American Journal of Case Reports

e-ISSN 1941-5923
© Am J Case Rep, 2018; 19: 924-926
DOI: 10.12659/AJCR.911298

Received: 2018.05.23
Accepted: 2018.07.12
Published: 2018.08.07

A Case of Heyde Syndrome with Resolution of Gastrointestinal Bleeding Two Weeks After Aortic Valve Replacement

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
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Conflict of interest: None declared

Patient: Female, 56
Final Diagnosis: Heyde syndrome
Symptoms: Anemia • gastrointesinal haemorrhage
Medication: —
Clinical Procedure: Colonoscopy • EGD • TAVR
Specialty: Gastroenterology and Hepatology

Objective: Unusual clinical course

Background: Heyde syndrome is the association between gastrointestinal (GI) bleeding from arteriovenous malformation (AVM) and aortic stenosis. The aim of this study was to review Heyde syndrome and to discuss the management of this condition.

Case Report: A 56-year-old female with a history of severe aortic stenosis and recurrent GI bleeding secondary to small bowel AVM, presented for hospital admission with melena and maroon blood in her stool. The patient underwent esophagogastroduodenoscopy with push enteroscopy, full colonoscopy, and mesenteric angiogram with failure to identify any active bleeding sources. Her hemoglobin continued to drop, requiring daily transfusion of packed red blood cells (PRBCs). Von Willebrand factor (VWF) antigen was low at 37%, and VWF large multimers were low and consistent with acquired VWF disease. The patient was then transferred to a tertiary care center and underwent transcatheter aortic valve replacement. Two weeks after discharge, she presented again with an episode of melena, with hemoglobin of 7.6 gm/dL and hematocrit of 25.1%. She was transfused 4 units of PRBCs and monitored for 48 hours, and then discharged without further episodes of GI bleeding. At the 2-month follow-up, she had stable hemoglobin at 15.1 gm/dL without further episodes of GI bleeding. At the 6-month follow-up she showed stable hemoglobin at 14.3 gm/dL without further episodes of GI bleeding.

Conclusions: Physicians need to consider Heyde syndrome in patients with aortic stenosis and GI bleeding secondary to angiodysplasia. Physicians should also be attentive in patients with Heyde syndrome presenting with GI bleeding after undergoing aortic valve replacement, as GI bleeding might take time to resolve completely in these patients.

MeSH Keywords: Aortic Valve Stenosis • Arteriovenous Malformations • Gastrointestinal Hemorrhage

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/911298

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Background

Heyde syndrome is the association between gastrointestinal (GI) bleeding from arteriovenous malformation (AVM) and aortic stenosis [1]. Von Willebrand factor (VWF) is assumed to be critical in the pathway for adequate (physiologic) suppression of angiogenesis. Patients with Heyde syndrome are assumed to be at increased risk for GI bleeding via AVM formation because of acquired von Willebrand syndrome resulting from mechanical destruction of von Willebrand multimers as they pass turbulently through the narrowed aortic valve [2–4]. GI bleeding is reported to improve in most patients after undergoing aortic valve replacement (AVR) and subsequent improvement in von Willebrand multimer levels [5]. In this case, we present our experience with this syndrome.

Case Report

A 56-year-old Caucasian female with a history of severe aortic stenosis, chronic anemia, and recurrent GI bleeding secondary to small bowel AVM diagnosed with capsule endoscopy, presented for hospital admission with melena, episodes of maroon blood in stool, and acute on chronic anemia with hemoglobin of 6.7 gm/dL (normal range: 11.7–15.5 gm/dL) and hematocrit of 20.9% (normal range: 35–45 gm/dL). The patient underwent esophagogastroduodenoscopy with push enteroscopy along with full colonoscopy with failure to identify any further AVMs or active bleeding sources. She also underwent mesenteric angiogram without identification of an active bleeding site. Her hemoglobin continued to drop, requiring daily transfusion of packed red blood cells (PRBCs). An echocardiogram showed severe aortic stenosis with aortic valve mean pressure gradient of 35 mm Hg, and aortic valve area (AVA) of 0.76. VWF antigen was low at 37% (normal range is 50–217 IU/dL), VWF ristocetin cofactor was low at <10% (normal range is 42–200 IU/dL), and VWF large multimers (high molecular weight VWF) were low and consistent with acquired VWF disease. The association of aortic stenosis, AVM, and acquired VWF disease made the diagnosis of Heyde syndrome. The patient was then transferred to a tertiary care center and had upper and lower double balloon enteroscopy with argon plasma coagulation/cauterization of several AVM areas, which included note and intervention of additional Dieulafoy lesion in the distal duodenum. After effect intervention for her small bowel bleeding, she then underwent transcatheter AVR (TAVR). Two weeks after discharge, she presented again with melena and maroon blood in stool, and she was found to have acute on chronic anemia with hemoglobin of 7.6 gm/dL and hematocrit of 25.1%. The patient was transfused with 4 units of PRBCs and monitored for 48 hours, then she was discharged without further episodes of melena or maroon blood in stool, with stable hemoglobin of 9.2 gm/dL and hematocrit of 30%. A repeat echocardiogram showed the aortic valve was a bioprosthetic Edwards, post TAVR with aortic valve mean pressure gradient of 24 mm Hg without regurgitation. The patient's 1-month follow-up showed stable hemoglobin at 14.4 gm/dL with no further episodes of GI bleeding. The patient's 3-month follow-up showed VWF antigen level was low at 38% (normal range is 50–217 IU/dL), VWF ristocetin cofactor was low at 14% (normal range 42–200 IU/dL), and VWF large multimers (high molecular weight VWFs) were low. The patient's hemoglobin was stable at 15.1 gm/dL without further episodes of GI bleeding. At the 6-month follow-up, she had stable hemoglobin at 14.3 gm/dL without further episodes of GI bleeding.

Discussion

In 1958, Heyde described the association between GI bleeding and aortic stenosis [1]. After that, the Heyde syndrome definition has been revised to include aortic stenosis, intestinal angiodysplasia, and acquired VWF syndrome. Heyde syndrome has been frequently reported, but some aspects of this rare syndrome are still debatable and controversial. Although VWF is assumed to suppress angiogenesis, the causal association between decreased VWF and increased angiogenesis remains limited and contentious in patients with acquired VWF [4]. The proposed mechanisms by which VWF regulates angiogenesis may include modifications in integrin-mediated adhesion and vascular endothelial growth factor receptor signaling, which may alter numerous stages of blood vessel formation [6,7]. Cody et al. proposed that ischemia induced by low cardiac output state and low perfusion state from aortic stenosis results in the formation of angiodysplastic vessels and induce epithelial damage, which results in bleeding from these vessels [8]. What contradicts this proposal is that low cardiac output secondary to mitral stenosis has not been associated with increased risk of GI bleeding [9]. There have been only a few case reports suggesting AVR to treat GI bleeding from AVM in patients with Heyde syndrome, and their number and follow-up duration were limited [10]. One report evaluated 16 patients with chronic GI bleeding, presumed to be secondary to AVM who underwent AVR for aortic stenosis. During 8 to 12 years of follow-up, GI bleeding stopped in 15 patients [5]. Thompson et al. reported improvement in GI bleeding in 80% of the patients with Heyde syndrome after AVR [11]. In our case, the patient underwent a successful AVR, and she presented with an episode of GI bleeding 2 weeks after the AVR procedure. But, follow-up at 1-month, 3-months, and 6-months after the AVR showed stable hemoglobin with no further episodes of GI bleeding after the single episode 2 weeks after the AVR. Gul et al. reported a case of Heyde syndrome with resolution of GI bleeding from angiodysplasia at 2 months after an AVR [12]. Shibamoto et al. reported another case of Heyde syndrome with continued melena and monthly blood

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transfusions until resolution of GI bleeding from angiodysplasia, at 20 months after an AVR [13]. In our case, we described resolution of GI bleeding from angiodysplasia, at 2 weeks after an AVR. VWF antigen and VWF large multimers levels may take time to improve after an AVR. A study enrolled 50 patients with aortic stenosis who have a history of bleeding. Forty-two of the 50 patients who had severe aortic stenosis underwent AVR and showed a significant improvement in biologic values, including VWF antigen levels and VWF large multimers levels observed at 6 months after the AVR [2].

Conclusions

Physicians need to be thoughtful and consider Heyde syndrome in patients with aortic stenosis and GI bleeding secondary to angiodysplasia. Physicians should also to be vigilant in patients with Heyde syndrome presenting with GI bleeding after undergoing AVR, as GI bleeding might take time to resolve completely in these patients, assuming they had a successful AVR.

Acknowledgements

The authors thank Mariem Alrubaie, MS.

References:

1. Heyde EC: Gastrointestinal bleeding in aortic stenosis (letter). N Engl J Med, 1958; 259: 196
2. Vincentelli A, Susen S, Le Tourneau T et al: Acquired von Willebrand syndrome in aortic stenosis. N Engl J Med, 2003; 349: 343–49
3. Pareti FI, Lattuada A, Bressi C et al: Proteolysis of von Willebrand factor and shear stress-induced platelet aggregation in patients with aortic valve stenosis. Circulation, 2000; 102: 1290–95
4. Franchini M, Mannucci PM: Von Willebrand disease-associated angiodysplasia: A few answers, still many questions. Br J Haematol, 2013; 161: 177–82
5. King RM, Pluth JR, Giuliani ER: The association of unexplained gastrointestinal bleeding with calcific aortic stenosis. Ann Thorac Surg, 1987; 44: 514–16
6. Randi AM, Laffan MA: Von Willebrand factor and angiogenesis: Basic and applied issues. J Thromb Haemost, 2017; 15: 13–20
7. Starke RD, Ferraro F, Paschalaki KE et al: Endothelial von Willebrand factor regulates angiogenesis. Blood, 2011; 117: 1071–80
8. Cody MC ODonovan PB, Hughes RW Jr.: Idiopathic gastrointestinal bleeding and aortic stenosis. Am J Dig Dis, 1974; 19: 393–98
9. McNamara JJ, Austen WG: Gastrointestinal bleeding occurring in patients with acquired valvular heart disease. Arch Surg, 1968; 97: 538–40
10. Bhutani MS, Gupta SC, Markert RJ et al: A prospective controlled evaluation of endoscopic detection of angiodysplasia and its association with aortic valve disease. Gastrointest Endosc 1995; 42: 398–402
11. Thompson JL 3rd, Schaff HV, Dearani JA et al: Risk of recur- rent gastrointestinal bleeding after aortic valve replacement in patients with Heyde syndrome. J Thorac Cardiovasc Surg, 2012; 144: 112–16
12. Gül M, Sürgit O, Özal E et al: Treatment of aortic valve stenosis and gastrointestinal bleeding by transcatheter aortic valve implantation in Heyde syndrome. Anadolu Kardiyol Derg, 2012; 12: 689–96
13. Shibamoto A, Kawaratani H1, Kubo T et al: Aortic valve replacement for the management of Heyde syndrome: A case report. J Nippon Med Sch, 2017; 84(4): 193–97

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