Single Case

Colonic Intramural Hematoma

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Keywords
Intramural hematoma · Colonoscopy · Anticoagulation · Argatroban

Abstract
Colonic intramural hematoma is a rare condition and its endoscopic and radiological findings remain poorly described. An 82-year-old woman was hospitalized with a diagnosis of acute cerebral infarction. She immediately received anticoagulant therapy with argatroban for 1 week. With the appearance 4 days later of hematochezia, she was found to have severe anemia. Following insertion of the colonoscope, a large submucosal hematoma was shown to be present in the descending colon, with the mucosa shown to be necrotic and the residual mucosa around the hematoma shown to be yellowish. Computed tomography revealed a hyperdense mass in the descending colon. Laparoscopic colectomy was performed for the lesion diagnosed as intramural hematoma. Pathologically, it was a hematoma located in the subserosal layer involving full-thickness hemorrhage. To our knowledge, this report represents a valuable addition to the literature describing a case of colonic intramural hematoma whose diagnosis was effectively established by the combined use of CS and CT.

Introduction

Colonic intramural hematoma is considered a rare condition, accounting for 4.4% of all gastrointestinal intramural hematomas [1]. Colonic intramural hematomas are mostly associated with blunt abdominal trauma, anticoagulation therapy, coagulation disorder, and hemorrhagic disease [2]. The main complaints are symptoms related to bowel obstruction, such as abdominal pain and vomiting, and hematochezia [3]. Computed tomography (CT) has
been reported to be useful for its diagnosis, in that it facilitates the detection of colonic intramural hematoma as a mass [3]. Recently, alongside CT, colonoscopy (CS) is reported to be useful for the diagnosis of colonic intramural hematoma [4–11]. While it is rare and its endoscopic and radiological features remain poorly described, we herein report a case of colonic intramural hematoma whose diagnosis was effectively established by the combined use of CS and CT.

Case Report/Case Presentation

An 82-year-old woman was admitted to our hospital because of weakness in the left half of her body and was diagnosed with acute cerebral infarction in the right radial crown and pons. She had a history of cerebral infarction and had been on dual antiplatelet therapy with cilostazol and clopidogrel for 2 years. She immediately received anticoagulant therapy with argatroban for 1 week. With the appearance 4 days later of hematochezia without abdominal pain, she was found to have severe anemia (Hb, 7.8 g/dL). Following insertion of the colonoscope, a large submucosal hematoma was shown to be present in the descending colon, with the mucosa shown to be necrotic and the residual mucosa around the hematoma was yellowish (Fig. 1a). An examination of the anal side of the hematoma disclosed a submucosal, tumor-like, elevated lesion with a yellowish and bluish mucosa (Fig. 1b). CT revealed a hyperdense mass in the descending colon (Fig. 2a, b). She was referred to another hospital for surgery with a diagnosis of intramural hematoma, and laparoscopic colectomy was performed for the lesion. The resected specimen revealed full-thickness hematoma (Fig. 3a, b). Pathologically, it was a hematoma located in the subserosal layer involving full-thickness hemorrhage.

Discussion/Conclusion

Our case offers two important implications for clinical practice. First, colonic intramural hematoma may occur in patients receiving anticoagulant therapy, while it remains rare and its endoscopic and radiological features remain poorly described in the literature.

Colonic intramural hematoma is formed in the submucosa or subserosa, which is rich in blood vessels, and is thought to be caused by the rupture of microvessels due to physical
irritation and underlying diseases that tend to induce bleeding [12]. To date, heparin and warfarin have been reported as major causative anticoagulants [4, 7–10]. Argatroban is a direct thrombin inhibitor, a class of anticoagulant drugs used in Japan for the following three indications: (1) chronic arterial occlusion, (2) acute cerebral thrombosis, and (3) hemodialysis in antithrombin-deficient patients or in patients with decreased antithrombin [13]. Its most significant adverse events are hemorrhagic complications, such as hemorrhagic cerebral infarction, hematuria, and gastrointestinal bleeding [13], while there have been no reports of argatroban-associated colonic intramural hematoma. In our case, it is thought likely that the hematoma may have occurred following the rupture of microvessels complicated by the addition of argatroban-induced coagulopathy against a backdrop of decreased platelet aggregation function associated with dual antiplatelet therapy. While treatments of colonic intramural hematoma include conservative treatment and surgery [3], surgery was selected for our patient presenting with severe anemia, considering her risk of rebleeding and intestinal necrosis.

The second implication is that our patient was evaluated for colonic intramural hematoma using two diagnostic modalities (CS and CT). To date, 9 cases have been reported of colonic intramural hematoma diagnosed by CS and CT (Table 1) [4–11] in 6 males and 3 females (mean age, 60.1 years), with sigmoid colon being the most common (5 cases). Endoscopic findings were dark reddish submucosal tumor-like lesions, with the mucosal surface shown to be diverse and involve a normal mucosa, hemorrhage, ulcer, necrosis, and hematoma. CT is also shown to be useful for the diagnosis and identification of lesion localization, where the lesion is characterized as a hyperdense mass on plain CT. In our case, CS clearly revealed a

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Fig. 2. Computed tomography. CT revealed a hyperdense mass in the descending colon (a, b: Coronal reformat ted multidetector CT).

Fig. 3. Resected specimen. a, b The resected specimen revealed full-thickness hematoma.
Table 1. Cases reported to date of colonic intramural hematoma diagnosed by CS and CT

| No. | Ref | Year | Age | Sex | Location | Endoscopic findings                                                                                     | CT findings                                                                 | Etiology                  | Treatment     |
|-----|-----|------|-----|-----|----------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------|---------------|
| 1   | [4] | 2005 | 67  | M   | Descending colon | Multiple, longitudinal, dark red elevations whose surface appeared to be covered with normal mucosa but was friable, with oozing of blood from multiple breaks | Multiple longitudinal lesions that exhibited water density                      | Anticoagulation therapy (heparin) | Conservative treatment |
| 2   | [5] | 2007 | 19  | M   | Descending colon | A bright-red, round, steep elevated lesion with a smooth surface which was covered with normal colonic mucosa containing several mucosal blood vessels | A low-density mass and the contrast medium diffused into the mass in the late phase | Idiopathic   | Surgery        |
| 3   | [6] | 2012 | 57  | M   | Sigmoid colon   | An endoluminal mass covered with normal mucosa with blood oozing                                      | Hyperdense masses exhibiting no significant change in their density on enhanced CT | Idiopathic   | Conservative treatment |
| 4   | [7] | 2014 | 62  | F   | Sigmoid colon   | A large intramural hematoma without bleeding                                                           | Intraluminal mass with a faint margin                                          | Antithrombotic therapy (warfarin, ticlopidine) | Conservative treatment |
| 5   | [8] | 2016 | 73  | M   | Descending colon | A voluminous hematoma with an extensive area of erythematous and bluish mucosa                         | A large intramural hematoma                                                   | Antithrombotic therapy (aspirin, warfarin) | Conservative treatment |
| 6   | [9] | 2018 | 70  | F   | Sigmoid colon   | Ruptured submucosal hematoma                                                                            | A hyperdense lesion in the intramural area                                     | Antithrombotic therapy (aspirin, heparin, ticagrelor) | Surgery        |
| 7   | [10]| 2018 | 70  | F   | Sigmoid colon   | Huge submucosal hematoma with active bleeding                                                            | Hugh hematoma                                                                | Anticoagulation therapy (heparin) | Surgery        |
| 8   | [11]| 2020 | 66  | M   | Ascending colon | A large voluminous mass covered with violet and bluish mucosa                                           | Hyperdense mass and unenhanced submucosal mass on enhanced CT                 | Idiopathic   | Surgery        |
| 9   |     |      | 57  | M   | Sigmoid colon   | A submucosal mass with intact mucosa and oozing blood on its surface                                    | Multiple hyperdense masses without enhancement after contrast administration  | Antithrombotic therapy (aspirin, clopidogrel) | Conservative treatment |
| 10  |     |      | 82  | F   | Descending colon | A large submucosal hematoma with its mucosa shown to be necrotic and the residual mucosa around the hematoma shown to be yellowish | A hyperdense mass                                                            | Antithrombotic therapy (argatroban, cilostazol, clopidogrel) | Surgery        |
large submucosal hematoma, with the mucosa being necrotic and the residual mucosa being yellowish; and CT revealed a hyperdense mass in the descending colon. Thus, an accurate diagnosis was achieved in our case by using both CS and CT.

In conclusion, colonic intramural hematoma is a rare condition that may occur in patients receiving anticoagulant therapy, including the direct thrombin inhibitor argatroban. The endoscopic and radiological images offered here should provide a clear illustration of the case and serve as a benchmark for future investigations.

Statement of Ethics

This study protocol was reviewed and approved by the Institutional Review Board of National Hospital Organization Hakodate National Hospital (approval number: AP0000659784). Written informed consent was obtained from the patient for the publication of this case report and any accompanying images.

Conflict of Interest Statement

The authors have no conflicts of interest to disclose in association with this study.

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Author Contributions

Kimitoshi Kubo reported the case and wrote the manuscript. Kimitoshi Kubo, Noriaki Hanyu, and Koichi Haraguchi were involved in this study as physicians treating the patient, and Noriko Kimura was responsible for the histopathological analysis of the surgical specimens. All authors declare that they contributed to the preparation of the manuscript at all stages and that they have read and approved the final version of the manuscript for publication.

Data Availability Statement

All data generated and/or analyzed during the course of this study are included in the article. Any further query may be addressed to the corresponding author.

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