Diagnostic and Interventional Endoscopy

Case Report

Small Bowel Involvement of Waldenstrom Macroglobulinemia: A Case Report

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Abstract

There is rare information in the literature regarding direct small bowel involvement of Waldenstrom macroglobulinemia. A 52-year-old male was admitted to the hospital with complaints of spleen mass and diarrhea and was diagnosed with lymphoma after splenectomy. In the upper gastrointestinal system, endoscopy performed due to watery diarrhea 8-10 times a day, no pathological findings were detected in the esophagus and stomach, but white nodular formations 1-2 mm in diameter were observed, covering almost the entire mucosa, combined with each other and continuous in the bulbus, second and third parts of duodenum. In the sample taken from the duodenum, it was noted that some of these deposits were located inside the lymphatics. In the histochemical examination, it was observed that the deposits were not stained with Congo red, they were stained red with Masson's trichrome, and in the immunohistochemical examination, lambda and immunoglobulin M were positive and immunoglobulin G, immunoglobulin A, and kappa were negative. In ileocolonoscopy, the cecum was normal, the same lesions in the duodenum were observed in the terminal ileum, and the biopsy result was also reported as immunoglobulin M lambda deposits in the epithelium. The case was evaluated as small bowel involvement of Waldenstrom macroglobulinemia.

Keywords: Diarrhea, gastrointestinal system, Waldenstrom macroglobulinemia

INTRODUCTION

Waldenstrom macroglobulinemia (WM) is a clinicopathological syndrome associated with B-cell lymphoma and characterized by the presence of immunoglobulin M paraprotein in the serum. Small bowel involvement of lymphoma is well known, but there is little information in the literature regarding direct small bowel involvement of WM itself. In this study, we are presenting WM case with intestinal involvement.

CASE REPORT

A 52-year-old male was admitted to our hospital with complaints of spleen mass and diarrhea and was diagnosed with lymphoma after splenectomy. The case was hospitalized in the Department of Hematology, and the diagnosis of lymphoplasmacytic lymphoma was confirmed as a result of bone marrow aspiration and biopsy, and WM accompanying lymphoma was found in the bone marrow.

In bone marrow biopsy, cellularity was around 95%, and diffuse small lymphoid cell infiltration, as well as lymphoplasmacytoid cells and plasma cells, was observed. In the imprint preparation, a small lymphocyte population of up to 25% was detected. In immunohistochemical examination, neoplastic lymphoid cells were CD20-, BCL-2-, and IgM-positive; BCL-6, CD10, CD23, CD3, CD5, CYCLIN D1, and IgD were negative. Ki-67 proliferation index was found to be low (Figure 1).

Immunoglobulin (Ig) M level was found to be high in the serum, and monoclonal gammopathy was detected in protein electrophoresis. In the upper gastrointestinal system endoscopy performed due to watery diarrhea 8-10 times a day, no pathological findings were detected in the esophagus and stomach, but white nodular formations 1-2 mm in diameter were observed, covering almost the entire mucosa, combined with each other and continuous in the bulbus, second and third parts of duodenum (Figure 2). Examination of the biopsy material revealed that these white oval nodular lesions were IgM lambda deposits in the epithelium.

In the sample taken from the duodenum, it was observed that the villi were enlarged and there were proteinous hyaline pink deposits in the lamina propria of the type found in intestinal macroglobulinemias. Some lymphatics were significantly enlarged and it was noted that some of

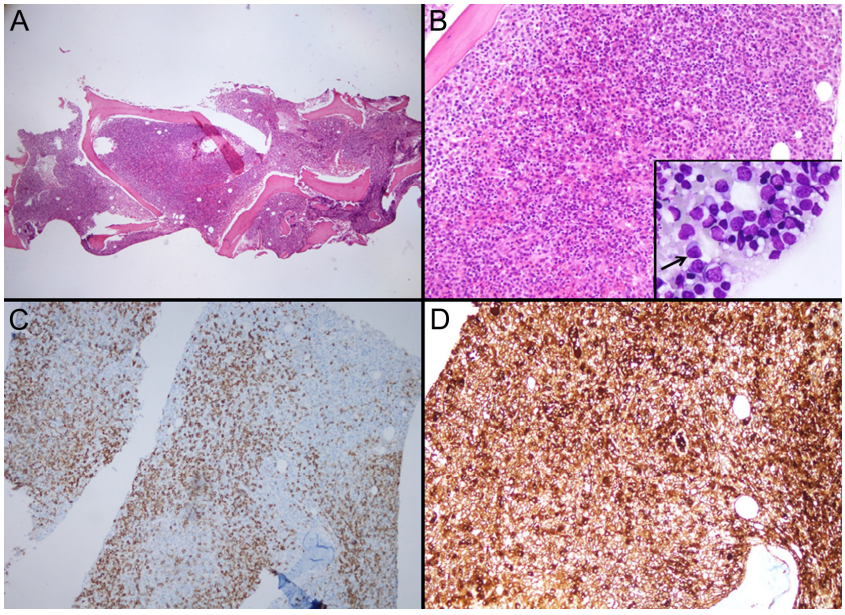

Figure 1. Bone marrow biopsy. (A-B) Bone marrow cellularity was around 95% (hematoxylin and eosin, ×2). (B) Dense lymphocytic, lymphoplasmacytoid cell, and plasma cell infiltration (hematoxylin and eosin, ×20). Inset: Lymphocytes and plasmacytoid cells (arrow) in imprint slides (hematoxylin and eosin, ×100). (C) CD20 positivity in neoplastic cells (antiCD20, ×20); (D) IgM positivity in plasmacytoid cells and plasma cells IgM positivity (antiIgM, ×20).

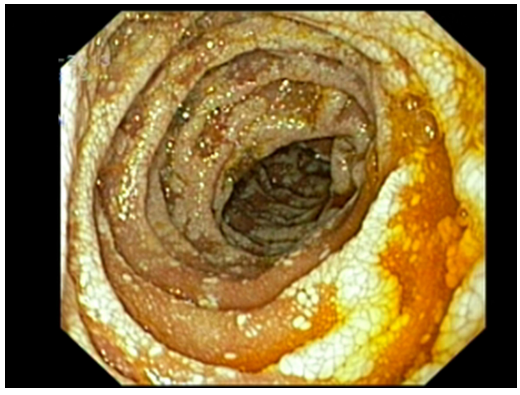

Figure 2. In the second part of the duodenum, there are white oval nodular formations with a diameter of 1-2 mm, which cover almost the entire mucosa, merge with each other, and show continuity.

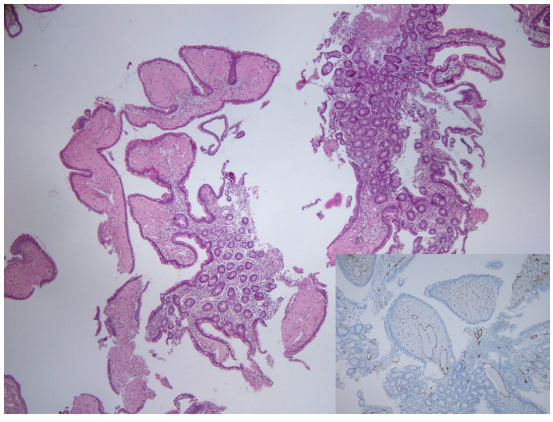

Figure 3. Duodenum biopsy. Villi are enlarged with dense pink deposits. (hematoxylin and eosin, ×4). Inset: Some villi showed dilated lymphatics (*) and at least some lymphatics bear those deposits.

these deposits were located inside the lymphatics (Figure 3). In the histochemical examination, it was observed that the deposits were not stained with Congo red, they were stained red with Masson's trichrome (Figure 4), and in the immunohistochemical examination, lambda and IgM were positive, IgG, IgA, and kappa were negative (Figure 5).

In the double-contrast abdominal tomography, all jejunal and ileal loops were found to be dilated (Figure 6). In ileocolonoscopy, the cecum was normal (Figure 7), the same lesions in the duodenum were observed in the terminal ileum (Figure 8), and the biopsy result was also reported as IgM lambda deposits in the epithelium.

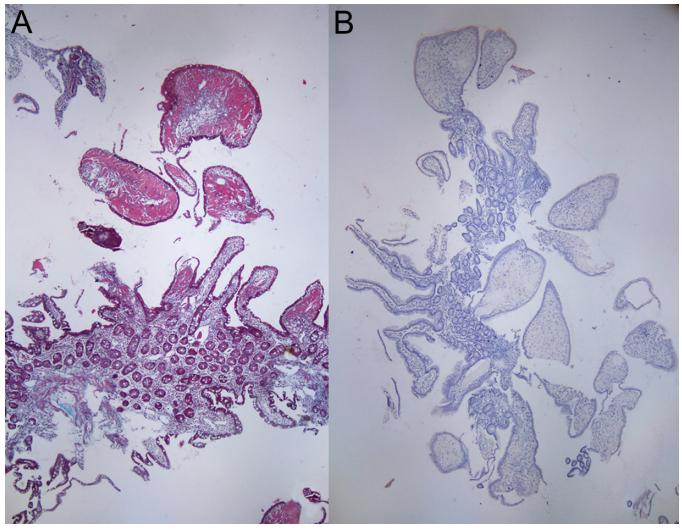

Figure 4. Histochemical examination. (A) Deposits were stained red with Masson's trichrome stain (Masson's trichrome stain, ×4); (B) they were negative with Congo red stain (Congo-red, ×4).

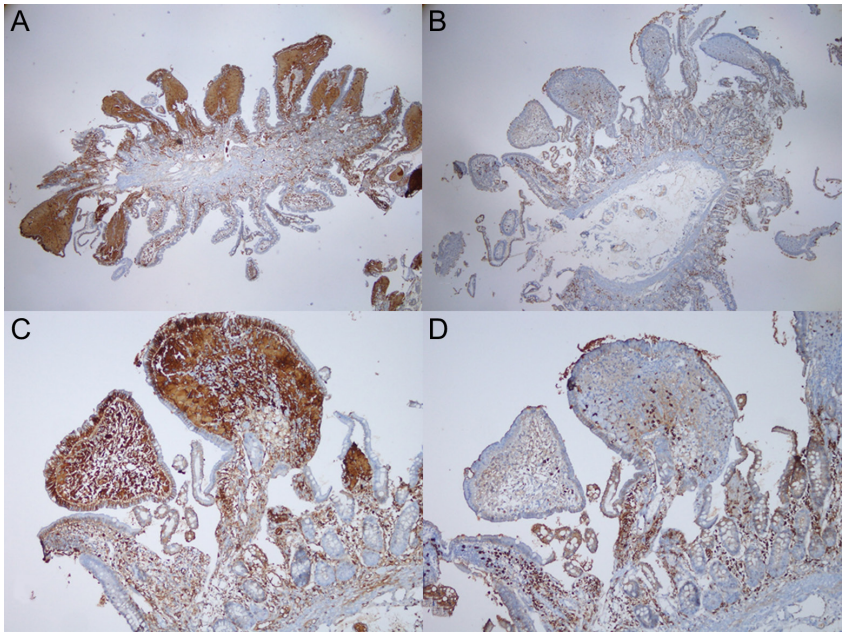

Figure 5. Immunohistochemical examination. (A) Diffuse Lambda positivity (anti-Lambda, ×4); (B) Kappa light chain was negative (anti-Kappa, ×4); (C) Striking IgM positivity in deposits (anti-IgM, ×10); (D) IgA and IgG were negative (antiIgA, ×10).

DISCUSSION

Waldenstrom macroglobulinemia is a distinct clinicopathologic entity demonstrating lymphoplasmacytic lymphoma (LPL) in the bone marrow with an IgM monoclonal gammopathy in the blood. Patients may present with symptoms related to the infiltration of the hematopoietic tissues or the effects of monoclonal IgM in the blood. Patients with WM may not necessarily present with the common symptoms such as weakness, fatigue, weight loss, or the less common signs such as hepatosplenomegaly or lymphadenopathy. As with our patient, they may present with symptomatology exclusive to the small intestine secondary to WM.

In the rare cases of WM in which deposits are found outside the lymphoid organs, there is a preponderance of pleuropulmonary tumors and infiltrates. Involvement of the gastrointestinal (GI) tract is rare. We have seen that there are 27 WM cases with GI involvement in the literature

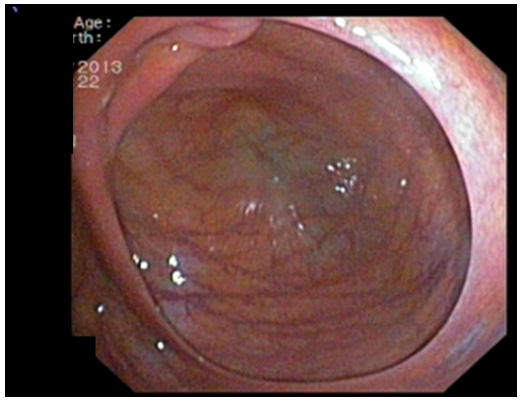

Figure 7. The cecum and ileocecal valve mucosa are normal in ileocolonoscopy.

Figure 6. MR-Enterography shows diffuse jejunal wall thickness on T2-weighted images.

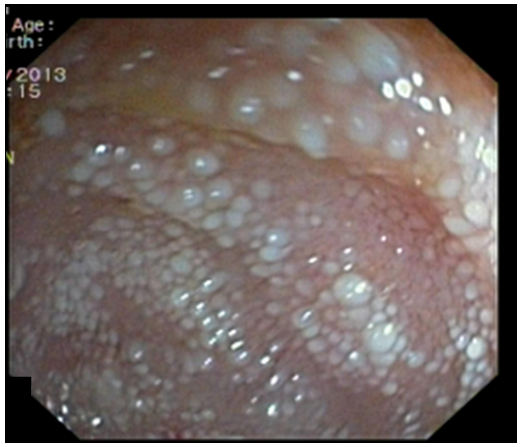

Figure 8. Terminal ileum mucosa is observed in ileocolonoscopy. The same lesions detected in the duodenum are also present in the terminal ileum.

Table 1. Waldenstrom Macroglobulinemia Gastrointestinal Involvement Cases

	Age	Sex	Symptoms	Endoscopic Findings	Involvement
Salamone et al[4]	76	Female	Diarrhea	Duodenal ulcer	Small bowel
Kantamaneni et al[5]	69	Male	Diarrhea	Duodenal ulcer	Small bowel
Gad et al[6]	71	Female	Fatigue	Mottled appearance with patchy cerebral gyrus-like pattern	Duodenum
Francis et al[7]	77	Male	Anemia	Nodular whitish duodenal mucus with scalloping and erosions	Duodenum
Koivisto et al[8]	47	Male	Diarrhea	Greyish-white with granularity duodenal mucosa with thickened folds, greyish-white granularity ileum mucosa	Small bowel
Rusynyk et al[9]	69	Female	Diarrhea	Granular appearance with focal petechiae	Duodenum
Parrish et al[10]	63	Male	Abdominal discomfort Weight loss	Luminescent pink duodenal mucosa with villous structure	Duodenum
Qutub et al[11]	64	Female	Shortness of breath, weight loss	Thickening of the gastric wall on CT and diffuse gastritis	Gastric involvement
Teo et al[12]	80	Female	Diarrhea	Diffusely abnormal duodenal mucosa with pale (almost White) color and granular pattern	Duodenum
Pratz et al[13]	35	Female	Diarrhea	Mucosal edema	Duodenum
Mattila et al[14]	54	Female	Diarrhea	The color of small bowel is greyish-white, and the intimal folds are accentuated, blunt, and swollen.	Small bowel
Ginestal-Cruz et al[15]	58	Male	Melena	Duodenal and gastric ulcer	Stomach+ small bowel
Brandt et al[16]	52	Male	Diarrhea	N/A	Small bowel
Rodriguez et al[17]	53	Male	Diarrhea	A brown-colored second portion of duodenum with the classic pale appearance of the tip of the folds	Duodenum
Kaila et al[3]	58	Male	melena	Nodularity and ulcerations of the mucosa involving the fundus and the corpus	Gastric involvement
Heenan et al[18]	70	Male	Ascite	Jejunal mass	Jejunum
Scully et al[2]	66	Female	Diarrhea, bleeding	Thickened and nodular folds of small bowel	Small bowel
Veloso et al[19]	71	Male	Diarrhea	Thickened intestine wall	Small bowel
Cabrera et al[20]	64	Male	Diarrhea	Gray-white granular projections which gave it a velvety appearance	Small bowel
Bradley et al[21]	48	Female	Steatorrhea	Convoluted jejunal mucosa in some areas with some leaf-shaped villi	Jejunum
Schechterman et al[22]	33	Female	N/A	N/A	İleum
Beker et al[23]	74	Male	Diarrhea	Thickened mucosal folds	Small bowel
Pruzanski etal[24]	69	Female	Steatorrhea	N/A	Small bowel
Bedine et al[25]	68	Female	N/A	N/A	Small bowel
Harris et al[26]	89	Male	Diarrhea	Striking pattern of tiny white flecks	Small bowel
Hoang et al[27]	60	Male	Diarrhea, steatorrhea	N/A	Small bowel

together with our case (Table 1). According to the data from the 27 WM cases who developed GI involvement, number of male patient is 15. While WM is more common in males,[1] this rate was equal between genders in our WM GI involvement literature series. Most cases are over 50 years old. The most seen symptom is diarrhea. Other symptoms are steatorrhea and bleeding. The most involved part of GI by WM is the small bowel, but in the literature, there are gastric involvement cases (Table 1). Endoscopy finding of involvement is the color change. The most described color is greyish-white. Mucosal edema, thickened folds, nodularity, and granularity of the mucosa are other endoscopy findings.

Two forms of intestinal involvement have been described on the basis of pathologic studies.[2] The cellular infiltrative pattern is characterized by diffuse infiltration of the bowel wall with neoplastic cells similar to the pattern seen in immunoproliferative diseases. This pattern is reported in few cases.[3] In the second and more common pattern, acellular macroglobulin deposition occurs predominantly in the tips of the villi, the interstitium, and the lacteals, with consequent lymphangiectasia. Our case had acellular infiltrative pattern.

Especially in cases diagnosed with B-cell lymphoma and examined for diarrhea, gastrointestinal system involvement of lymphoma, as well as gastrointestinal system involvement of accompanying WM, should be considered. The case is worth presenting because of its rarity and interesting endoscopic, radiological, and histopathological images.

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

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Declaration of Interests: The authors declare that they have no competing interest.

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