Diffuse Angiodysplasia of the Upper Gastrointestinal Tract in a Patient with Hypertrophic Obstructive Cardiomyopathy

Hiroshi Fujita, Junji Tomiyama, Yoshimichi Chuganji, Masaru Momoi and Takehiko Tanaka

Abstract

A 64-year-old woman with a known history of hypertrophic obstructive cardiomyopathy presented with severe anemia of unknown origin. She had also suffered from repeated episodes of upper gastrointestinal bleeding for the previous 3 years. Despite bone marrow examination and panendoscopic and angiographic studies, the origin of anemia remained undefined until a small bleeding site was found during a duodenoscopic examination. The lesion proved to be angiodysplasia. This case report is interesting in that angiodysplasia elicited gastrointestinal bleeding and was the cause of anemia. In the international literature, there are very few reported cases of bleeding from gastrointestinal angiodysplasia in association with subvalvular aortic obstruction.

Case Report

A 64-year-old woman was admitted to the hospital for evaluation of severe anemia, tarry stool and exertional dyspnea. During the 3 years prior to admission, she had suffered repeated episodes of tarry stool and anemia, and had been hospitalized several times. Detailed evaluation, including panendoscopic studies, failed to disclose the cause of the repeated gastrointestinal bleeding and anemia. Therapy for anemia consisted of blood transfusion. The hemoglobin decreased from 10 g/dl to 6.8 g/dl during a 14 day period without blood transfusion.

Four years prior to admission, HOCM had been diagnosed at another hospital and she was prescribed a β blocker (carteolol hydrochloride). Starting three years prior to the present admission, the patient suffered from dry eyes and mouth. Her past history was negative for previous hepatitis or liver cirrhosis. She had a history of excessive alcohol consumption for 40 years. There was no history of pharmaceutical abuse and she was not currently on medication. On physical examination, she was poorly nourished. The patient exhibited pale conjuctiva, and the sclera were anicteric. She had a brisk carotid pulse with an elevated jugular venous pulse. Her blood pressure was 78/50 mmHg, pulse regular with a rate of 50/min. There was a systolic thrill at the apex and the point of maximal impulse was diffuse and laterally displaced. On auscultation, the heart sounds were normal with an S4. There was a grade III/VI systolic ejection murmur at the apex. There were no audible crackles in either lung fields. Abdominal examination suggested neither hepatosplenomegaly nor tenderness. Rectal and genitourinary examinations were normal. There were no skin rashes, adenopathy, petechia, jaundice, or tattoos.

Ancillary studies on admission revealed a peripheral white blood cell (WBC) count of 6.3x10^7/l with a normal differential count. C-reactive protein was negative. Hemoglobin was low (5.9 g/dl, MCV: 104 μm^3). Serum iron, folate and vitamin B12 were within the normal range. Partial thromboplastin time, prothrombin time, urinalysis, serum glucose and electrolytes all were normal. BUN (21 mg/dl, normal reference range: 7–20), and serum creatinine (1.0 mg/dl, normal: 0.4–1.1) were almost normal. Platelet count was normal (316x10^9/l). Liver function

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Received for publication February 25, 1999; Accepted for publication December 24, 1999
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tests revealed an aspartate aminotransferase (AST) of 30 IU/l (normal <40), alanine aminotransferase (ALT) of 11 IU/l (normal <50), γ-GTP of 22 IU/l (normal <65), total bilirubin of 3.4 μmol/l (normal: 3.4–18), albumin of 2.8 g/dl (normal: 3.6–5.1), alkaline phosphatase of 257 IU/l (normal: 60–320). Bone marrow aspiration and biopsy revealed only erythroid hyperplasia without myelodysplastic change. Bone marrow cells showed no chromosomal abnormalities.

Chest radiography revealed cardiomegaly (cardiothoracic ratio: 65%). An electrocardiogram showed normal sinus rhythm and left ventricle hypertrophy (Fig. 1A). Echocardiography showed asymmetric septal hypertrophy with a septal posterior wall ratio of 1.7 to 1 and severe left ventricular outflow obstruction with a resting pressure gradient of 97 mmHg. Systolic anterior motion of the mitral valve compatible with hypertrophic subaortic stenosis was observed (Fig. 1B).

Serology revealed hypergammaglobulinemia (IgG: 3,673 mg/dl, IgA: 407 mg/dl) with a positive RA test, high antinuclear antibody (160×, speckled type) and positive anti-SS-A (Ro) antibody. C3, C4 and CH50 were slightly low. Scintigraphy of the salivary glands showed bilateral hypofunction. Sialography showed the irregular pattern typical of Sjögren's syndrome. Moreover, mild auricular secretion was noted, and Schirmer's I test and rose Bengal test were both positive. Dry eyes and mouth over the previous four years were considered to be related to Sjögren's syndrome.

Serum amylase was slightly high (238 IU/l, normal: 55–165), and serum elastase (1,432 ng/dl, normal: 72–432) and lipase (179 U/l, normal: 9–55) were also high. Furthermore, pancreatic function diagnostic test showed hypofunction of the pancreas (48%). Endoscopic retrograde cholangiopancreatography revealed signs of chronic pancreatitis including irregular pancreatic ducts with slight dilatation.

Occult blood in the stool was detected on admission. A contrast computerized tomographic scan of the abdomen revealed a gallbladder stone and calcification in the pancreatic head. Gallium scintigraphic scanning results were normal. Tc-99m RBC studies demonstrated extravasation into the small bowel.

Barium tests on the small and large bowel were normal. On admission, gastroduodenoscopy revealed multiple sites of angiodysplasia in the stomach, duodenum, but none were actively bleeding. Colonoscopy did not reveal the bleeding sites such as angiodysplasia and varices. There were neither tumors nor ulcers on endoscopic examination. Celiac, superior mesenteric and inferior mesenteric arteriographic results were normal. The portography did not reveal the findings of the portal hypertension. The late phases of superior and inferior mesenteric angiography demonstrated slightly dilated veins with irregular walls at the ileocecal vein and inferior mesenteric vein.

At the third gastroduodenoscopy, angiodysplasia bleeding actively at the duodenal bulb was occasionally found. We considered the bleeding lesions to have arisen from the multiple sites of angiodysplasia in the stomach, duodenum and jejunum (Fig. 2). Tarry stools were usually attributed to upper gastrointestinal bleeding. Therefore, we performed endoscopic mucosal resection using a ligating device (EMRL) for the gastric angiodysplasia and clipping for the duodenal angiodysplasia. This therapy ameliorated the severe anemia. At one year after the endoscopic therapy, she has not required blood transfusion (Hb: 12 g/dl).

Discussion

The relationship between vascular ectasia and HOCM

Characteristically, angiodysplasia (vascular ectasia) : 1) occurs mostly in patients over 60 years of age with a slight female preponderance; 2) is not associated with angiomatous lesions of the skin or other viscera; 3) nearly always occurs in the cecum or proximal ascending colon although lesions have been reported in the stomach, small intestine, rectum and pan-

![Figure 1. Electrocardiogram (ECG) and echocardiogram on admission. (A) ECG. ECG revealed left ventricular hypertrophy. (B) Echocardiogram. M mode in echocardiogram showed systolic anterior motion of the mitral valve.](image-url)

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creas; 4) is small, usually less than 5 mm in diameter; 5) can rarely be identified intraoperatively or by standard pathological laboratory techniques; and 6) usually can be diagnosed clinically by angiography (5). Among the elderly, who commonly have chronic illnesses such as aortic stenosis and end-stage renal diseases, the stomach, proximal duodenum, the terminal duodenum, proximal jejunum are the next most common sites of angiodysplasia involvement after the right colon (3, 4). In most cases, angiodysplasia is combined with valvular diseases such as aortic valve stenosis. In the present case, HOCM had been noted three years prior to admission. There are only 6 previous case reports describing angiodysplasia with HOCM (6-11). In Table 1, we summarize the characteristics in the 5 case reports with angiodysplasia combined with HOCM in the English language literature (6-10). In Japan, however, there has been no case report describing angiodysplasia with HOCM. The mechanism by which aortic valve stenosis or HOCM causes angiodysplasia in the gastrointestinal tract still remains unclear. Boley and Brandt have suggested that gastrointestinal angiodysplasia is acquired with aging due to intermittent venous obstruction in the bowel (5). The low perfusion pressure seen with aortic stenosis might well cause ischemic necrosis of the single layer of endothelium which often separates ectatic vessels from the colonic lumen, resulting in gastrointestinal bleeding (5). We believe that the hypothesis put forward to explain severe aortic stenosis and bleeding from gastrointestinal angiodysplasia may also apply to subvalvular aortic stenosis. On the other hand, Love proposed a coagulation defect produced by the roughened stenotic valve as the cause of gastrointestinal bleeding from angiodysplasia (12). A stenotic aortic valve resulting in an acquired von Willebrand's defect causing coexisting angiodysplasia of the gut to bleed has also recently been suggested as the mechanism of gastrointestinal bleeding in patients with aortic stenosis (13). In the present case, unfortunately, von Willebrand factor was not measured, because coagulation system parameters, e.g. PT and APTT were normal. There have been no reports on the relationship between defective von Willebrand's factor and HOCM.

**Therapy for angiodysplasia complicated by cardiac disease**

Therapies for angiodysplasia in the stomach and duodenum commonly involve electrocoagulation and surgery (14, 15). As shown in Table 1, therapy for angiodysplasia complicated by HOCM is variable. Surgical and medical management for HOCM improved the bleeding from angiodysplasia in one case each (6, 10). Schwartz et al reported that propranolol is effective for both HOCM and bleeding from angiodysplasia (10). However, the present case had already taken a β blocker (carteolol hydrochloride) for HOCM prior to the bleeding from angiodysplasia. We consider the β blocker to have been ineffective in our case. Three other cases underwent surgery, colectomy or partial ileotomy (7-9). In Japan, endoscopic ligation has recently been recognized as a good therapy for hemorrhagic gastric angiodysplasia (16). In the present case, we performed EMRL for the gastric angiodysplasia and clipping for the duodenal angiodysplasia. The anemia then improved and tarry stool disappeared. Therefore, we consider these therapies to be effective for angiodysplasia complicated with HOCM. This is the first case demonstrating the usefulness of EMRL and clipping for gastric and duodenal angiodysplasia respectively complicated by HOCM.

**Sjögren's syndrome**

The present case satisfied the criteria for Sjögren's syndrome. Her presentation was, in fact, highly typical of Sjögren's syndrome. There are no reports of Sjögren's syndrome in combination with angiodysplasia and HOCM. We speculate that Sjögren's syndrome is occasionally associated with HOCM. However, Sjögren's syndrome has been known to occasionally occur in association with pancreatitis. She had clinical findings of chronic pancreatitis. In the late phase of mesenteric arteriography, the findings of the vein were indicative of phlebitis. In addition, Sjögren's syndrome, as a collagen disease, may induce vasculitis. There is a possibility that Sjögren's syn-
Table 1. Characteristics of Cases with Angiodysplasia and HOCM

<table>
<thead>
<tr>
<th>Case</th>
<th>Age/Sex</th>
<th>HOCM: degree and therapy</th>
<th>Portion with angiodysplasia</th>
<th>Therapy for angiodysplasia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(ref. 6) 74 yrs/female</td>
<td>PG 75mmHg /β blocker and verapamil (no effect)</td>
<td>colon</td>
<td>cardiac surgery (septal myoectomy)</td>
</tr>
<tr>
<td>2</td>
<td>(ref. 7) 65 yrs/female</td>
<td>not described</td>
<td>ascending colon</td>
<td>right hemicolecotomy</td>
</tr>
<tr>
<td>3</td>
<td>(ref. 8) 57 yrs/female</td>
<td>PG 140 mmHg</td>
<td>ascending colon</td>
<td>right hemicolecotomy</td>
</tr>
<tr>
<td>4</td>
<td>(ref. 9) 73 yrs/female</td>
<td>not described</td>
<td>terminal ileum</td>
<td>partial resection of the ileum</td>
</tr>
<tr>
<td>5</td>
<td>(ref. 10) 75 yrs/female</td>
<td>not described</td>
<td>colon (cecum)</td>
<td>β blocker (propranolol 40 mg/day)</td>
</tr>
</tbody>
</table>

PG: pressure gradient.

drome might be indirectly involved, in this case, in phlebitis of the mesenteric veins and pancreatitis.

References


