

Tower Health

## Scholar Commons @ Tower Health

---

Reading Hospital Internal Medicine Residency

Internal Medicine Residency (Faculty and Residents)

---

11-21-2013

### Mesenteric vein thrombosis in a patient heterozygous for factor V Leiden and G20210A prothrombin genotypes.

Paras Karmacharya

Reading Hospital, paraskarmacharya@gmail.com

Madan Raj Aryal

Reading Hospital

Anthony A. Donato

Reading Hospital

Follow this and additional works at: <https://scholarcommons.towerhealth.org/>

[gme\\_int\\_med\\_resident\\_program\\_read](#)



Part of the [Internal Medicine Commons](#)

---

#### Recommended Citation

Karmacharya, P., Aryal, M. R., & Donato, A. A. (2013). Mesenteric vein thrombosis in a patient heterozygous for factor V Leiden and G20210A prothrombin genotypes.. *World journal of gastroenterology : WJG*, 19 (43), 7813-7815. <https://doi.org/10.3748/wjg.v19.i43.7813>

This Article is brought to you for free and open access by the Internal Medicine Residency (Faculty and Residents) at Scholar Commons @ Tower Health. It has been accepted for inclusion in Reading Hospital Internal Medicine Residency by an authorized administrator of Scholar Commons @ Tower Health. For more information, please contact [alexandra.short@towerhealth.org](mailto:alexandra.short@towerhealth.org).

## Mesenteric vein thrombosis in a patient heterozygous for factor V Leiden and G20210A prothrombin genotypes

Paras Karmacharya, Madan Raj Aryal, Anthony Donato

Paras Karmacharya, Madan Raj Aryal, Anthony Donato, Department of Internal Medicine, Reading Health System, West Reading, PA 19611, United States

Author contributions: Karmacharya P and Aryal MR wrote the initial draft; and Donato A provided the subsequent revisions and final manuscript.

Correspondence to: Paras Karmacharya, MD, Department of Internal Medicine, 6<sup>th</sup> avenue and Spruce Street, Reading Health System, West Reading, PA 19611,

United States. [paraskarmacharya@gmail.com](mailto:paraskarmacharya@gmail.com)

Telephone: 1-484-6288255 Fax: 1-484-6289003

Received: July 26, 2013 Revised: August 27, 2013

Accepted: September 3, 2013

Published online: November 21, 2013

### Abstract

Mesenteric venous thrombosis (MVT) is a rare but life threatening form of bowel ischemia. It is implicated in 6%-9% of all cases of acute mesenteric ischemia. The proportion of patients with primary (or idiopathic) MVT varies from 0% to 49%, with a decrease in frequency secondary to more recent availability of newer investigations for hypercoagulability. The presence of factor V Leiden (FVL) and prothrombin G20210A mutations (PGM) have been well documented in these cases. However, there have been scarce case reports describing MVT in heterozygotes of both these mutations occurring simultaneously and its implications on long term management. Our case describes acute MVT in a previously asymptomatic young patient with no prior history of venous thromboembolism. The patient was found to be heterozygous for FVL and PGM and treated with lifelong anticoagulation with warfarin (goal international normalized ratio: 2-3) and avoidance of hormonal contraceptives.

© 2013 Baishideng Publishing Group Co., Limited. All rights reserved.

**Key words:** Mesenteric vein thrombosis; Prothrombin

gene; Factor V Leiden; Heterozygous; Anticoagulation; Oral contraceptives

**Core tip:** The common presence of two thrombophilic defects increases the thrombotic risk several folds above the risk of a single defect and these tend to occur at an earlier age as seen in our case. Also the risk of recurrent thrombosis is significantly increased among these heterozygotes. Indefinite anticoagulation with oral anti-coagulants (goal International Normalized Ratio = 2-3) is recommended for high risk patients like our case with thrombosis at unusual sites (*e.g.*, mesenteric vein), and heterozygosity for both factor V Leiden and prothrombin G20210A mutations. These patients should avoid any hormonal therapy and family members should be screened for underlying prothrombotic condition.

Karmacharya P, Aryal MR, Donato A. Mesenteric vein thrombosis in a patient heterozygous for factor V Leiden and G20210A prothrombin genotypes. *World J Gastroenterol* 2013; 19(43): 7813-7815 Available from: URL: <http://www.wjgnet.com/1007-9327/full/v19/i43/7813.htm> DOI: <http://dx.doi.org/10.3748/wjg.v19.i43.7813>

### INTRODUCTION

Mesenteric venous thrombosis (MVT) is a rare but life threatening form of bowel ischemia, responsible for 6%-9% of all acute mesenteric ischemia. The presence of factor V Leiden (FVL) and prothrombin G20210A mutations (PGM) have been well documented in these cases. However, there have been scarce case reports describing MVT in heterozygotes of both these mutations occurring simultaneously and its implications on long term management.

### CASE REPORT

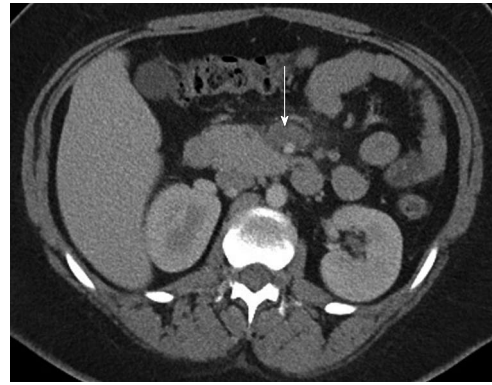
A 22-year-old Caucasian female presented to the emer-

gency department with progressively worsening, colicky left upper quadrant abdominal pain for 4 d with radiation to her back, associated with some nausea. She denied any history of fever or changes in bowel movements. Past medical history was significant for Polycystic Ovarian syndrome treated with oral contraceptives. She denied personal or family history of thrombosis. Physical exam was significant for tenderness on left upper quadrant of abdomen without guarding, rigidity or rebound tenderness. Complete blood count and electrolytes were within normal limits. A computed tomography (CT) scan of the abdomen revealed possible superior mesenteric vein (SMV) thrombosis without evidence of bowel ischemia (Figure 1). Patient was started on enoxaparin (1 mg/kg twice daily) with bridging to warfarin. Subsequent CT angiography confirmed the initial diagnosis of SMV thrombosis. Surgical intervention was not indicated due to lack of bowel ischemia. Workup for possible vasculitis, including antinuclear antibody, Anti-neutrophil cytoplasmic antibody, titers of hepatitis B, hepatitis C, and Human Immunodeficiency Virus screening were all negative. Hypercoagulable evaluation including protein-C and S, antithrombin III, anticardiolipin antibodies were all negative. However she was found to have heterozygous mutations for both prothrombin G20210A and FVL. She was discharged on warfarin with a therapeutic level of anticoagulation. She was advised to have lifelong anticoagulation with warfarin [goal International Normalized Ratio (INR) = 2-3] and avoidance of hormonal contraceptives.

## DISCUSSION

MVT is a rare but potentially life threatening cause of mesenteric ischemia with high recurrence rates<sup>[1,2]</sup>. It is implicated in 6%-9% of all cases of acute mesenteric ischemia<sup>[1,3,4]</sup>. Predisposing conditions including myeloproliferative disorders, neoplasia, hereditary hemorrhagic telangiectasia, paroxysmal nocturnal hemoglobinuria, inherited thrombophilias, oral contraceptive pill (OCP) use, pancreatitis, recent abdominal surgery or local intraabdominal infections can be identified in most patients<sup>[5]</sup>. When no underlying etiology is identified, MVT is described as primary or idiopathic. The proportion of patients with primary (or idiopathic) MVT varies from 0% to 49%, with a decrease in frequency secondary to more recent availability of newer investigations for hypercoagulability. Abdominal pain is the most common symptom, especially with acute thrombosis, whereas chronic MVT usually manifests as portal hypertension or diagnosed incidentally by imaging. The increasing use of CT for the investigation of abdominal pain and anticoagulation for the treatment of acute MVT have improved outcomes in these patients<sup>[6]</sup>. Surgery and bowel resection may occasionally be needed for patients with bowel infarction, perforation, and peritonitis. The management of patients with chronic MVT is aimed at reducing complications of portal hypertension<sup>[4,6]</sup>.

The present case is of interest in that acute MVT was



**Figure 1** Contrast-enhanced computed tomography scan. It shows decreased attenuation within the superior mesenteric vein (arrow), immediately below the portal confluence, compatible with venous thrombosis.

the initial presentation in a patient with combined heterozygosity for FVL mutation and the G20210A prothrombin gene variation in the face of oral contraceptive use. The association of each of these mutations with thrombotic disease has been well established. Among Caucasian patients presenting with an initial episode of idiopathic deep venous thrombosis, 12%-20% will be found to be heterozygous for the FVL mutation and 6% heterozygous for the prothrombin G20210A gene variation as compared to 6% and 2% respectively, in asymptomatic Caucasian controls<sup>[7]</sup>. A recent retrospective study by Amitrano *et al*<sup>[5]</sup> noted a high prevalence of thrombophilic genotypes (75%): FVL (25%), prothrombin G20210A gene (25%), and MTHFR prothrombotic defects (50%) in patients with acute mesenteric vein thrombosis. Double heterozygotes of FVL mutation and the prothrombin G20210A gene variation have been shown to be associated with a greater risk of venous thrombosis than either defect alone. Also the age at the first episode of venous thromboembolism in double heterozygotes was significantly younger than those without both gene defects (34.7 years *vs* 40.6 years;  $P < 0.01$ ) in observational and meta-analytic studies. Finally, use of OCPs was associated with a significantly increased risk of thrombosis over those not using them (OR = 16.97, 95%CI: 3.95-72.80)<sup>[8-11]</sup>.

It seems plausible that in our case, MVT was induced by OCPs on the background of her hematological disorders leading to a hypercoagulable state. The common presence of two thrombophilic defects increases the thrombotic risk several folds above the risk of a single defect and these tend to occur at an earlier age which was also seen in our case<sup>[10]</sup>. Also the risk of recurrent thrombosis is significantly increased among these heterozygotes. Indefinite anticoagulation with oral anticoagulants (with goal INR = 2-3) is recommended for high risk patients like our case with thrombosis at unusual sites (*e.g.*, mesenteric vein), and heterozygosity for both FVL and PGM<sup>[9,12,13]</sup>. These patients should avoid any hormonal therapy including OCPs due to increased risk of blood clots. It may also be advised to screen the family members for underlying prothrombotic condition, even with a

first episode of idiopathic venous thrombosis<sup>[7,11]</sup>.

## REFERENCES

- 1 **Rhee RY**, Gloviczki P. Mesenteric venous thrombosis. *Surg Clin North Am* 1997; **77**: 327-338 [PMID: 9146716]
- 2 **Clavien PA**, Dürig M, Harder F. Venous mesenteric infarction: a particular entity. *Br J Surg* 1988; **75**: 252-255 [PMID: 3349333]
- 3 **Brunaud L**, Antunes L, Collinet-Adler S, Marchal F, Ayav A, Bresler L, Boissel P. Acute mesenteric venous thrombosis: case for nonoperative management. *J Vasc Surg* 2001; **34**: 673-679 [PMID: 11668323 DOI: 10.1067/mva.2001.117331]
- 4 **Harnik IG**, Brandt LJ. Mesenteric venous thrombosis. *Vasc Med* 2010; **15**: 407-418 [PMID: 20926500 DOI: 10.1177/1358863X10379673]
- 5 **Amitrano L**, Brancaccio V, Guardascione MA, Margaglione M, Iannaccone L, Dandrea G, Ames PR, Marmo R, Mosca S, Balzano A. High prevalence of thrombophilic genotypes in patients with acute mesenteric vein thrombosis. *Am J Gastroenterol* 2001; **96**: 146-149 [PMID: 11197244 DOI: 10.1111/j.1572-0241.2001.03465.x]
- 6 **Singal AK**, Kamath PS, Tefferi A. Mesenteric venous thrombosis. *Mayo Clin Proc* 2013; **88**: 285-294 [PMID: 23489453 DOI: 10.1016/j.mayocp.2013.01.012]
- 7 **Al-Juburi A**, Scott MA, Shah HR, Raufman JP. Heterozygosity for factor V Leiden and G20210A prothrombin genotypes in a patient with mesenteric vein thrombosis. *Dig Dis Sci* 2002; **47**: 601-606 [PMID: 11911349]
- 8 **Emmerich J**, Rosendaal FR, Cattaneo M, Margaglione M, De Stefano V, Cumming T, Arruda V, Hillarp A, Reny JL. Combined effect of factor V Leiden and prothrombin 20210A on the risk of venous thromboembolism--pooled analysis of 8 case-control studies including 2310 cases and 3204 controls. Study Group for Pooled-Analysis in Venous Thromboembolism. *Thromb Haemost* 2001; **86**: 809-816 [PMID: 11583312]
- 9 **De Stefano V**, Martinelli I, Mannucci PM, Paciaroni K, Chi-usolo P, Casorelli I, Rossi E, Leone G. The risk of recurrent deep venous thrombosis among heterozygous carriers of both factor V Leiden and the G20210A prothrombin mutation. *N Engl J Med* 1999; **341**: 801-806 [PMID: 10477778 DOI: 10.1056/NEJM199909093411104]
- 10 **Hertzberg MS**, Underwood T, Favaloro EJ. Mesenteric vein thrombosis secondary to combined protein C deficiency and double heterozygosity for factor V Leiden and prothrombin G20210A. *Am J Hematol* 1999; **62**: 199-200 [PMID: 10539890]
- 11 **Segal JB**, Brotman DJ, Necochea AJ, Emadi A, Samal L, Wilson LM, Crim MT, Bass EB. Predictive value of factor V Leiden and prothrombin G20210A in adults with venous thromboembolism and in family members of those with a mutation: a systematic review. *JAMA* 2009; **301**: 2472-2485 [PMID: 19531787 DOI: 10.1001/jama.2009.853]
- 12 **Leebeek FW**, Smalberg JH, Janssen HL. Prothrombotic disorders in abdominal vein thrombosis. *Neth J Med* 2012; **70**: 400-405 [PMID: 23123534]
- 13 **Grouzi E**, Politou M, Douramani P, Merkouri E, Gialeraki A, Brountzos H, Perros G, Travlou A. Portal, splenic and mesenteric vein thrombosis in a patient double heterozygous for factor V Leiden and prothrombin G20210A mutation. *Blood Coagul Fibrinolysis* 2009; **20**: 722-725 [PMID: 19734780 DOI: 10.1097/MBC.0b013e3283306e3c]

**P- Reviewers:** Goll R, Leitman M, Matteo F **S- Editor:** Qi Y

**L- Editor:** A **E- Editor:** Zhang DN





百世登

**Baishideng**®

Published by **Baishideng Publishing Group Co., Limited**

Flat C, 23/F., Lucky Plaza,

315-321 Lockhart Road, Wan Chai, Hong Kong, China

Fax: +852-65557188

Telephone: +852-31779906

E-mail: [bpgoffice@wjgnet.com](mailto:bpgoffice@wjgnet.com)

<http://www.wjgnet.com>



ISSN 1007-9327



9 771007 932045

4 3>