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A case of rheumatoid arthritis with protein losing enteropathy induced by multiple diaphragmatic strictures of the small intestine: successful treatment by bougieing under double-balloon enteroscopy

Non-steroidal anti-inflammatory drugs (NSAIDs) are the most favoured for the treatment of rheumatoid arthritis (RA) but they sometimes induce inflammation and ulceration of the gastrointestinal tract.¹ Approximately 75% of patients receiving long term NSAIDs develop inflammation in the small intestine that in rare cases results in protein losing enteropathy.^{2,3} Furthermore, NSAIDs can bring about diaphragmatic strictures in the small intestine as a consequence of ulcer healing.

We report here a patient with RA who had multiple diaphragmatic strictures in the small intestine and subsequent protein losing enteropathy, probably due to long term non-steroidal anti-inflammatory drugs use. Her intestinal stricture and protein losing enteropathy, however, were successfully corrected by bougieing under double balloon enteroscopy without resort to surgical resection.

A 57 year old Japanese woman developed RA in 1995 and was given prednisolone and NSAIDs, as well as several disease modifying antirheumatic drugs, including infliximab and etanercept. She was admitted to the Jichi Medical University Hospital in November 2005 because of lower leg oedema caused by severe hypoalbuminaemia. NSAIDs were withdrawn immediately after admission. Protein losing enteropathy was diagnosed based on ^{99m}Tc-human albumin scintigraphy and α_1 -antitrypsin clearance at 180.2 ml/day (normal range 0.4–19), although the exact cause was not specified at that time. In January 2006, she was hospitalised due to severe nausea and vomiting, difficulty eating food, and emaciation. Because a tentative diagnosis of gastrointestinal amyloidosis was not confirmed by biopsies of the stomach, duodenum, caecum, and rectum, double balloon enteroscopy was performed to examine small intestinal lesions.

A membranous stricture with a 5 mm opening was detected at the duodenum-jejunum junction. After a small balloon was placed through the stenosis aided by guide-wire equipped with a double balloon enteroscope, air was slowly pumped to inflate the balloon for bougieing the stricture (fig 1A–D). Three more diaphragmatic strictures were found in the distal portion and were treated in the same manner. The patient resumed eating without nausea or vomiting, and gained in body weight and serum albumin concentration. ^{99m}Tc-human albumin scintigraphy no longer showed signs of protein losing.

Amyloidosis is the most probable cause of protein losing enteropathy in patients with intractable RA.⁴ However, the present case demonstrates that it is also caused by diaphragmatic stricture of the small intestine that was probably induced by prolonged use of NSAIDs. Even more important is the reversibility of this lesion. After multiple strictures were corrected, to some extent, by a novel method employing double balloon enteroscopy, she recovered from loss of protein, with serum albumin level increasing from 1.5 to 3.4 mg/dl. Because all of the biopsy specimens were obtained from the relatively normal mucosa between the strictures, and revealed no pathological abnormalities, the precise mechanism of the protein losing enteropathy was not elucidated. However, in view of the spontaneous recovery after bougieing, bacterial overgrowth and increased intraluminal pressure due to stasis may be possible pathogenetic mechanisms.

Rapid progress has been made in finding pathological lesions in the small intestine using capsule endoscopy or double balloon endoscopy.^{5,6} As shown here, bougieing under double balloon enteroscopy is powerful and effective for the treatment of intestinal stenosis, especially in immunocompromised patients in whom laparotomy and surgical resection of the diseased intestine should be avoided.

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Figure 1 Diaphragmatic stricture of the small intestine and its enlargement using a double balloon endoscope and bougieing. (A) Diaphragm with a small orifice was found in the small intestine using a double balloon endoscope. (B) A balloon was placed through the diaphragmatic orifice and inflated with air to enlarge the stricture. (C) Abdominal roentgenogram showing a double balloon endoscope with a guidewire (small arrow) and inflated balloon (large arrow). (D) Enlarged orifice of diaphragmatic stricture of the small intestine.