

Polidocanol injection therapy for small-bowel hemangioma by using double-balloon endoscopy

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Background and Aims: Small-bowel hemangioma is a rare disease that often causes active bleeding. The standard therapeutic method for small-bowel hemangioma is surgical resection. The aim of this study was to evaluate the usefulness of polidocanol injection (PDI) for small-bowel hemangiomas.

Methods: This study included 12 patients with obscure GI bleeding (6 male; mean age 62 years) with 39 small-bowel hemangiomas; patients were treated with PDI by using double-balloon endoscopy (DBE). EUS with DBE was performed before PDI. The lesions were divided into 2 groups according to tumor size: Group A (size <10 mm; 20 lesions) and group B (size ≥10 mm; 19 lesions). The outcomes of PDI treatment for small-bowel hemangioma were evaluated between the 2 groups. Additionally, in order to standardize the amount of PDI injected, the total amount of polidocanol according to lesion size was calculated.

Results: There was no difference in the location of lesions and treatment times between the 2 groups. Group B had a significantly higher injection time per lesion ($P < .05$) and amount of polidocanol per lesion than group A ($P < .01$). Rebleeding occurred in only 1 case (8%). There were no adverse events related to PDI. The contribution ratio between the lesion size and amount of polidocanol showed a correlation ($r = 0.77$). The optimal amount of polidocanol for small-bowel hemangioma was determined to be 0.2 mL/mm.

Conclusions: PDI is an easy, safe, and effective method to treat small-bowel hemangiomas.

Small-bowel bleeding accounts for 5% of all GI bleeding.¹ In a systematic review, Xin et al² reported that small-bowel vascular lesions account for 40.4% of small-bowel bleeding. Small-bowel hemangiomas, a rare disease that is characterized by small-bowel vascular lesions, can be a major cause of small-bowel bleeding. In the Yano-Yamamoto classification, which is a well-known endoscopic classification for small-bowel vascular lesions,³ small-bowel hemangiomas are categorized as type 4. However, there is no consensus about therapeutic indications, and surgical resection⁴⁻⁷

remains the most common treatment method for patients diagnosed with small-bowel hemangioma.

Polidocanol is widely accepted for endoscopic therapy of esophageal varices as a safe and effective hemostatic treatment for GI bleeding.⁸⁻¹⁰ Previously, we reported the usefulness of polidocanol injection (PDI) for small-bowel angiectasia by using double-balloon endoscopy (DBE).¹¹ The aim of this study was to evaluate the usefulness of PDI for small-bowel hemangiomas.

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Abbreviations: BRBNS, blue rubber bleb nevus syndrome; CE, capsule endoscopy; DBE, double-balloon endoscopy; OGIB, obscure GI bleeding; PDI, polidocanol injection.

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METHODS

Patients

A total of 652 patients with obscure GI bleeding (OGIB) underwent capsule endoscopy (CE) at Hiroshima University Hospital consecutively between August 2007 and March 2014. Twelve patients (1.8%) who were suspected to have small-bowel hemangiomas by CE and who were diagnosed with 39 small-bowel hemangiomas by DBE were enrolled in the study. All patients were treated with PDI by using DBE. We performed DBE within 2 weeks after CE.

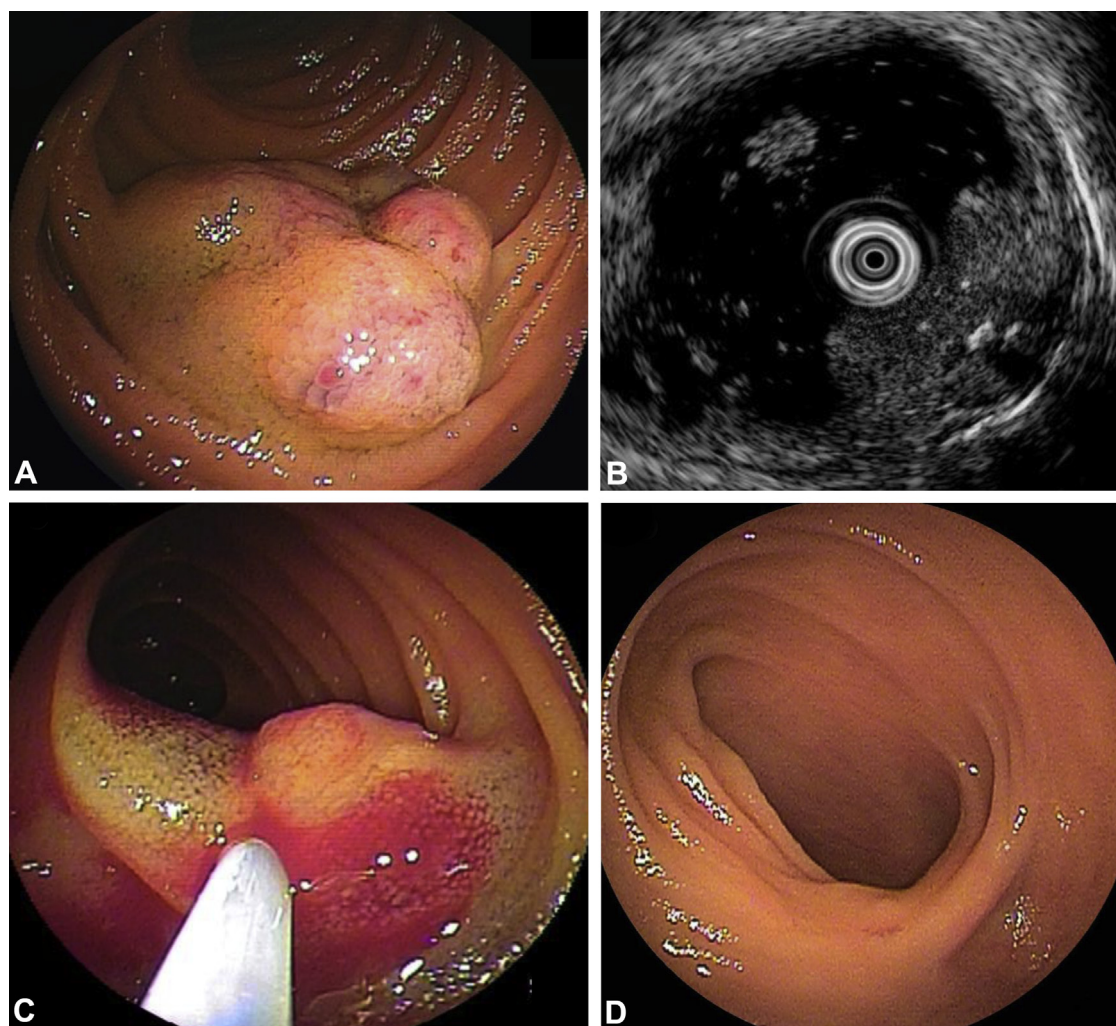


Figure 1. Thirty-millimeter lesion located in the jejunum that was treated with polidocanol injection. **A**, Hemangioma visualized at white-light image. **B**, Hemangioma visualized by EUS as multiple small-round anechoic lesions in mucosal, submucosal, and muscularis layers. **C**, Endoscopic treatment with polidocanol injection. **D**, One year after polidocanol injection therapy.

The patients were divided into 2 groups according to lesion size: group A (size <10 mm; 20 lesions) and group B (size \geq 10 mm; 19 lesions). Follow-up CE or DBE was performed 3 to 6 months after endoscopic hemostasis, and all patients were followed up for a minimum of 1 year.

We had informed consent from all patients who enrolled in the study. The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of Hiroshima University Hospital.

CE procedure

CE was performed by using PillCam SB1, PillCam SB2, or PillCam SB3 capsules (Given Imaging Ltd, Yokneam, Israel). The capsule was swallowed with a dimethicone solution after an overnight fast, without any other preparation. Patients were allowed to drink clear liquids and eat a light meal 2 and 4 hours after swallowing the capsule, respectively. The sensor array and recording device were removed 8 hours after each patient swallowed the capsule.

DBE procedure

DBE procedures were performed by using the DBE system (FUJIFILM; Saitama, Japan) using a FUJIFILM EN-450 P5, EN-450 T5, or EN-580T endoscope. Patients were required to fast for 8 to 12 hours before oral insertion of the endoscope, similar to the preparation for upper GI endoscopy. All rectal insertions required a preparation similar to that used for colonoscopy. Patients were lightly sedated with pentazocine (15 mg) and midazolam (0.05 mg/kg). All patients underwent CE, and the oral or rectal route was selected based on results of the examination. If the source of bleeding was not identified during the examination, the small-bowel mucosa was marked with pure carbon at the most distal point. When the targeted lesion was encountered, we performed EUS and measured tumor size after endoscopic observation. EUS was attempted by using a miniature EUS probe. As preparation for EUS, both the endoscopic and the overtube balloons were inflated to fix the endoscope to the small-bowel

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