

Spontaneous Intramural Hematoma of the Small Bowel-A complication of Anticoagulant therapy

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Citation

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Abstract

Spontaneous intramural small bowel hematoma is a rare complication of anticoagulant therapy. The authors report a case of small bowel intramural hematoma resulting from sodium Warfarin toxicity in a patient with prosthetic mitral valve. The patient presented with colicky abdominal pain, vomiting and melena. Typical findings on abdominal Sonography and MDCT with elevated INR value suggested the diagnosis. Patient was treated conservatively. The history of anticoagulant use with prolonged INR value in patients presenting with abdominal complaints should alert clinician and radiologist to look for this entity. The essence of prompt and accurate diagnosis of this condition lies in the conservative management to avoid an un-indicated surgery.

CASE REPORT

A 54 year old man presented to the emergency department with complaints of acute onset colicky abdominal pain, vomiting and melena since 2 days. He had undergone prosthetic mitral valve replacement in 2004 for mitral valve prolapse. He was on oral sodium warfarin 5mg daily, since then. On clinical examination, he was hemodynamically stable. Tenderness was noted in the left upper abdomen with abdominal distension. Hemoglobin was 8.6 gm/dl and platelet count was 196,000/mm³. Prothrombin time (PT) was increased to 64 sec (control 12.6 sec) and INR was elevated to 8. Other hematological tests were unremarkable.

Then the patient was subjected for the radiological investigations. Supine and erect abdominal radiographs revealed dilated small bowel loops with increased density on the left side of the abdomen [Fig-1].

Figure 1

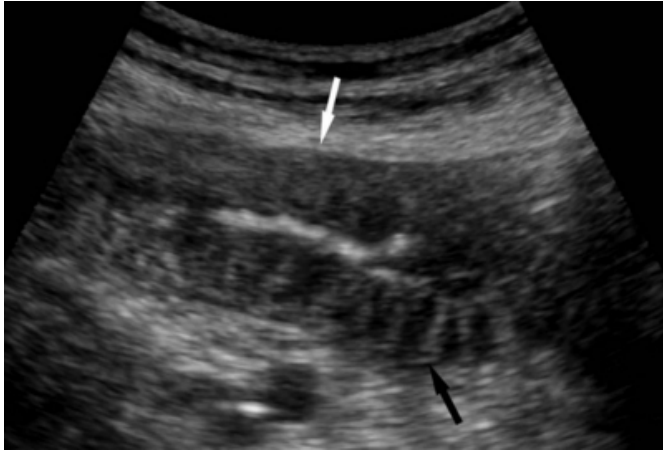
FIGURE 1: Supine and erect abdominal radiographs show dilated small bowel loops with increased radio-density (white arrows) in the left side of the abdomen.



Sonography of the abdomen showed dilated and thickened jejunal loops with luminal narrowing on the left side of the abdomen [Fig-2].

Figure 2

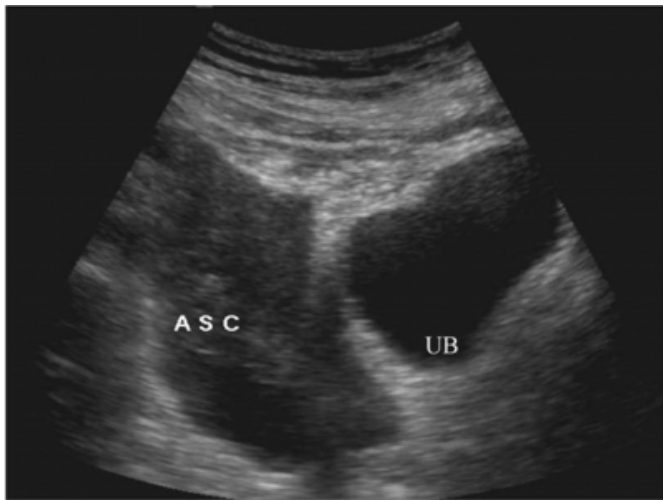
FIGURE 2: Sonography of the left upper quadrant of abdomen shows dilated and thickened small bowel loop with luminal narrowing (white arrow). Valvulae conniventes appear thickened and hyperechoic (black arrow).



Minimal ascites was seen in the pelvis with internal echoes [Fig-3].

Figure 3

FIGURE 3: Transabdominal ultrasound image of the pelvis reveal complex ascites with internal echoes (ASC). UB-Urinary bladder



CT scan of the abdomen and pelvis was performed on 16 slice MDCT scanner without administration of positive oral contrast material. Non-enhanced CT (NECT) scan revealed circumferential, hyperdense, segmental wall thickening of the 3rd and 4th part of duodenum and proximal jejunum causing luminal narrowing [Fig-4A & 4B].

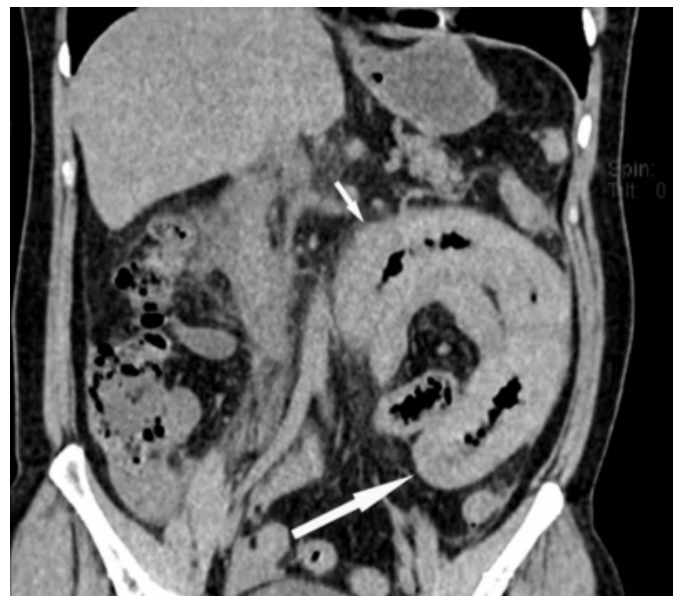
Figure 4

FIGURE 4A: NECT scan of the abdomen without administration of oral contrast shows circumferential, hyperdense, segmental wall thickening of the 3 and 4 part of duodenum (short arrow) and proximal jejunum (long arrow) causing luminal narrowing.



Figure 5

FIGURE 4B: NECT coronal reformatted image of the abdomen shows segmental hyperdense wall thickening of duodenum (short arrow) and proximal jejunal loop (long arrow).



The attenuation value of the thickened wall ranged from 50 to 70 HU [Fig-4C].

Figure 6

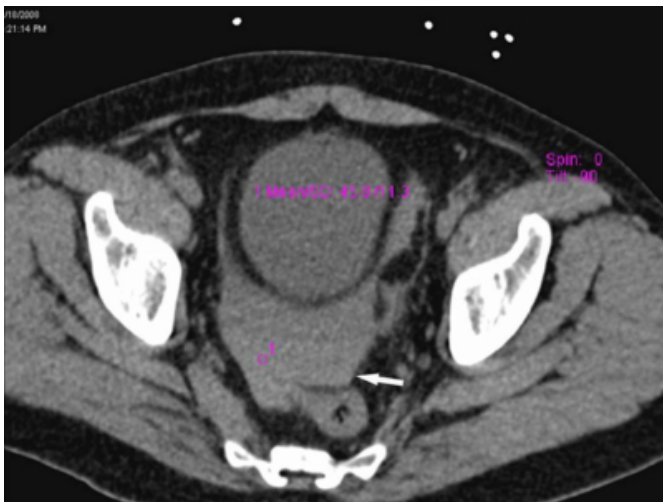
FIGURE 4C: NECT scan of the abdomen shows the higher attenuation value of the thickened wall of jejunum (Mean HU value is 54).



Minimal hemoperitoneum with layering of fluid was noted in the pelvis [Fig-5].

Figure 7

FIGURE 5: Axial NECT scan of the pelvis shows ascites with layering of fluid in the pelvis. High density fluid is seen in the dependent part suggestive of hemoperitoneum (arrow).



The contrast enhanced CT (CECT) showed normally enhancing thickened small bowel wall with crowding of jejunal folds [Fig-6].

Figure 8

FIGURE 6: CECT coronal reformatted MIP (Maximum intensity projection) image shows normally enhancing thickened small bowel wall with crowding of jejunal folds (white arrows).



The superior mesenteric artery and vein and their branches were normal [Fig-7].

Figure 9

FIGURE 7: CECT coronal reformatted MIP image shows normal superior mesenteric artery, vein and their branches (white arrows) supplying the thickened small bowel.



There was no mesenteric ischemia, fat stranding or bowel obstruction.

The CT features of segmental hyperdense wall thickening of

duodenum and jejunum in a patient on oral anticoagulant with elevated INR suggested the diagnosis of spontaneous intramural hematoma of small bowel with minimal hemoperitoneum.

Patient was managed conservatively. To restore the normal coagulation state anticoagulant was withdrawn temporarily. Fresh frozen plasma (FFP) and Vitamin-K were administered to restore the INR to 2. The patient showed signs of improvement with the medical management. After an un-eventful recovery, the patient was discharged on 10th day of admission. Oral Sodium warfarin was reintroduced on alternate day basis at the time of discharge. During the follow-up after 2 weeks the patient was asymptomatic and INR was 2.4.

DISCUSSION

The intramural hematoma (IMH) of the bowel is a rare abdominal emergency condition resulting from submucosal or subserosal hemorrhage. The various causes of intramural bowel hematoma are trauma, surgery, biopsy and spontaneous. The most common cause of this condition is blunt abdominal trauma^[1]. Spontaneous IMH is a result of altered hemostasis leading to hemorrhage from the small vessels within the intestinal wall. The commonest cause of spontaneous small-bowel IMH is anticoagulant toxicity, which deranges the normal coagulation. There is increase in the incidence of anticoagulant induced intramural small-bowel hematoma, due to the increased use of anticoagulants and increased use of CT in the diagnosis of abdominal conditions. Since, Warfarin is the most commonly used anticoagulant for long term anticoagulation, it accounts for the maximum cases of anticoagulant induced IMH. The incidence of IMH is one case per 2500 patients on anticoagulants. Other causes of spontaneous IMH are hemophilia, leukemia, pancreatitis, idiopathic thrombocytopenic purpura and vasculitis like polyarteritis nodosa and Henoch-Schonlein purpura^{[2], [3]}.

Abdominal pain is the most common presenting complaint in a patient with IMH. The other symptoms are vomiting, abdominal distension and diarrhea. Gastro-intestinal hemorrhage in the form of hematemesis, melena or rectal bleeding is less common. These patients with deranged coagulation mechanism may have bleeding at other sites in the form epistaxis, ecchymosis, hematuria and intracranial bleed^{[3], [4]}. Clinical examination may reveal anemia, abdominal distention, tenderness, guarding and palpable mass. Biochemical investigations may reveal anemia,

leukocytosis and elevated clotting time, PT, PTT and INR values. Spontaneous intramural hematoma of the small bowel should be suspected strongly in a patient on anticoagulant, presenting with abdominal complaints and raised INR value^{[4], [5]}.

Both spontaneous and traumatic IMH affects small-bowel more frequently than large bowel. However these two differ in the site and the extent of small-bowel involvement. Jejunum is the most commonly affected segment of small bowel followed by ileum and duodenum in spontaneous IMH. Duodenum being a fixed retroperitoneal organ is the commonest segment of small bowel to be affected by traumatic IMH. Spontaneous IMH usually affects a long segment of bowel, whereas traumatic hematoma tends to be focal^{[1], [4]}. Although both duodenum and jejunum were involved in our case, a long segment of small bowel was affected in continuity without skip lesions. Involvement of colon alone in spontaneous IMH is rare. However it may be affected along with the small-bowel. IMH of small bowel may be associated with intraluminal, intraperitoneal or retroperitoneal hemorrhage^[6]. Hemoperitoneum was noted in our patient. Extensive IMH causing luminal narrowing may result in small-bowel obstruction^[7].

Accurate and prompt diagnosis is important for the proper management of spontaneous IMH, as it is treated conservatively. Hence radiologist plays a major role in the management of this condition. Abdominal radiograph may show dilated bowel loop with thickened and crowding of valvulae conniventes giving a "stacked coin" appearance. Similar features are seen on barium study. Appearance on barium study is called "picket fence" sign due to the sharp, pointed, transverse projections of barium between the thickened mucosal folds. Other features on barium study are dilated loop with abrupt transition, luminal narrowing and increased transit time^[2]. In our case dilated small bowel loops with increased density was noted on plain radiography. Since findings on radiography and barium study are non-specific and may be seen in other diseases of bowel, further work-up with cross sectional imaging is essential. Sonography may show circumferential wall thickening of the affected segment of bowel. Hemorrhage may appear hypoechoic or anechoic depending on the duration. The mucosal folds appear thickened, hyperechoic and may be apposed together due to luminal narrowing caused by intramural hemorrhage^[5].

CT is the imaging modality of choice in diagnosis of IMH

because of higher sensitivity and specificity^[5]. CT is performed with water as oral contrast material rather than using positive oral contrast. Both NECT and CECT are necessary in the correct diagnosis. CECT is helpful in characterization of bowel wall thickening and enhancement pattern. It helps in differentiating IMH from other causes of bowel wall thickening like tuberculosis, Crohn's, malignancy, lymphoma and ischemia^[2]. CT features of IMH depend on the age of hemorrhage. An acute IMH on NECT shows classical features of circumferential, hyperdense segmental wall thickening causing luminal narrowing with or without bowel obstruction. Higher attenuation of the wall (HU value of 50-70) is helpful in differentiating IMH from other causes of bowel wall thickening. Hyperdense wall thickening is pathognomonic of intramural hematoma^[2]. With the lyses of the clot the attenuation value decreases and it may be indistinguishable from other causes of wall thickening^[8]. In such cases clinical history and altered coagulation profile will help in the correct diagnosis.

Use of MRI in the evaluation of bowel pathology is limited. MRI features of duodenal hematoma have been described, which appear as circumferential bright signal within the wall on T2-weighted images. No data is available describing the MRI features of small bowel hematoma. In view of wider availability, faster scanning and excellent spatial resolution CT is the imaging modality of choice in IMH^[2].

Spontaneous IMH is managed conservatively by restoring the normal hemostasis. Both oral and parenteral anticoagulants are discontinued. Vitamin-K and FFP are administered to restore the INR value to 2. Patient is kept nil orally for 2 to 3 days. Both clinical and hematological improvement is noted within 72 hours. Spontaneous IMH rarely requires surgical intervention, like in case of bowel perforation and infarction^{[3],[4]}. Mortality is even rarer and

depends on the extent of bowel involvement, extra-abdominal hemorrhage and co-morbid conditions. No delayed complication or sequela is seen in spontaneous IMH. However it takes several weeks for complete resolution of the hematoma. Anticoagulant can be reintroduced, keeping the dose within the therapeutic range and with cautious monitoring of INR value^{[1],[4]}.

The essence of prompt and accurate diagnosis of this condition lies in the conservative management to avoid an un-indicated surgery or biopsy. The CT features of hyperdense, circumferential wall thickening in a patient on anticoagulant with abdominal pain are pathognomonic of spontaneous intramural hematoma.

References

1. Abbas MA, Collins JM, Olden KW, Kelly KA. Spontaneous intramural small-bowel hematoma: clinical presentation and long-term outcome. *Arch Surg.* 2002; 137:306-10.
2. Abbas MA, Collins JM, Olden KW. Spontaneous intramural small-bowel hematoma: imaging findings and outcome. *AJR Am J Roentgenol.* 2002; 179(6):1389-94.
3. Sorbello MP, Utiyama EM, Parreira JG, Birolini D, Rasslan S. Spontaneous intramural small bowel hematoma induced by anticoagulant therapy: review and case report. *Clinics vol.62 no.6 Sao Paulo* 2007.
4. Chaiteerakij R, Treeprasertsuk S, Mahachai V, Kullavanijaya P. Anticoagulant-Induced Intramural Intestinal Hematoma: Report of Three Cases and Literature Review. *J Med Assoc Thai* 2008; 91 (8): 1285-90.
5. Polat C, Dervisoglu A, Guven H, Kaya E, Malazgirt Z, Danaci M, et al. Anticoagulant-induced intramural intestinal hematoma. *Am J Emerg Med* 2003; 21: 208-11.
6. Birns MT, Katon RM, Keller F. Intramural hematoma of the small intestine presenting with major upper gastrointestinal hemorrhage. Case report and review of the literature. *Gastroenterology* 1979; 77:1094-100.
7. Chen YY, Su WW, Soon MS, Yen HH. Gastrointestinal: Intramural hematoma of the duodenum. *J Gastroenterol Hepatol* 2006; 21: 1071.
8. Boudiaf M, Soyer P, Terem C, Pelage JP, Maissiat E, Rymer R. CT Evaluation of Small Bowel Obstruction. *RadioGraphics* 2001; 21:613-624.

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