

World Journal of *Clinical Cases*

World J Clin Cases 2021 June 26; 9(18): 4460-4880



OPINION REVIEW

- 4460 Surgery for pancreatic tumors in the midst of COVID-19 pandemic

Kato H, Asano Y, Arakawa S, Ito M, Kawabe N, Shimura M, Hayashi C, Ochi T, Yasuoka H, Higashiguchi T, Kondo Y, Nagata H, Horiguchi A

REVIEW

- 4467 Roles of exosomes in diagnosis and treatment of colorectal cancer

Umwali Y, Yue CB, Gabriel ANA, Zhang Y, Zhang X

MINIREVIEWS

- 4480 Dynamics of host immune responses to SARS-CoV-2

Taherkhani R, Taherkhani S, Farshadpour F

- 4491 Current treatment for hepatitis C virus/human immunodeficiency virus coinfection in adults

Laiwatthanapaisan R, Sirinawasatien A

- 4500 Anti-tumor effect of statin on pancreatic adenocarcinoma: From concept to precision medicine

Huang CT, Liang YJ

- 4506 Roles of vitamin A in the regulation of fatty acid synthesis

Yang FC, Xu F, Wang TN, Chen GX

ORIGINAL ARTICLE**Basic Study**

- 4520 Identification of the circRNA-miRNA-mRNA regulatory network and its prognostic effect in colorectal cancer

Yin TF, Zhao DY, Zhou YC, Wang QQ, Yao SK

- 4542 Tetramethylpyrazine inhibits proliferation of colon cancer cells *in vitro*

Li H, Hou YX, Yang Y, He QQ, Gao TH, Zhao XF, Huo ZB, Chen SB, Liu DX

Case Control Study

- 4553 Significance of highly phosphorylated insulin-like growth factor binding protein-1 and cervical length for prediction of preterm delivery in twin pregnancies

Lan RH, Song J, Gong HM, Yang Y, Yang H, Zheng LM

Retrospective Cohort Study

- 4559** Expected outcomes and patients' selection before chemoembolization—"Six-and-Twelve or Pre-TACE-Predict" scores may help clinicians: Real-life French cohorts results

Adhoute X, Larrey E, Anty R, Chevallier P, Penaranda G, Tran A, Bronowicki JP, Raoul JL, Castellani P, Perrier H, Bayle O, Monnet O, Pol B, Bourliere M

Retrospective Study

- 4573** Application of intelligent algorithms in Down syndrome screening during second trimester pregnancy
Zhang HG, Jiang YT, Dai SD, Li L, Hu XN, Liu RZ
- 4585** Evaluation of a five-gene signature associated with stromal infiltration for diffuse large B-cell lymphoma
Nan YY, Zhang WJ, Huang DH, Li QY, Shi Y, Yang T, Liang XP, Xiao CY, Guo BL, Xiang Y
- 4599** Efficacy of combination of localized closure, ethacridine lactate dressing, and phototherapy in treatment of severe extravasation injuries: A case series
Lu YX, Wu Y, Liang PF, Wu RC, Tian LY, Mo HY
- 4607** Observation and measurement of applied anatomical features for thoracic intervertebral foramen puncture on computed tomography images
Wang R, Sun WW, Han Y, Fan XX, Pan XQ, Wang SC, Lu LJ
- 4617** Histological transformation of non-small cell lung cancer: Clinical analysis of nine cases
Jin CB, Yang L
- 4627** Diagnostic value of amygdala volume on structural magnetic resonance imaging in Alzheimer's disease
Wang DW, Ding SL, Bian XL, Zhou SY, Yang H, Wang P
- 4637** Comparison of ocular axis and corneal diameter between entropion and non-entropion eyes in children with congenital glaucoma
Wang Y, Hou ZJ, Wang HZ, Hu M, Li YX, Zhang Z

Observational Study

- 4644** Risk factors for postoperative delayed gastric emptying in ovarian cancer treated with cytoreductive surgery and hyperthermic intraperitoneal chemotherapy
Cui GX, Wang ZJ, Zhao J, Gong P, Zhao SH, Wang XX, Bai WP, Li Y
- 4654** Clinical characteristics, gastrointestinal manifestations and outcomes of COVID-19 patients in Iran; does the location matters?
Mokarram P, Dalivand MM, Pizuorno A, Aligolighasemabadi F, Sadeghdoust M, Sadeghdoust E, Aduli F, Oskrochi G, Brim H, Ashktorab H
- 4668** AWGS2019 vs EWGSOP2 for diagnosing sarcopenia to predict long-term prognosis in Chinese patients with gastric cancer after radical gastrectomy
Wu WY, Dong JJ, Huang XC, Chen ZJ, Chen XL, Dong QT, Bai YY

Prospective Study

- 4681** Clinical outcomes and 5-year follow-up results of keratosis pilaris treated by a high concentration of glycolic acid

Tian Y, Li XX, Zhang JJ, Yun Q, Zhang S, Yu JY, Feng XJ, Xia AT, Kang Y, Huang F, Wan F

Randomized Controlled Trial

- 4690** Tenofovir disoproxil fumarate in Chinese chronic hepatitis B patients: Results of a multicenter, double-blind, double-dummy, clinical trial at 96 weeks

Chen XF, Fan YN, Si CW, Yu YY, Shang J, Yu ZJ, Mao Q, Xie Q, Zhao W, Li J, Gao ZL, Wu SM, Tang H, Cheng J, Chen XY, Zhang WH, Wang H, Xu ZN, Wang L, Dai J, Xu JH

SYSTEMATIC REVIEWS

- 4700** Mesenteric ischemia in COVID-19 patients: A review of current literature

Kerawala AA, Das B, Solangi A

- 4709** Role of theories in school-based diabetes care interventions: A critical review

An RP, Li DY, Xiang XL

CASE REPORT

- 4721** Alport syndrome combined with lupus nephritis in a Chinese family: A case report

Liu HF, Li Q, Peng YQ

- 4728** Botulinum toxin injection for Cockayne syndrome with muscle spasticity over bilateral lower limbs: A case report

Hsu LC, Chiang PY, Lin WP, Guo YH, Hsieh PC, Kuan TS, Lien WC, Lin YC

- 4734** Meigs' syndrome caused by granulosa cell tumor accompanied with intrathoracic lesions: A case report

Wu XJ, Xia HB, Jia BL, Yan GW, Luo W, Zhao Y, Luo XB

- 4741** Primary mesonephric adenocarcinoma of the fallopian tube: A case report

Xie C, Shen YM, Chen QH, Bian C

- 4748** Pancreas-preserving duodenectomy for treatment of a duodenal papillary tumor: A case report

Wu B, Chen SY, Li Y, He Y, Wang XX, Yang XJ

- 4754** Pheochromocytoma with abdominal aortic aneurysm presenting as recurrent dyspnea, hemoptysis, and hypotension: A case report

Zhao HY, Zhao YZ, Jia YM, Mei X, Guo SB

- 4760** Minimally invasive removal of a deep-positioned cannulated screw from the femoral neck: A case report

Yang ZH, Hou FS, Yin YS, Zhao L, Liang X

- 4765** Splenic Kaposi's sarcoma in a human immunodeficiency virus-negative patient: A case report

Zhao CJ, Ma GZ, Wang YJ, Wang JH

- 4772** Neonatal syringocystadenoma papilliferum: A case report
Jiang HJ, Zhang Z, Zhang L, Pu YJ, Zhou N, Shu H
- 4778** Disappeared intralenticular foreign body: A case report
Xue C, Chen Y, Gao YL, Zhang N, Wang Y
- 4783** Femoral neck stress fractures after trampoline exercise: A case report
Nam DC, Hwang SC, Lee EC, Song MG, Yoo JI
- 4789** Collision carcinoma of the rectum involving neuroendocrine carcinoma and adenocarcinoma: A case report
Zhao X, Zhang G, Li CH
- 4797** Therapeutic effect of autologous concentrated growth factor on lower-extremity chronic refractory wounds: A case report
Liu P, Liu Y, Ke CN, Li WS, Liu YM, Xu S
- 4803** Cutaneous myiasis with eosinophilic pleural effusion: A case report
Fan T, Zhang Y, Lv Y, Chang J, Bauer BA, Yang J, Wang CW
- 4810** Severe hematuria due to vesical varices in a patient with portal hypertension: A case report
Wei ZJ, Zhu X, Yu HT, Liang ZJ, Gou X, Chen Y
- 4817** Rare coexistence of multiple manifestations secondary to thalamic hemorrhage: A case report
Yu QW, Ye TF, Qian WJ
- 4823** Anderson-Fabry disease presenting with atrial fibrillation as earlier sign in a young patient: A case report
Kim H, Kang MG, Park HW, Park JR, Hwang JY, Kim K
- 4829** Long-term response to avelumab and management of oligoprogression in Merkel cell carcinoma: A case report
Leão I, Marinho J, Costa T
- 4837** Central pontine myelinolysis mimicking glioma in diabetes: A case report
Shi XY, Cai MT, Shen H, Zhang JX
- 4844** Microscopic transduodenal excision of an ampullary adenoma: A case report and review of the literature
Zheng X, Sun QJ, Zhou B, Jin M, Yan S
- 4852** Growth hormone cocktail improves hepatopulmonary syndrome secondary to hypopituitarism: A case report
Ji W, Nie M, Mao JF, Zhang HB, Wang X, Wu XY
- 4859** Low symptomatic COVID-19 in an elderly patient with follicular lymphoma treated with rituximab-based immunotherapy: A case report
Łęcki S, Wyżgolik K, Nicze M, Georgiew-Nadziakiewicz S, Chudek J, Wdowiak K

- 4866** Adult rhabdomyosarcoma originating in the temporal muscle, invading the skull and meninges: A case report
Wang GH, Shen HP, Chu ZM, Shen J
- 4873** *Listeria monocytogenes* bacteremia in a centenarian and pathogen traceability: A case report
Zhang ZY, Zhang XA, Chen Q, Wang JY, Li Y, Wei ZY, Wang ZC

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Shingo Tsujinaka, MD, PhD, Assistant Professor, Senior Lecturer, Surgeon, Department of Surgery, Saitama Medical Center, Jichi Medical University, Saitama 330-8503, Japan. tsujinakas@omiya.jichi.ac.jp

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The WJCC is now indexed in Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, Scopus, PubMed, and PubMed Central. The 2020 Edition of Journal Citation Reports® cites the 2019 impact factor (IF) for WJCC as 1.013; IF without journal self cites: 0.991; Ranking: 120 among 165 journals in medicine, general and internal; and Quartile category: Q3. The WJCC's CiteScore for 2019 is 0.3 and Scopus CiteScore rank 2019: General Medicine is 394/529.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Ji-Hong Lin; Production Department Director: Xiang Li; Editorial Office Director: Jin-Lai Wang.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Dennis A Bloomfield, Sandro Vento, Bao-Gan Peng

EDITORIAL BOARD MEMBERS

<https://www.wjnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

June 26, 2021

COPYRIGHT

© 2021 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>

Severe hematuria due to vesical varices in a patient with portal hypertension: A case report

Zong-Jie Wei, Xin Zhu, Hai-Tao Yu, Zong-Jian Liang, Xin Gou, Yong Chen

ORCID number: Zong-Jie Wei 0000-0001-7102-4278; Xin Zhu 0000-0002-2773-4229; Hai-Tao Yu 0000-0002-9745-8418; Zong-Jian Liang 0000-0002-8880-7268; Xin Gou 0000-0003-3062-209X; Yong Chen 0000-0001-8054-0856.

Author contributions: Wei ZJ and Zhu X collected the data, reviewed the literature, and contributed to manuscript drafting; Chen Y, Liang ZJ, and Yu HT were the patient's surgeons and contributed to manuscript drafting; Chen Y and Gou X were responsible for the revision of the manuscript for important intellectual content; all authors issued final approval for the version to be submitted.

Informed consent statement: Informed written consent was obtained from the patient for publication of this report and any accompanying images.

Conflict-of-interest statement: The authors declare that they have no conflicts of interest to report.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Open-Access: This article is an open-access article that was

Zong-Jie Wei, Xin Zhu, Hai-Tao Yu, Zong-Jian Liang, Xin Gou, Yong Chen, Department of Urology, The First Affiliated Hospital of Chongqing Medical University, Chongqing 400016, China

Corresponding author: Yong Chen, MD, Associate Professor, Department of Urology, The First Affiliated Hospital of Chongqing Medical University, No. 1 Youyi Road, Yuanjiagang, Yuzhong District, Chongqing 400016, China. tankchenyong@126.com

Abstract

BACKGROUND

Hematuria is one of the most common clinical symptoms for urologists and is typically observed in urinary system tumors, prostate hyperplasia, and urinary stone disease. Hematuria due to vesical varices is very rare, and only a few cases have been reported since 1989. We report the first case of vesical varices due to portal hypertension with aberrant development and functioning of the genitourinary system along with the complete diagnosis and treatment process.

CASE SUMMARY

This patient was a 53-year-old man with a history of aberrant development of the genitourinary system and hepatitis B-associated cirrhosis. He was admitted to the emergency department with severe hematuria and bladder clot tamponade. Many abnormally dilated blood vessels were found surrounding the bladder in the pelvis by color Doppler ultrasound, contrast-enhanced computed tomography, and three-dimensional visualization technology. It was difficult to perform transurethral cystoscopy and hemostasis in this patient, so we performed open surgical bladder exploration for hemostasis and surgical devascularization around the bladder.

CONCLUSION

Urologists should improve the understanding of the pathophysiology, clinical manifestations, diagnosis, and treatment of vesical varices. This case may be presented as a reference for the diagnosis and management of severe hematuria due to vesical varices.

Key Words: Vesical varices; Portal hypertension; Three-dimensional visualization technology; Case report

©The Author(s) 2021. Published by Baishideng Publishing Group Inc. All rights reserved.

selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Specialty type: Urology and nephrology

Country/Territory of origin: China

Peer-review report's scientific quality classification

Grade A (Excellent): 0
Grade B (Very good): B, B, B
Grade C (Good): C
Grade D (Fair): 0
Grade E (Poor): 0

Received: January 25, 2021

Peer-review started: January 25, 2021

First decision: March 25, 2021

Revised: April 2, 2021

Accepted: April 23, 2021

Article in press: April 23, 2021

Published online: June 26, 2021

P-Reviewer: Arguelles E, Garbuzenko DV, Xiol X

S-Editor: Zhang H

L-Editor: Wang TQ

P-Editor: Yuan YY



Core Tip: Hematuria due to vesical varices is very rare. Here, we report a case of vesical varices due to portal hypertension with aberrant development and functioning of the genitourinary system, review the literature, and discuss its pathophysiology, clinical manifestations, diagnosis, and treatment.

Citation: Wei ZJ, Zhu X, Yu HT, Liang ZJ, Gou X, Chen Y. Severe hematuria due to vesical varices in a patient with portal hypertension: A case report. *World J Clin Cases* 2021; 9(18): 4810-4816

URL: <https://www.wjgnet.com/2307-8960/full/v9/i18/4810.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v9.i18.4810>

INTRODUCTION

Esophageal and gastric fundic varices are common complications of portal hypertension caused by liver cirrhosis[1]. Varicose veins formed by the collateral branches of the portal vein in other places are less common and are called ectopic varices[2]. Ectopic varices are mainly located in the duodenum, jejunum, ileum, colon, rectum, and intestinal fistulas, whereas varicose veins around the bladder are extremely rare [3]. We present herein the first case of vesical varices due to portal hypertension with aberrant development and functioning of the genitourinary system and discuss its pathophysiology, clinical manifestations, diagnosis, and treatment.

CASE PRESENTATION

Chief complaints

A 53-year-old man was referred to the Emergency Department of our hospital with severe hematuria and a massive bladder clot.

History of past illness

The patient had a history of bilateral cryptorchidism since childhood and was untreated and had hepatitis B-associated cirrhosis for 16 years. He underwent splenectomy with devascularization surgery of the lower esophagus and proximal stomach 10 years ago due to hematemesis and melena.

Physical examination

The physical examination revealed uplift of the suprapubic region and dullness percussion. His pubic hair was sparsely distributed, the penis and scrotum were underdeveloped, and the testis was impalpable in the scrotum (Figure 1).

Laboratory examinations

Blood analysis revealed an abnormal hemogram, including $3.09 \times 10^9/\text{L}$ red blood cells (normal range: $3.5\text{--}5.5 \times 10^9/\text{L}$) with 9.0 g/dL hemoglobin (normal range: 12.0-15.5 g/dL) and normal leukocytic and platelet counts. Prothrombin and partial thromboplastin times were normal, and D-dimer level was slightly increased at 0.85 mg/L. The results of liver and kidney function were normal. Serological assays for markers of hepatitis B were positive. The levels of serum tumor markers (CEA, CA 19-9, CA 12-5, PSA, CEA, and AFP) were all within normal limits.

Imaging examinations

Color Doppler ultrasound demonstrated the enlargement of the portal vein with a main trunk diameter of approximately 14.8 mm and many twisted tube-like echoes around the bladder, which were connected to the bilateral iliac veins. Color Doppler flow imaging showed a color flow signal inside the tube-like echoes (Figure 2). Computed tomography (CT) revealed multiple tortuous and thickened veins on the anterior and both sidewalls of the bladder and enlargement of the inferior mesenteric veins (Figures 3 and 4). Three-dimensional (3D) visualization technology clearly revealed many abnormally dilated blood vessels surrounding the bladder in the pelvis. In this patient, the dilated vesical varices on the right side drained into the



Figure 1 Physical examination showed that the penis and scrotum were underdeveloped, and the testis was impalpable in the scrotum.

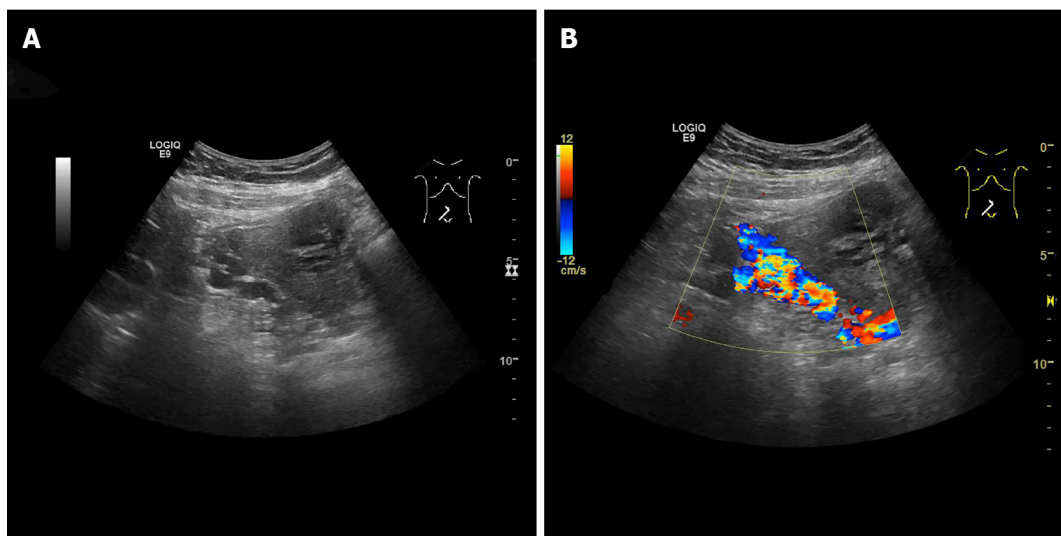


Figure 2 Color Doppler ultrasound images. A: Color Doppler ultrasound demonstrated many twisted tube-like echoes around the bladder; B: Color Doppler flow imaging showed color flow signal inside the tube-like echoes.

internal iliac vein, and those on the left side were connected with the inferior mesenteric vein and finally entered the splenic vein (Figure 5).

FINAL DIAGNOSIS

The final diagnosis of the presented case was vesical varices.

TREATMENT

After entering the hospital, the patient underwent indwelling catheterization and continuous bladder irrigation to prevent bladder clot tamping. In the process of continuous bladder irrigation, a large number of blood clots were flushed out. He was given symptomatic treatment, including hemostasis drugs (hemocoagulase atrox and carbazochrome sodium sulfonate) and fluid replacement, but the patient's hemoglobin continued to decrease. Considering the patient's continuous bladder bleeding, an open bladder exploration operation was performed imminently. During the operation, a large number of tortuous and swollen veins were observed in the posterior and top

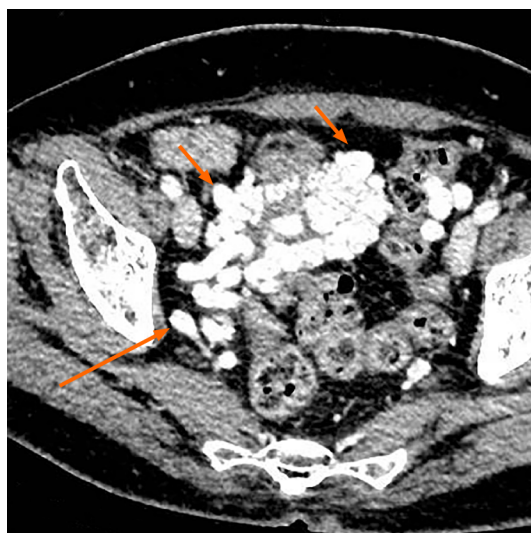


Figure 3 Axial contrast-enhanced computed tomography image demonstrating multiple tortuous and thickened veins on the anterior wall and both sidewalls of the bladder (short arrow). The dilated vesical varices on the right side drained into the internal iliac vein (long arrow).



Figure 4 Contrast-enhanced coronal computed tomography-reconstructed images demonstrating abnormally dilated blood vessels (short arrow) surrounding the bladder, and the enlargement of inferior mesenteric veins (long arrow).

walls of the urinary bladder, twisting each other into a mass (Figure 6). The vesical varices on the left side continued with the inferior mesenteric vein. On the right side, the vesical varices drained into the right iliac vessels. After clamping the left side of vesical varices with hemostat, the tension of the venous wall was reduced. After incising the less vascularized area of the anterior wall of the bladder with an ultrasonic knife and clearing the blood clot, venous swelling in the urinary bladder trigone was observed, and a globular raised tortuous vein was observed at the inner side of the right ureteral opening with a 4 mm rupture at the top. The bleeding vein was sewn to stop the bleeding. We separated the vesical varices on both sides of the bladder and ligated and disrupted the large veins.

OUTCOME AND FOLLOW-UP

The operation went smoothly. The patient was followed 3 mo later, and hematuria did not occur again.

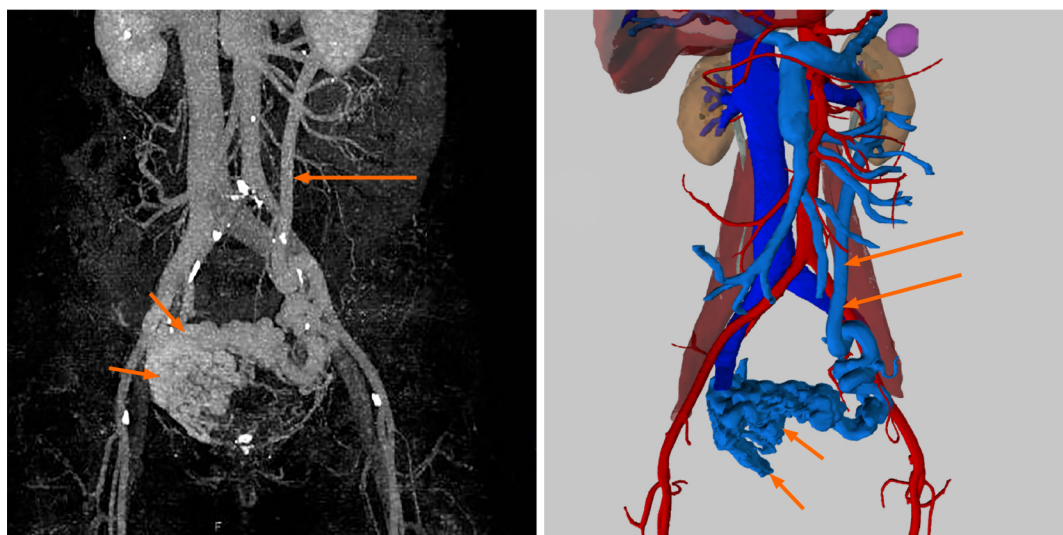


Figure 5 Three-dimensional visualization technology clearly showed that there were many abnormally dilated blood vessels surrounding the bladder in the pelvis (short arrow). In this patient, the dilated vesical varices on the right side drained into the internal iliac vein and on the left side was connected with the inferior mesenteric vein (long arrow), and finally entered into the splenic vein.



Figure 6 A large number of tortuous and swollen veins were seen surrounding the urinary bladder, twisting each other into a mass.

DISCUSSION

Esophageal and gastric fundic varices are common complications of portal hypertension, and varicose veins formed by the collateral branches of the portal vein in other unusual places are called ectopic varices[2], which are mainly located in the duodenum, jejunum, ileum, colon, rectum, intestinal fistulas, *etc.* Ectopic varices account for 3.5% of portal hypertensive patients, and bladder varices are even rarer at approximately 0.25%[3].

The causes of bladder varicose veins can be divided into secondary and primary causes. Secondary vesical varices are related to portal hypertension[4-7], schistosomiasis[8], pregnancy[9], ataxia[10], Klippel-Trenaunay syndrome[11], iliac vein thrombosis, and retroperitoneal fibrosis[12]. In previous reports, vesical varices caused by portal hypertension were the most common. Ectopic varices often appear when the usual collateral veins from portal hypertension may have been disrupted by surgical ligation, sclerotherapy, adhesions, and other treatments. Kim *et al*[7] described a patient who had not undergone prior interventions that altered portal pressure dynamics and had vesical varices with portal hypertension. In addition, Lipsich *et al* [13] and Lim *et al*[14] each reported a case of ectopic varices in a male patient in the bowel who had a history of bladder substitution with ileal segments due to urinary

system disease. Primary vesical varices are even rarer and are typically related to anatomical variations. Since 1996, only two cases have been reported. The first case was an adult man reported by Bawany *et al*[15] in 2009, and the second case was a 4-year-old girl reported by Hou *et al*[16] in 2012.

The present patient had a history of portal hypertension due to hepatitis B-associated cirrhosis. With the help of CT examination and 3D visualization technology, it was clearly noted that the vesical varices communicated with the splenic vein and portal vein through the inferior mesenteric vein from the left side and the systemic circulation through the internal iliac vein on the right side. In this patient, long-term liver cirrhosis led to obstruction of portal venous return, which led to increased portal venous pressure and enlargement of the portal vein and upper and lower mesenteric veins. Since the patient had a history of splenectomy with devascularization surgery, the usual collateral veins that communicate the portal vein and the superior vena cava have been disrupted, and the vesical venous plexus became the communicating branch between the portal vein and the inferior vena cava. The increased portal venous pressure can only be conducted through the splenic vein and the inferior mesenteric vein to the bladder vein and then communicate with the inferior vena cava, resulting in tortuosity and dilation of the vesical venous plexus.

The current diagnostic methods for vesical varices are color Doppler and CT; however, 3D visualization technology shows an advantage in displaying the overall situation of dilated veins. As a noninvasive examination, color Doppler has been adopted in the early diagnosis of vesical varices[17], but it cannot reflect the overall blood flow pattern of dilated veins. Conventional CT examination requires the doctor to make subjective assumptions about the 3D models of anatomical parts based on two-dimensional images, which have certain limitations. 3D visualization technology is a 3D digital model reconstructed based on imaging data that has been widely used in urologic disease. It can accurately display the anatomical characteristics of dilated veins and provide more accurate data and positioning for the formulation of surgical plans. To date, cystoscopy has been considered the gold standard for the diagnosis of vesical varices, and we can clearly see tortuous blood vessel masses in the bladder wall through cystoscopy. However, the patient reported here has not been treated for bilateral cryptorchidism since childhood, resulting in aberrant development and functioning of the genitourinary system. Thus, it is difficult to perform cystoscopy. Percutaneous transhepatic portography is also an important method for diagnosing vesical varices, but it is usually not recommended as the first-choice examination due to its invasive nature.

Currently, no uniform opinions on the treatment of vesical varices are available. Lim *et al*[14] used balloon-occluded percutaneous transhepatic obliteration to treat dilated veins of the bladder and achieved good results given that cystoscopy and CT showed the disappearance of vesical varices after 6 wk. In addition, Sivalingam *et al*[18] and Parmar *et al*[19] introduced a treatment modality in treatment of bleeding vesical varices using endoscopic injection of N-butyl cyanoacrylate and achieved satisfactory results. However, Herden *et al*[6] believed that in symptomatic vesical varices, surgical devascularization around the bladder, laser sclerosis, and coagulation are usually only temporarily effective. Successful long-term treatment involves surgical decompression of portal hypertension by complete or selective portocaval shunts, transjugular intrahepatic portosystemic shunts, or liver transplantation. The bleeding site of symptomatic vesical varices is usually located in the bladder trigone, and it is often clinically manifested as a large amount of gross hematuria, which cannot stop on its own and easily leads to hemorrhagic shock. Drugs and surgery are the main treatment methods. It was difficult to perform transurethral cystoscopy and hemostasis in this patient. Finally, we performed open surgical bladder exploration for hemostasis and surgical devascularization around the bladder.

CONCLUSION

Hematuria is a common disease in urology, but hematuria caused by varicose veins of the bladder is relatively rare. Urologists should improve the understanding of the pathophysiology, clinical manifestations, diagnosis, and treatment of vesical varices. For patients with massive hematuria, the possibility of this disease should be considered, especially in patients with portal hypertension who have undergone interventions altering portal pressure dynamics and flow patterns. CT and 3D visualization technology can clarify the blood flow direction of dilated veins and provide a reference for the treatment of patients.

REFERENCES

- 1 **Garcia-Tsao G**, Bosch J. Management of varices and variceal hemorrhage in cirrhosis. *N Engl J Med* 2010; **362**: 823-832 [PMID: [20200386](#) DOI: [10.1056/NEJMra0901512](#)]
- 2 **Helmy A**, Al Kahtani K, Al Fadda M. Updates in the pathogenesis, diagnosis and management of ectopic varices. *Hepatol Int* 2008; **2**: 322-334 [PMID: [19669261](#) DOI: [10.1007/s12072-008-9074-1](#)]
- 3 **Sato T**, Akaiki J, Toyota J, Karino Y, Ohmura T. Clinicopathological features and treatment of ectopic varices with portal hypertension. *Int J Hepatol* 2011; **2011**: 960720 [PMID: [21994879](#) DOI: [10.4061/2011/960720](#)]
- 4 **Sano K**, Shuin T, Takebayashi S, Sugawara T, Moriyama M, Kinoshita Y, Kubota Y, Hosaka M. A case of vesical varices as a complication of portal hypertension and manifested gross hematuria. *J Urol* 1989; **141**: 369-371 [PMID: [2913361](#) DOI: [10.1016/s0022-5347\(17\)40771-3](#)]
- 5 **Gaspar Y**, Detry O, de Leval J. Vesical varices in a patient with portal hypertension. *N Engl J Med* 2001; **345**: 1503-1504 [PMID: [11794214](#) DOI: [10.1056/NEJM200111153452018](#)]
- 6 **Herden U**, Seiler CA, Candinas D, Schmid SW. Bladder tamponade due to vesical varices during orthotopic liver transplantation. *Transpl Int* 2008; **21**: 1105-1106 [PMID: [18680484](#) DOI: [10.1111/j.1432-2277.2008.00732.x](#)]
- 7 **Kim M**, Al-Khalili R, Miller J. Vesical varices: an unusual presentation of portal hypertension. *Clin Imaging* 2015; **39**: 920-922 [PMID: [25982495](#) DOI: [10.1016/j.clinimag.2015.04.011](#)]
- 8 **Bruet A**, Fingerhut A, Lopez Y, Bergue A, Taugourdeau P, Mathe C, Hillion D, Fendler JP. Ileal varices revealed by recurrent hematuria in a patient with portal hypertension and Mekong Schistosomiasis. *Am J Gastroenterol* 1983; **78**: 346-350 [PMID: [6859013](#)]
- 9 **Hallamore SL**, Grills RJ, Neerhut G, Lawrentschuk N. Submucosal vesical varicosities causing hematuria and retention of urine in pregnancy: cystovarix. *Am J Obstet Gynecol* 2007; **196**: e29-e30 [PMID: [17466671](#) DOI: [10.1016/j.ajog.2006.10.864](#)]
- 10 **Suzuki K**, Tsugawa K, Oki E, Morio T, Ito E, Tanaka H. Vesical varices and telangiectasias in a patient with ataxia telangiectasia. *Pediatr Nephrol* 2008; **23**: 1005-1008 [PMID: [18193295](#) DOI: [10.1007/s00467-007-0710-0](#)]
- 11 **Rinnab L**, Paiss T, Küfer R. [Klippel-Trénaunay syndrome. A rare cause of recurrent macrohematuria: case report]. *Urologe A* 2006; **45**: 739-741 [PMID: [16598450](#) DOI: [10.1007/s00120-006-1033-7](#)]
- 12 **Koshy CG**, Govil S, Shyamkumar NK, Devasia A. Bladder varices--rare cause of painless hematuria in idiopathic retroperitoneal fibrosis. *Urology* 2009; **73**: 58-59 [PMID: [18722652](#) DOI: [10.1016/j.urology.2008.06.039](#)]
- 13 **Lipsich J**, Rojas L, Alonso J, Teplisky D, Halac A, Alvarez F, Sierre S. Massive hematuria due to portal hypertension in a child with bladder augmentation for vesical exstrophy. *J Pediatr Urol* 2008; **4**: 236-238 [PMID: [18631935](#) DOI: [10.1016/j.jpuro.2007.09.002](#)]
- 14 **Lim DH**, Kim DH, Kim MS, Kim CS. Balloon-occluded percutaneous transhepatic obliteration of isolated vesical varices causing gross hematuria. *Korean J Radiol* 2013; **14**: 94-96 [PMID: [23323037](#) DOI: [10.3348/kjr.2013.14.1.94](#)]
- 15 **Bawany FA**, Ghirano RA, Bayabani SR. Primary vesical varices: a cause of gross haematuria. *J Pak Med Assoc* 2009; **59**: 332-334 [PMID: [19438145](#)]
- 16 **Hou Y**, Xue Y, Yang Y, Sun RG. Vesical varices causing gross hematuria in a four-year-old girl. *Urology* 2012; **79**: 902-905 [PMID: [22119255](#) DOI: [10.1016/j.urology.2011.08.038](#)]
- 17 **Sato T**. Transabdominal color Doppler ultrasonography for the diagnosis of small intestinal and vesical varices in a patient successfully treated with percutaneous transhepatic obliteration. *Clin J Gastroenterol* 2010; **3**: 214-218 [PMID: [26190250](#) DOI: [10.1007/s12328-010-0164-y](#)]
- 18 **Sivalingam S**, Manikam R, Razack MPdH, Mohamad N. Endoscopic Injection of Histoacryl® in the Treatment of Recurrent Hematuria Secondary to Bladder Varices. *Int J Case Rep Imag* 2011; **2** [DOI: [10.5348/ijcri-2011-10-58-CR-2](#)]
- 19 **Parmar K**, Rathi S, Khanna A, Gupta M, Singh A, Singh SK, Singh V. Portal Hypertensive Vesiculopathy: A Rare Cause of Hematuria and a Unique Management Strategy. *Urology* 2018; **115**: e7-e8 [PMID: [29548866](#) DOI: [10.1016/j.urology.2018.02.015](#)]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: bpgoffice@wjgnet.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

