Ethics Committee at the Soonchunhyang University Seoul Hospital approved the study (IRB No: 2018-08-009-001).

## 3. Results

We identified 25 patients who fulfilled the EULAR criteria of HSP and underwent GI endoscopic investigations (Table 1). These patients include 15 males and 10 females. There were 6 children and 19 adults.

The most common GI symptom was abdominal pain (20/25), followed by loose stool/diarrhea (9/25), nausea/vomiting (7/25), hematochezia (3/25), and melena (3/25). Seventeen patients underwent U-GIT investigations with EGD. Fourteen patients underwent L-GIT investigations with colonoscopy. Six patients were received both evaluations. Of the total of 44 biopsied specimens, 19 were from U-GIT and 25 were from L-GIT (Table 2). Of the 19 biopsied specimens from U-GIT, 9 were stomach specimens and 10 were duodenum specimens. Specimens from L-GIT (n=25) included 7 terminal ileum, 1 cecum, 4 ascending colon, 1 transverse colon, 2 descending colon, 7 sigmoid colon, and 3 rectum specimens. Nine patients showed involvement of multiple GIT sites and 6 of them had both U-GIT and L-GIT specimens. The most commonly biopsied site was the duodenum (10/25) in U-GIT and sigmoid colon (7/25) in L-GIT.

**Table 2**

**Composition of biopsy sites.**

| | No. of biopsied specimens |
|---|---|
| Upper gastrointestinal tract (n=19) | |
| Stomach | 9 |
| Duodenum | 10 |
| Lower gastrointestinal tract (n=25) | |
| Terminal ileum | 7 |
| Cecum | 1 |
| Ascending colon | 4 |
| Transverse colon | 1 |
| Descending colon | 2 |
| Sigmoid colon | 7 |
| Rectum | 3 |
| Total | 44 |

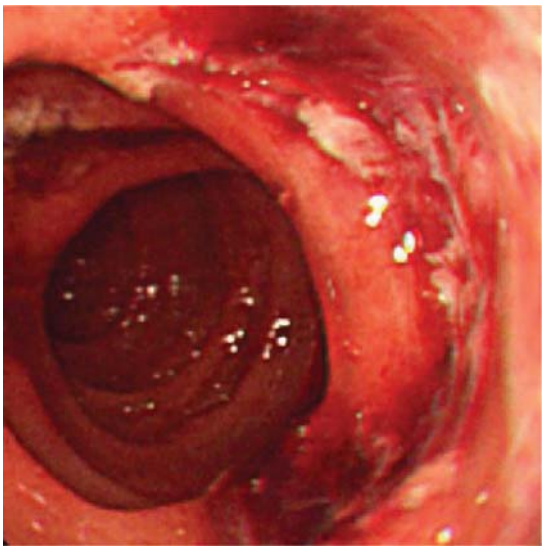

**Figure 1.** Esophagogastroduodenoscopy shows erosive lesion with erythematous change covered with inflammatory exudates in the duodenum.

The EGD findings of U-GIT included erythema/petechiae (11/17) (Fig. 1), erosion/ulceration (10/17), edema (2/17), atrophy (1/17), and hemorrhage (1/17). Early gastric cancer was incidentally found in 1 patient (Table 3). Colonoscopic findings included erosion/ulceration (9/14) (Fig. 2), erythema/petechiae (7/14), edema (2/14), vascular ectasia (2/14), vascular eruption (1/14), hemorrhage (1/14), and unremarkable endoscopic finding (1/14) (Table 4).

Extravasted red blood cells (RBCs) (14/19) were the most common histologic findings of U-GIT. Leukocytoclastic vasculitis (LCV)/capillarities were observed in 7 specimens (Fig. 3, Table 5). Other findings were edema (10/19), erosion/ulceration (8/19), fibrin exudates in lamina propria (4/19), and lymphangiectasia or dilated lymphatics (4/19). These 19 specimens were classified into 3 groups according to the severity of inflammation: 6 mild, 6 moderate, and 7 severe inflammation. Histologic findings of L-GIT included extravasated RBCs (22/25), edema (14/25), erosion/ulceration (10/25), LCV/capillarities (10/25) (Fig. 4), and fibrin deposition (6/25) (Table 6). Two specimens from the terminal ileum and ascending colon revealed lymphangiectasia or dilated lymphatics. Like U-GIT specimens, 25 L-GIT specimens were also evaluated according to the severity of inflammation. Results showed 12 cases, 9 cases, and 4 cases with mild, moderate, and severe inflammation, respectively.

Additionally, of the 25 patients, 6 patients also underwent kidney biopsies and 13 patients underwent skin biopsies (Table 1). All the kidney specimens showed LCV or proliferative glomerulonephritis with IgA deposit, which are consistent with HSP. Twelve skin specimens (12/13) disclosed LCV and the remaining 1 specimen showed histologic findings for nonspecific inflammation.

**Table 3**

**Summarization of endoscopic and histologic characteristics of upper gastrointestinal tract.**

| | | | | | Histologic findings | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Age/sex | Symptoms at presentation | Endoscopic findings | Biopsy site | Severity of inflammation | Leukocytoclastic vasculitis (capillarities) | Extravasated RBC | Erosion/ ulceration | Edema | Fibrin exudates | Lymphangiectasia/ dilated lymphatics |
| 1 | 33/F | Abdominal pain, loose stool | Erosion | Stomach | Mild | – | – | + | + | – | – |
| 2 | 54/M | Diarrhea, melena | Ulceration | Duodenum | Moderate | + | – | + | + | + | – |
| 3 | 26/F | Nausea/vomiting, abdominal pain, melena | Edema, erosion multiple ulcer, petechiae | Stomach | Severe | – | + | – | + | – | – |
| | | | | Duodenum | Severe | + | + | + | + | – | + |
| 4 | 11/F | Nausea/vomiting, abdominal pain, melena | Erythema | Duodenum | Mild | + | + | – | – | + | + |
| 5 | 57/M | Abdominal pain | Erythema, atrophy | Stomach | Severe | + | + | + | – | – | – |
| 6 | 56/M | Abdominal pain, loose stool | Early gastric cancer | Stomach | Mild | – | + | – | – | – | – |
| 7 | 14/M | Abdominal pain, petechia | Ulceration, erythema | Duodenum | Mild | – | + | – | – | – | + |
| 8 | 44/M | Abdominal pain, petechiae | Petechiae | Stomach | Severe | – | + | + | – | – | – |
| 9 | 14/M | Petechiae | Ulceration | Duodenum | Severe | – | – | + | + | – | + |
| 10 | 15/M | Abdominal pain, petechiae | Erythema, ulceration | Duodenum | Moderate | – | + | + | – | – | – |
| 11 | 64/M | Abdominal pain | Multifocal hemorrhage | Stomach | Severe | + | + | – | + | – | – |
| 12* | 24/M | Abdominal pain, loose stool, petechiae | Erythema, erosion | Stomach | Severe | – | + | – | + | – | – |
| 13* | 32/F | Abdominal pain | Erythema | Stomach | Moderate | – | + | + | – | – | – |
| | | | | Duodenum | Moderate | + | + | – | + | + | – |
| 14* | 41/F | Abdominal pain, petechiae | Erosion | Stomach | Mild | – | – | – | + | – | – |
| 15* | 39/M | Nausea/vomiting, abdominal pain, diarrhea | Erythema, ulceration | Duodenum | Moderate | + | + | – | – | – | – |
| 16* | 26/F | Abdominal pain, arthralgia | Erosion, erythema | Duodenum | Mild | – | + | – | + | – | – |
| 17* | 66/M | Hematochezia, petechiae, arthralgia | Erosion, edema | Duodenum | Moderate | – | – | – | – | + | – |

* Patients who underwent both upper and lower gastrointestinal tract investigations.

RBC = red blood cell.

**Table 4**

**Summary of endoscopic and histologic characteristics of lower gastrointestinal tract.**

| | Age/sex | Symptoms at presentation | Endoscopic findings | Biopsy site | Histologic findings | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Severity of inflammation | Leukocytoclastic vasculitis (capillarities) | Extravasated RBC | Erosion/ ulceration | Edema | Fibrin exudates | Lymphangiectasia/ dilated lymphatics |
| 1 | 29/F | Nausea/vomiting, abdominal pain, loose stool | Erythema, vascular ectasia | Sigmoid colon | Mild | – | – | – | – | – | – |
| 2 | 42/M | Nausea/vomiting, hematochezia, petechiae, arthralgia | Erythema, erosion | Sigmoid colon | Mild | – | + | + | + | + | – |
| 3 | 18/F | Nausea/vomiting, abdominal pain | Unremarkable | Sigmoid colon | Moderate | + | – | + | + | – | – |
| 4 | 39/F | Abdominal pain, diarrhea, hematuria | Edema, erythema, ulceration | Terminal ileum | Moderate | + | + | – | + | – | – |
| | | | | Sigmoid colon | Severe | – | + | + | + | – | – |
| 5 | 33/M | Abdominal pain, petechiae | Erythema, ulceration | Terminal ileum | Mild | + | + | + | – | + | – |
| | | | | Cecum | Mild | – | + | – | + | – | – |
| | | | | Ascending colon | Mild | – | + | – | + | – | – |
| 6 | 41/M | Abdominal pain, petechiae | Erythema, erosion | Ascending colon | Mild | – | + | – | – | – | – |
| | | | | Sigmoid colon | Mild | – | + | – | – | – | – |
| | | | | Rectum | Mild | – | + | – | – | – | – |
| 7 | 77/M | Hematochezia, petechiae | Erythema, erosion | Descending colon | Moderate | – | + | + | + | – | – |
| | | | | Sigmoid colon | Mild | – | + | – | + | – | – |
| 8 | 14/F | Abdominal pain, loose stool | Ulceration, hemorrhage | Sigmoid colon | Severe | – | + | + | – | – | – |
| 9* | 24/M | Abdominal pain, loose stool, petechiae | Ulceration | Transverse colon | Moderate | + | + | + | – | + | – |
| 10* | 32/F | Abdominal pain | Ulceration | Terminal ileum | Moderate | + | + | – | + | + | – |
| | | | | Ascending colon | Moderate | + | + | + | – | – | – |
| | | | | Descending colon | Moderate | + | + | + | – | – | – |
| | | | | Rectum | Moderate | + | + | + | – | – | – |
| 11* | 41/F | Abdominal pain, petechiae | Ulceration | Terminal ileum | Severe | + | + | – | + | + | + |
| | | | | Ascending colon | Moderate | – | + | – | + | – | + |
| 12* | 39/M | Nausea/vomiting, abdominal pain, diarrhea | Erythema, ulceration | Terminal ileum | Mild | – | – | – | + | – | – |
| 13* | 26/F | Abdominal pain, arthralgia | Vascular eruption | Terminal ileum | Mild | – | + | – | – | – | – |
| | | | | Rectum | Mild | – | + | – | + | – | – |
| 14* | 66/M | Hematochezia, petechiae, arthralgia | Edema, vascular ectasia | Terminal ileum | Severe | + | + | – | + | + | – |

* Patients who underwent both upper and lower gastrointestinal tract investigations.

RBC = red blood cell.

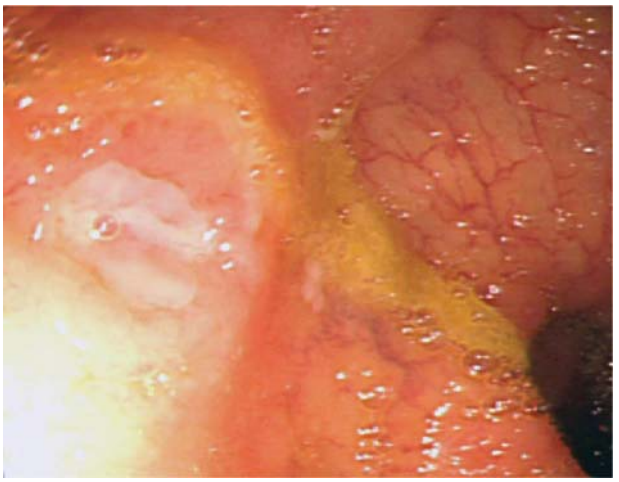

**Figure 2.** Colonoscopy shows shallow ulcerative lesion in the terminal ileum.

**Table 5**

**Summarization of endoscopic, histologic characteristics in Henoch–Schönlein purpura involving upper gastrointestinal tract.**

| Endoscopic findings | No. of patients (%) |
|---|---|
| Edema | 2 (12%) |
| Erythema/petechiae | 11 (65%) |
| Erosion/ulceration | 10 (58%) |
| Etc. | 3 (18%) |
| Total | 17 (100%) |
| **Histologic findings** | **No. of biopsied specimens (%)** |
| Severity of inflammation | |
| Mild | 6 (32%) |
| Moderate | 6 (32%) |
| Severe | 7 (37%) |
| Leukocytoclastic vasculitis/capillarities | 7 (37%) |
| Extravasated RBCs | 14 (74%) |
| Erosion/ulceration | 8 (42%) |
| Edema | 10 (53%) |
| Fibrin exudates | 4 (21%) |
| Lymphangiectasia/dilated lymphatics | 4 (21%) |
| Etc. | 1 (5%) |
| Total | 19 (100%) |

RBC = red blood cell.

## 4. Discussion

The HSP shows a small-vessel vasculitis and its involvement of GIT is noted in about 2/3 patients. There have been a few studies for the endoscopic and microscopic findings of HSP patients in western countries. However, similar studies about GI findings in patients with HSP have been rarely studied in Asia in despite of its high incidence of HSP.[3,4]

Although peak incidence of HSP is 4 to 7 years old, GI involvement rate of HSP is higher in adults.[5] In our study, there were 24% of childhood cases and 76% of adult cases. As involvement of GIT in HSP is higher in adult group and endoscopic investigations are readily accessible diagnostic tools in Korea, more adult cases are included in this study. We thought that there could be selection bias for the following causes. First, in Korea, it is easy to access endoscopic evaluation because of low medical cost by national health insurance. Nevertheless, a large number of patients receive only supportive treatment without endoscopic examination and biopsy. Another cause is that endoscopic examination might be limited in pediatric patients for various reasons. Although HSP is well known as childhood disease, our study includes only 24% of pediatric cases. Additionally, there is no well-established guideline for the endoscopic approach of patients with HSP with GI symptoms. Additional studies should be needed, considering different approaches in adult and pediatric patients.

The most commonly presented symptom was abdominal pain followed by loose stool/diarrhea. As adult group showed higher frequency of diarrhea,[5] many cases underwent L-GIT investigations. In other studies, the duodenum was found to be the predominantly involved site.[4,6] Ten cases involved duodenum, which occupied the largest proportion of U-GIT biopsy in the present study. Erythema/petechiae was identified as the most common endoscopic finding in U-GIT followed by erosion/ulceration. In L-GIT, erosion/ulceration was the predominant

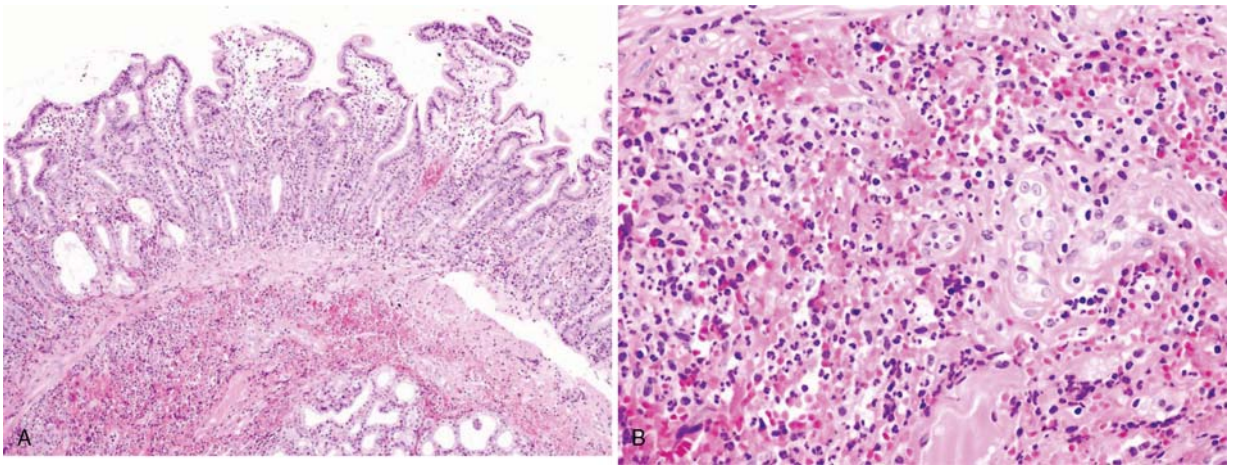


**Figure 3.** (A) Duodenal biopsy exhibits infiltration of inflammatory cells in mucosa and acute inflammation with hemorrhage in submucosa (hematoxylin and eosin [H&E], ×100). (B) On detailed view of (A), submucosa shows neutrophilic infiltration around vessels and nuclear debris with swelling of endothelial cells and surrounding fresh hemorrhage is also seen, suggesting leukocytoclastic vasculitis (H&E, ×400).

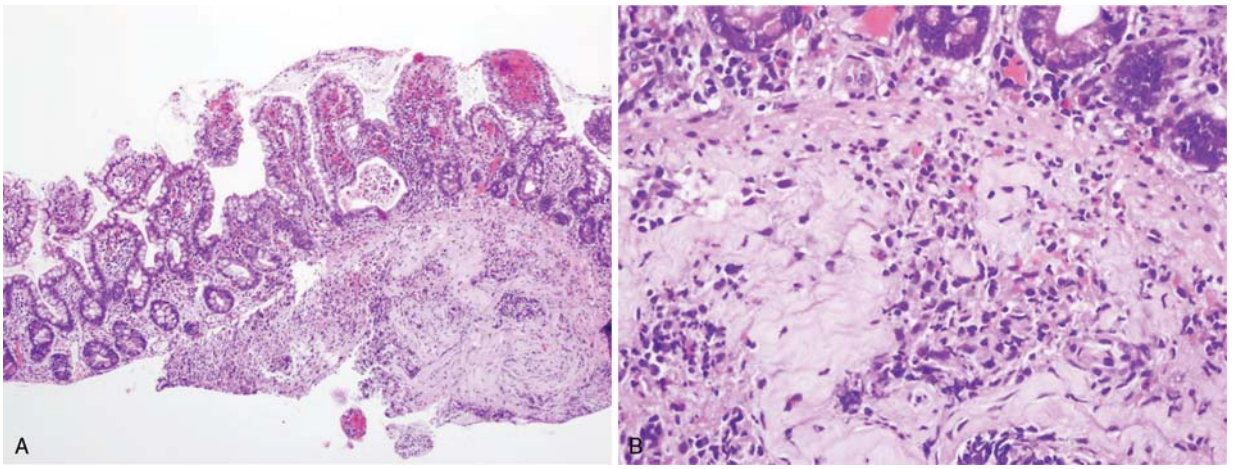


**Figure 4.** (A) Terminal ileum biopsy exhibits acute cryptitis and neutrophilic infiltration in submucosal layer (hematoxylin and eosin [H&E], ×100). (B) On detailed view of (A) reveals vasculitis with infiltration of neutrophils around vessels and nuclear debris in submucosa (H&E, ×400).

finding and erythema/petechiae was the 2nd most common finding. These findings were fairly correlated with results of previous studies.[2,7–9]

The LCV is recognized as the characteristic histologic finding of HSP. Antigen antibody (mostly composed of IgA) complexes are formed by multiple etiologies. These complex will deposit in walls of small vessels and activate alternate complement pathway, resulting in neutrophilic accumulation.[3] This inflammation of vessel will cause RBC extravasation and fibrin deposition in interstitial tissues, leading to edema. In our slide reviews, vasculitis was identified in 7 (37%) specimens (5 duodenum and 2 stomach) in U-GIT and 10 (40%) specimens (5 terminal ileum, 1 ascending colon, 1 transverse colon, 1 descending colon, 1 sigmoid colon, and 1 rectum) in L-GIT. These rates were similar to results of previous studies.[4,10]

**Table 6**

**Summarization of endoscopic, histologic characteristics in Henoch–Schönlein purpura involving lower gastrointestinal tract.**

| Endoscopic findings | No. of patients (%) |
|---|---|
| Edema | 2 (14%) |
| Erythema/petechiae | 7 (50%) |
| Erosion/ulceration | 9 (60%) |
| Etc. | 5 (36%) |
| Total | 14 (100%) |
| **Histologic findings** | **No. of biopsied specimens (%)** |
| Severity of inflammation | |
| Mild | 12 (48%) |
| Moderate | 9 (36%) |
| Severe | 4 (16%) |
| Leukocytoclastic vasculitis/capillarities | 10 (40%) |
| Extravasated RBCs | 22 (88%) |
| Erosion/ulceration | 10 (40%) |
| Edema | 14 (56%) |
| Fibrin exudates | 6 (24%) |
| Lymphangiectasia/dilated lymphatics | 2 (8%) |
| Total | 25 (100%) |

RBC = red blood cell.

Our microscopic findings were similar to those of other studies. One case of L-GIT was unremarkable at colonoscopic investigation. However, the biopsy specimen showed capillarities. Akkari et al have reported IgA deposition despite the absence of lesion at endoscopy previously.[11] One patient who visited hospital for abdominal pain and loose stool underwent EGD and early gastric cancer was incidentally found and histologically confirmed as well-differentiated adenocarcinoma.

While patients with HSP generally have favorable prognosis, some might have poor prognosis due to renal sequelae. There might be connections between intestinal IgA vasculitis and IgA nephropathy.[12] Therefore, it is important to start appropriate treatment when there are GI manifestations. Proper treatment should be based on proper diagnosis after recognizing histologic findings of HSP in GIT.

## 5. Conclusion

Although this study contains several limitations, there has been extremely rare data for endoscopic and histopathologic findings of GIT in HSP. Therefore, an accumulation of endoscopic and pathologic findings of HSP presented in this study will be basic data of HSP-related researches and will help to develop endoscopic guidelines for patients with HSP with GI symptoms. The results of this study are very similar to some previous Western studies, and we think that these findings provide a basis for generalization in other peoples. Herein, we share our 18 years of experience in single institute for endoscopic and histologic findings of GIT in patients with HSP.

## Author contributions

**Conceptualization:** Yeeun Han, In Ho Choi.
**Data curation:** Yeeun Han.
**Methodology:** Yeeun Han, In Ho Choi.
**Supervision:** In Ho Choi.
**Visualization:** Yeeun Han.
**Writing – original draft:** Yeeun Han.
**Writing – review & editing:** So-Young Jin, Dong Won Kim, Yoon Mi Jeen, Yon Hee Kim, In Ho Choi.

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