

World Journal of *Clinical Cases*

World J Clin Cases 2018 December 6; 6(15): 869-1072



REVIEW

- 869 Biomarkers in colorectal cancer: Current clinical utility and future perspectives
Vacante M, Borzi AM, Basile F, Biondi A
- 882 Inflammation and de-differentiation in pancreatic carcinogenesis
Seimiya T, Otsuka M, Iwata T, Tanaka E, Suzuki T, Sekiba K, Yamagami M, Ishibashi R, Koike K

MINIREVIEWS

- 892 Management of gastroesophageal reflux disease: Patient and physician communication challenges and shared decision making
Klenzak S, Danelisen I, Brannan GD, Holland MA, van Tilburg MA
- 901 Non-small bowel lesion detection at small bowel capsule endoscopy: A comprehensive literature review
Koffas A, Laskaratos FM, Epstein O

ORIGINAL ARTICLE

Case Control Study

- 908 Genetic associations of inflammatory bowel disease in a South Asian population
Niriella MA, Liyanage IK, Kodisinghe SK, De Silva AP, Rajapakshe N, Nanayakkara SD, Luke D, Silva T, Nawarathne M, Peiris RK, Kalubovila UP, Kumarasena SR, Dissanayake VH, Jayasekara RW, de Silva HJ
- 916 Clinical relevance of atrial septal aneurysm and patent foramen ovale with migraine
He L, Cheng GS, Du YJ, Zhang YS

Retrospective Study

- 922 Current trends of liver cirrhosis in Mexico: Similitudes and differences with other world regions
Méndez-Sánchez N, Zamarripa-Dorsey F, Panduro A, Purón-González E, Coronado-Alejandro EU, Cortez-Hernández CA, Higuera de la Tijera F, Pérez-Hernández JL, Cerda-Reyes E, Rodríguez-Hernández H, Cruz-Ramón VC, Ramírez-Pérez OL, Aguilar-Olivos NE, Rodríguez-Martínez OF, Cabrera-Palma S, Cabrera-Álvarez G
- 931 Retrograde intrarenal surgery vs miniaturized percutaneous nephrolithotomy to treat lower pole renal stones 1.5-2.5 cm in diameter
Li MM, Yang HM, Liu XM, Qi HG, Weng GB

Clinical Trials Study

- 936 Comparative study on operative trauma between microwave ablation and surgical treatment for papillary thyroid microcarcinoma

Xu B, Zhou NM, Cao WT, Gu SY

Observational Study

- 944 Association between functional abdominal pain disorders and asthma in adolescents: A cross-sectional study

Kumari MV, Devanarayana NM, Amarasiri L, Rajindrajith S

Prospective Study

- 952 Evaluating mucosal healing using colon capsule endoscopy predicts outcome in patients with ulcerative colitis in clinical remission

Takano R, Osawa S, Uotani T, Tani S, Ishida N, Tamura S, Yamade M, Iwaizumi M, Hamaya Y, Furuta T, Miyajima H, Sugimoto K

META-ANALYSIS

- 961 Probiotic Medilac-S® for the induction of clinical remission in a Chinese population with ulcerative colitis: A systematic review and meta-analysis

Sohail G, Xu X, Christman MC, Tompkins TA

- 985 Impact of body mass index on short-term outcomes of laparoscopic gastrectomy in Asian patients: A meta-analysis

Chen HK, Zhu GW, Huang YJ, Zheng W, Yang SG, Ye JX

- 995 Scoring systems for prediction of mortality in decompensated liver cirrhosis: A meta-analysis of test accuracy

Wu SL, Zheng YX, Tian ZW, Chen MS, Tan HZ

CASE REPORT

- 1007 Gangrenous cholecystitis: A silent but potential fatal disease in patients with diabetic neuropathy. A case report

Mehrzad M, Jehle CC, Roussel LO, Mehrzad R

- 1012 Successful endovascular treatment of endoscopically unmanageable hemorrhage from a duodenal ulcer fed by a renal artery: A case report

Anami S, Minamiguchi H, Shibata N, Koyama T, Sato H, Ikoma A, Nakai M, Yamagami T, Sonomura T

- 1018** Didactic surgical experience of thyroid metastasis from renal cell carcinoma: A case report
Yamauchi M, Kai K, Shibamiya N, Shimazu R, Monji M, Suzuki K, Kakinoki H, Tobu S, Kuratomi Y
- 1024** Gastric cancer with severe immune thrombocytopenia: A case report
Zhao ZW, Kang WM, Ma ZQ, Ye X, Yu JC
- 1029** Injury to the axillary artery and brachial plexus caused by a closed floating shoulder injury: A case report
Chen YC, Lian Z, Lin YN, Wang XJ, Yao GF
- 1036** Pancreatic panniculitis and solid pseudopapillary tumor of the pancreas: A case report
Zhang MY, Tian BL
- 1042** Intermittent abdominal pain accompanied by defecation difficulties caused by Chilaiditi syndrome: A case report
Luo XG, Wang J, Wang WL, Yu CZ
- 1047** Endoscopic titanium clip closure of gastric fistula after splenectomy: A case report
Yu J, Zhou CJ, Wang P, Wei SJ, He JS, Tang J
- 1053** Successful steroid treatment for acute fibrinous and organizing pneumonia: A case report
Ning YJ, Ding PS, Ke ZY, Zhang YB, Liu RY
- 1059** Sub-Tenon's urokinase injection-assisted vitrectomy in early treatment of suprachoroidal hemorrhage: Four cases report
Chai F, Ai H, Deng J, Zhao XQ
- 1067** Plexiform fibromyxoma of the small bowel: A case report
Zhang WG, Xu LB, Xiang YN, Duan CH

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Steven M Schwarz, MD, Professor, Department of Pediatrics, Children's Hospital at Downstate, SUNY-Downstate Medical Center, Brooklyn, NY 11203, United States

AIM AND SCOPE

World Journal of Clinical Cases (*World J Clin Cases*, *WJCC*, online ISSN 2307-8960, DOI: 10.12998) is a peer-reviewed open access academic journal that aims to guide clinical practice and improve diagnostic and therapeutic skills of clinicians.

The primary task of *WJCC* is to rapidly publish high-quality Autobiography, Case Report, Clinical Case Conference (Clinicopathological Conference), Clinical Management, Diagnostic Advances, Editorial, Field of Vision, Frontier, Medical Ethics, Original Articles, Clinical Practice, Meta-Analysis, Minireviews, Review, Therapeutics Advances, and Topic Highlight, in the fields of allergy, anesthesiology, cardiac medicine, clinical genetics, clinical neurology, critical care, dentistry, dermatology, emergency medicine, endocrinology, family medicine, gastroenterology and hepatology, geriatrics and gerontology, hematology, immunology, infectious diseases, internal medicine, obstetrics and gynecology, oncology, ophthalmology, orthopedics, otolaryngology, pathology, pediatrics, peripheral vascular disease, psychiatry, radiology, rehabilitation, respiratory medicine, rheumatology, surgery, toxicology, transplantation, and urology and nephrology.

INDEXING/ABSTRACTING

World Journal of Clinical Cases (*WJCC*) is now indexed in PubMed, PubMed Central, Science Citation Index Expanded (also known as SciSearch®), and Journal Citation Reports/Science Edition. The 2018 Edition of Journal Citation Reports cites the 2017 impact factor for *WJCC* as 1.931 (5-year impact factor: N/A), ranking *WJCC* as 60 among 154 journals in Medicine, General and Internal (quartile in category Q2).

EDITORS FOR THIS ISSUE

Responsible Assistant Editor: *Xiang Li*
Responsible Electronic Editor: *Wen-Wen Tan*
Proofing Editor-in-Chief: *Lian-Sheng Ma*

Responsible Science Editor: *Ying Dou*
Proofing Editorial Office Director: *Jin-Lei Wang*

NAME OF JOURNAL
World Journal of Clinical Cases

ISSN
 ISSN 2307-8960 (online)

LAUNCH DATE
 April 16, 2013

FREQUENCY
 Semimonthly

EDITORS-IN-CHIEF
Sandro Vento, MD, Department of Internal Medicine, University of Botswana, Private Bag 00713, Gaborone, Botswana

EDITORIAL BOARD MEMBERS
 All editorial board members resources online at <http://www.wjgnet.com/2307-8960/editorialboard.htm>

EDITORIAL OFFICE
 Jin-Lei Wang, Director

World Journal of Clinical Cases
 Baishideng Publishing Group Inc
 7901 Stoneridge Drive, Suite 501, Pleasanton, CA 94588, USA
 Telephone: +1-925-2238242
 Fax: +1-925-2238243
 E-mail: editorialoffice@wjgnet.com
 Help Desk: <http://www.f6publishing.com/helpdesk>
<http://www.wjgnet.com>

PUBLISHER
 Baishideng Publishing Group Inc
 7901 Stoneridge Drive, Suite 501, Pleasanton, CA 94588, USA
 Telephone: +1-925-2238242
 Fax: +1-925-2238243
 E-mail: bpgoffice@wjgnet.com
 Help Desk: <http://www.f6publishing.com/helpdesk>
<http://www.wjgnet.com>

PUBLICATION DATE
 December 6, 2018

COPYRIGHT
 © 2018 Baishideng Publishing Group Inc. Articles published by this Open Access journal are distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits use, distribution, and reproduction in any medium, provided the original work is properly cited, the use is non commercial and is otherwise in compliance with the license.

SPECIAL STATEMENT
 All articles published in journals owned by the Baishideng Publishing Group (BPG) represent the views and opinions of their authors, and not the views, opinions or policies of the BPG, except where otherwise explicitly indicated.

INSTRUCTIONS TO AUTHORS
<http://www.wjgnet.com/bpg/gerinfo/204>

ONLINE SUBMISSION
<http://www.f6publishing.com>

Gastric cancer with severe immune thrombocytopenia: A case report

Zhe-Wei Zhao, Wei-Ming Kang, Zhi-Qiang Ma, Xin Ye, Jian-Chun Yu

Zhe-Wei Zhao, Wei-Ming Kang, Zhi-Qiang Ma, Xin Ye, Jian-Chun Yu, Department of General Surgery, Peking Union Medical College Hospital, Chinese Academy of Medical Science and Peking Union Medical College, Beijing 100730, China

ORCID number: Zhe-Wei Zhao (0000-0002-0157-7472); Wei-Ming Kang (0000-0001-6968-1394); Zhi-Qiang Ma (0000-0001-6968-1396); Xin Ye (0000-0001-6968-1392); Jian-Chun Yu (0000-0002-8250-7475).

Author contributions: Zhao ZW and Yu JC drafted this manuscript; Kang WM and Yu JC performed the operation for this patient; Ma ZQ and Ye X analyzed the patient data and prepared the figures; all authors read and approved the final manuscript.

Informed consent statement: Consent was obtained from relatives of 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.

CARE Checklist (2013) statement: The authors have read the CARE Checklist (2013), and the manuscript was prepared and revised according to the CARE Checklist (2013).

Open-Access: This article is an open-access article which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (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

Corresponding author to: Jian-Chun Yu, MD, Chief Doctor, Professor, Department of General Surgery, Peking Union Medical College Hospital, Chinese Academy of Medical Science and Peking Union Medical College, No. 1, Shuaifuyuan, Dongcheng District, Beijing 100730, China. yjcpumch@126.com Telephone: +86-10-69155067

Fax: +86-10-69155068

Received: August 16, 2018

Peer-review started: August 17, 2018

First decision: October 8, 2018

Revised: October 31, 2018

Accepted: November 7, 2018

Article in press: November 7, 2018

Published online: December 6, 2018

Abstract

BACKGROUND

Primary immune thrombocytopenia (ITP) is a rare autoimmune disease associated with a high bleeding risk. For those patients with gastric cancer, surgical treatment may be the only option for therapy. Here, we present the first case of gastric cancer with severe and medically refractory ITP treated by radical resection of the gastric cancer and splenectomy.

CASE SUMMARY

A 54-year-old female patient was admitted to our surgical department with a 2 mo history of decreased appetite, nausea, vomiting, and weight loss, which progressed to difficulty in feeding 3 d prior to her visit. According to her medical history, she was diagnosed with refractory ITP [platelets (PLT), 3000-8000/ μ L] 10 years ago. After admission, the patient underwent a splenectomy and a distal subtotal gastrectomy (D2 radical resection) with Roux-en-Y reconstruction simultaneously. She had an uneventful postoperative course with a slight increase in her PLT count. This case is unique in terms of the patient's complication of severe and medically refractory ITP.

CONCLUSION

Simultaneous splenectomy, preoperative PLT transfusion, and early enteral nutrition were important treatment methods for helping this patient recover.

Key words: Gastric cancer; Immune thrombocytopenia; Surgical treatment; Case report

© **The Author(s) 2018.** Published by Baishideng Publishing Group Inc. All rights reserved.

Core tip: Immune thrombocytopenia (ITP) is a rare autoimmune disease with a reduced platelet count. Severe and medically refractory thrombocytopenia is an absolute contraindication to chemotherapy or radiotherapy. For those patients with a malignant tumor, surgical treatment may be the only option despite a high risk of bleeding. This case might contribute to improving our understanding of the behavior and perioperative management of severe and medically refractory ITP patients with gastric cancer.

Zhao ZW, Kang WM, Ma ZQ, Ye X, Yu JC. Gastric cancer with severe immune thrombocytopenia: A case report. *World J Clin Cases* 2018; 6(15): 1024-1028 Available from: URL: <http://www.wjgnet.com/2307-8960/full/v6/i15/1024.htm> DOI: <http://dx.doi.org/10.12998/wjcc.v6.i15.1024>

INTRODUCTION

Primary immune thrombocytopenia (ITP), also known as idiopathic thrombocytopenia purpura, is an autoimmune disease associated with a reduced platelet (PLT) count without any obvious initiating and/or underlying cause. Severe and medically refractory thrombocytopenia is an absolute contraindication to chemotherapy or radiotherapy. For those patients with gastric cancer, surgical treatment may be the only option for therapy despite a high risk of bleeding. This uncommon condition can be worrisome for surgeons. Here, aiming to lay a foundation for future clinical work, we report the first case of gastric cancer complicated by severe and medically refractory ITP treated by subtotal gastrectomy and splenectomy and a review of the related literature.

CASE REPORT

A 54-year-old woman was admitted to our hospital with a 2-mo history of decreased appetite, nausea, vomiting, and weight loss, which progressed to difficulty in feeding 3 d prior to her visit. A rapid urease test and serum antibody testing demonstrated that she was negative for *Helicobacter pylori* (*H. pylori*). An upper gastrointestinal endoscopy showed irregular erosion on the pylorus with pyloric stenosis. Multiple mucosal biopsies were obtained, and a histological analysis revealed gastric adenocarcinoma. Serum levels of tumor markers were significantly elevated (CA19-9 273.1 U/mL and CA242 > 150.0 U/mL). Abdominal contrast-enhanced computed tomography revealed a thickening wall of the gastric antrum with significantly enhanced, multiple small lymph nodes around the stomach but no obvious retroperitoneal

lymph nodes, and a normal spleen. She worked in a plastics factory and was exposed to chemicals and radioactive materials for several years. She was diagnosed with ITP (PLT 3000-8000/ μ L) 10 years ago. Prednisolone therapy (80 mg/d for 2 wk) was started; and her PLT increased to 50000-60000/ μ L. However, PLT decreased to 3000-7000/ μ L immediately after reduction of corticosteroids. Then, dexamethasone therapy (40 mg/d for 4 d) was started. PLT increased to 170000/ μ L temporarily but decreased to 3000-7000/ μ L 3 d after therapy. Other medications including immunoglobulins (10 g/d for 4 d), androgen derivatives (danazol 400 mg/d for 3 mo), cyclosporine A (200 mg/d for 2 wk), and thrombopoietin (50 μ g/d for 7 d) were administered respectively. However, she no longer responded to any of these medical therapies. Other previous medical history included congenital ventricular septal defect and subclinical hypothyroidism. Her family history was unremarkable. On admission, her physical examination and blood biochemistry laboratory results were within normal limits. Hematological tests revealed a decreased PLT count of 5000/ μ L and a normal hemoglobin (HGB) level of 111 g/L. Subsequently, she presented with melena and bloody drainage which was observed in the nasogastric tube; the HGB and PLT decreased to 85 g/L and 1000/ μ L, respectively. Her general condition was examined before surgery. Because of decreased appetite and difficulty in feeding, her weight dropped to 66 kg from her normal weight of 80 kg (body mass index dropped from 30.1 kg/m² to 24.8 kg/m²). Although both cardiac function and pulmonary function were at normal levels, her high nutritional risk may affect the postoperative recovery.

The patient underwent a splenectomy and a distal subtotal gastrectomy (D2 radical resection) with a Roux-en-Y reconstruction simultaneously. A needle catheter jejunostomy was performed to ensure postoperative enteral nutrition (EN). In total, four pheresis units (one pheresis unit contains approximately $2.5-4.0 \times 10^{11}$ PLTs, equal to 10-12 whole blood donor units) of PLT were transfused. The patient's PLT counts fluctuated between 30000-60000/ μ L during the surgery and PLT were administered accordingly (one pheresis unit was administered 1 h before induction of anesthesia; two pheresis units administered during surgery; and one pheresis unit 2 h after surgery).

The patient resumed EN (oligopeptide, low-fat, isocaloric, non-residue diet; Peptisorb, Nutricia, Schiphol, The Netherlands) on the morning of the 2nd postoperative day. She had an uneventful postoperative course with a slight increase in the PLT count (Figure 1) and was discharged on the 15th postoperative day. The histopathological examination after the subtotal gastrectomy revealed a poorly differentiated gastric adenocarcinoma which had reached the serosal layer. The cancer had also metastasized to 3/30 lymph nodes. The pathological stage was pT4aN2M0, IIIA. There was no evidence of recurrence, and she showed a consistent and stable increase in the PLT count around 20000/ μ L for

Table 1 Cases of immune thrombocytopenia patients suffering with gastric malignant tumors

Ref.	PLT level (/μL)	Gastric tumor	<i>H. pylori</i>	Treatment for gastric tumor	Prognosis of gastric tumor
Bachmeyer <i>et al</i> ^[6] , 2000	40000	Gastric MALT lymphoma	Positive	Chemotherapy	-
Noda <i>et al</i> ^[7] , 2004	27000	Gastric MALT lymphoma	Positive	Endoscopic mucosal resection	Without recurrence in 2 yr
Wakata <i>et al</i> ^[8] , 2006	73000-10800	Gastric cancer	-	Subtotal gastrectomy and splenectomy	Without recurrence in 2 yr
Villias <i>et al</i> ^[9] , 2008	76000	Gastric cancer and GIST	-	Subtotal gastrectomy and splenectomy	-
Hamabe <i>et al</i> ^[10] , 2011	52000	Gastric cancer and gastric MALT lymphoma	Positive	Total gastrectomy and splenectomy	Without recurrence in 2 yr

MALT: Mucosal associated lymphoid tissue; *H. pylori*: *Helicobacter pylori*; GIST: Gastrointestinal stromal tumor; PLT: Platelet.

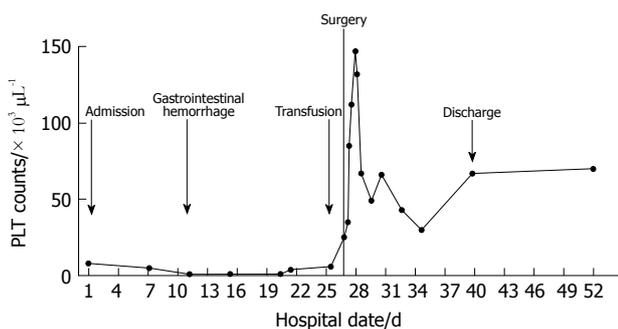


Figure 1 Platelet count fluctuation of the patient during hospitalization. PLT: Platelet.

about 2 years after the operation.

DISCUSSION

ITP is an immune-mediated disease associated with a reduced PLT count lower than 100000/μL^[1]. The mechanism of ITP includes that PLT membrane proteins become antigenic and stimulate the immune system resulting in thrombocytopenia due to immune-mediated PLT destruction and/or suppression of PLT production^[2]. Some studies defined very severe thrombocytopenia as PLT count < 10000/μL^[3]; however, some researchers suggest that the severity of the disease is based clinically on bleeding scores rather than a PLT count^[4,5]. In this case, the patient presented with gastrointestinal hemorrhage accompanied with acute anemia. According to Khellaf's bleeding score^[4], this patient had a high bleeding score (> 8), which indicated a severe ITP with a high risk of life-threatening hemorrhage. Patients are considered to have medically refractory ITP when they require treatment following failure to respond to medical treatment. Response was defined as PLT count > 30000/μL and at least a 2-fold increase in the baseline count and absence of bleeding^[1]. In this case, the patient was considered nonresponse to medication.

To the best of our knowledge, only five cases of ITP patients suffering with gastric malignant tumors have been reported in English in MEDLINE (Table 1)^[6-10]. Patients in these cases suffered mild ITP with a PLT level larger than 20000/μL. The commonest pathology is gastric cancer and gastric mucosa associated lymphoid

tissue (MALT) lymphoma. *H. pylori* may play a key role in the pathogenesis of both gastric malignant tumors and ITP. Noda *et al*^[7] reported a case of regression of ITP after resection of gastric MALT lymphoma and eradicating treatment of *H. pylori*. In terms of treatment, endoscopic resection could be performed only when the tumor is restricted to the mucosa during eradication therapy. Subtotal/total gastrectomy combined with splenectomy is the most appropriate treatment when tumors invade the submucosa. And this is the first case of gastric cancer with severe and medically refractory ITP. The extremely low PLT level led to a high risk of bleeding, especially during the perioperative period.

Corticosteroids with or without intravenous immunoglobulin (IVIg) are the standard first-line treatment for ITP patients with a PLT count < 30000/μL^[11]. For patients who have failed corticosteroid therapy, a splenectomy is recommended as a second-line treatment. According to recent research, a short-term response to a splenectomy was achieved in approximately 87% of ITP patients^[12-14]. Whereas in patients with a PLT count on admission of < 40000/μL, only 40% may achieve a long-term stable response^[14]. In our patient, the thrombocytopenia continued with PLT counts fluctuating between 3000-8000/μL and she showed a poor response to preoperative medical boosting. Considering its satisfactory and high response rates in short-term postoperative time, it is reasonable for patients to undergo a splenectomy in terms of low complication rates and low bleeding risk.

According to some studies, PLT transfusions were recommended only in a few life-threatening cases that require a rapid rise in PLT count to achieve hemostasis, such as intracranial hemorrhage or major surgery^[1,15]. Despite the short-term efficacy, PLT transfusion every 30 min to 8 h and a PLT transfusion in conjunction with IVIg or steroids have been effective for increasing PLT levels in emergency situations^[16-18]. Traditionally, for safety, most guidelines recommend a PLT count of at least 30000-50000/μL for prophylaxis during surgery^[19,20]. Recently, some researchers reported that a perioperative PLT transfusion might be unnecessary for a laparoscopic splenectomy in ITP patients^[21,22]. However, there is still a lack of evidence to guide preoperative PLT transfusions used as prophylaxis for surgery, especially for those

with a high bleeding risk. In this case, a PLT transfusion resulted in a rapid rise of PLT count ranging from 30000 to 60000/ μ L during the operation and ensured a successful surgery.

Postoperative patients with advanced gastric cancer generally suffer from various complications, such as infection and malnutrition^[23]. Early EN is important to implement as a way to accelerate rehabilitation of intestinal function and immune response in patients undergoing a gastrectomy, especially in patients with severe complications^[24]. Needle catheter jejunostomy was reported to be safe and progressive EN support could be implemented successfully^[25,26]. In this patient, the step-by-step EN feeding program was initiated on the 2nd postoperative day using the needle catheter jejunostomy.

In conclusion, we report a case of advanced gastric cancer complicated with severe and medically refractory ITP that was successfully cured by radical resection of the gastric cancer. Simultaneous splenectomy, preoperative PLT transfusion, and early EN were important assistances to the treatment of this patient.

ARTICLE HIGHLIGHTS

Case characteristics

The patient suffered from decreased appetite, nausea, vomiting, and weight loss for 2 mo with a past medical history of thrombocytopenia, which progressed to difficulty in feeding and gastrointestinal hemorrhage.

Clinical diagnosis

The patient was diagnosed with gastric cancer accompanied with severe and medically refractory immune thrombocytopenia.

Differential diagnosis

Mucosal biopsy from endoscopy was useful for differential diagnosis and histological analysis revealed a gastric adenocarcinoma.

Laboratory diagnosis

Laboratory findings revealed elevated tumor markers (CA19-9 and CA242), low platelet count, and decreased hemoglobin.

Imaging diagnosis

Abdominal contrast-enhanced computed tomography revealed a thickening wall of the gastric antrum with significantly enhanced, multiple small lymph nodes around the stomach but no obvious retroperitoneal lymph nodes and a normal spleen.

Pathological diagnosis

The histopathological examination after the subtotal gastrectomy revealed a poorly differentiated gastric adenocarcinoma which had reached the serosal layer and the cancer had also metastasized to 3/30 lymph nodes.

Treatment

The patient underwent a splenectomy and a distal subtotal gastrectomy (D2 radical resection) with a Roux-en-Y reconstruction simultaneously.

Related reports

Five cases of immune thrombocytopenia (ITP) patients suffering with gastric malignant tumors have been reported in English in MEDLINE. Patients in these cases suffered mild ITP with a platelet (PLT) level larger than 25000/ μ L. The commonest pathologies are gastric cancer and gastric mucosa associated

lymphoid tissue (MALT) lymphoma. *Helicobacter pylori* (*H. pylori*) may play a key role in the pathogenesis of both gastric malignant tumors and ITP. Noda *et al*^[7] reported a case of regression of ITP after resection of gastric MALT lymphoma and eradicating treatment of *H. pylori*. In terms of treatment, endoscopic resection could be performed only when the tumor is restricted to the mucosa during eradication therapy. Subtotal/total gastrectomy combined with splenectomy is the most appropriate treatment when tumors invade the submucosa.

Experiences and lessons

For patients with cancer and medical refractory ITP, surgical treatment may be the only option for therapy despite a high risk of bleeding. Simultaneous splenectomy, preoperative PLT transfusion, and early enteral nutrition are important treatment methods for postoperative recovery.

REFERENCES

- 1 **Rodeghiero F**, Stasi R, Gernsheimer T, Michel M, Provan D, Arnold DM, Bussel JB, Cines DB, Chong BH, Cooper N, Godeau B, Lechner K, Mazzucconi MG, McMillan R, Sanz MA, Imbach P, Blanchette V, Kühne T, Ruggeri M, George JN. Standardization of terminology, definitions and outcome criteria in immune thrombocytopenic purpura of adults and children: report from an international working group. *Blood* 2009; **113**: 2386-2393 [PMID: 19005182 DOI: 10.1182/blood-2008-07-162503]
- 2 **Shan NN**, Dong LL, Zhang XM, Liu X, Li Y. Targeting autophagy as a potential therapeutic approach for immune thrombocytopenia therapy. *Crit Rev Oncol Hematol* 2016; **100**: 11-15 [PMID: 26830007 DOI: 10.1016/j.critrevonc.2016.01.011]
- 3 **Gupta S**, Kalayarasan R, Chandrasekar S, Gnanasekaran S, Pottakkat B. Laparoscopic Splenectomy for Immune Thrombocytopenic Purpura (ITP) Patients with Very Severe Thrombocytopenia. *Indian J Hematol Blood Transfus* 2018; **34**: 535-539 [PMID: 30127567 DOI: 10.1007/s12288-017-0902-0]
- 4 **Khellaf M**, Michel M, Schaeffer A, Bierling P, Godeau B. Assessment of a therapeutic strategy for adults with severe autoimmune thrombocytopenic purpura based on a bleeding score rather than platelet count. *Haematologica* 2005; **90**: 829-832 [PMID: 15951296]
- 5 **Page LK**, Psaila B, Provan D, Michael Hamilton J, Jenkins JM, Elish AS, Lesser ML, Bussel JB. The immune thrombocytopenic purpura (ITP) bleeding score: assessment of bleeding in patients with ITP. *Br J Haematol* 2007; **138**: 245-248 [PMID: 17542983 DOI: 10.1111/j.1365-2141.2007.06635.x]
- 6 **Bachmeyer C**, Audouin J, Bouillot JL, Coutarel P, Mougeot-Martin M, Delmer A. Immune thrombocytopenic purpura as the presenting feature of gastric MALT lymphoma. *Am J Gastroenterol* 2000; **95**: 1599-1600 [PMID: 10894617 DOI: 10.1111/j.1572-0241.2000.02113.x]
- 7 **Noda M**, Mori N, Nomura K, Kojima K, Mitsufuji S, Yamane I, Misawa S, Okanoue T. Regression of idiopathic thrombocytopenic purpura after endoscopic mucosal resection of gastric mucosa associated lymphoid tissue lymphoma. *Gut* 2004; **53**: 1698-1700 [PMID: 15479694 DOI: 10.1136/gut.2003.033555]
- 8 **Wakata N**, Kiyozuka T, Konno S, Nakazora H, Nomoto N, Sugimoto H, Nemoto H. Autoimmune thrombocytopenic purpura, autoimmune hemolytic anemia and gastric cancer appeared in a patient with myasthenia gravis. *Intern Med* 2006; **45**: 479-481 [PMID: 16679706 DOI: 10.2169/internalmedicine.45.1496]
- 9 **Villias C**, Gourgiosis S, Veloudis G, Sampaziotis D, Moreas H. Synchronous early gastric cancer and gastrointestinal stromal tumor in the stomach of a patient with idiopathic thrombocytopenic purpura. *J Dig Dis* 2008; **9**: 104-107 [PMID: 18419644 DOI: 10.1111/j.1751-2980.2008.00330.x]
- 10 **Hamabe A**, Omori T, Oyama T, Akamatsu H, Yoshidome K, Tori M, Ueshima S, Tsujimoto M, Nishida T. A case of *Helicobacter pylori* infection complicated with gastric cancer, gastric mucosa-associated lymphoid tissue lymphoma, and idiopathic thrombocytopenic purpura successfully treated with

- laparoscopy-assisted total gastrectomy and splenectomy. *Asian J Endosc Surg* 2011; **4**: 32-35 [PMID: 22776172 DOI: 10.1111/j.1758-5910.2010.00067.x]
- 11 **Provan D**, Newland AC. Current Management of Primary Immune Thrombocytopenia. *Adv Ther* 2015; **32**: 875-887 [PMID: 26499177 DOI: 10.1007/s12325-015-0251-z]
 - 12 **Montalvo J**, Velazquez D, Pantoja JP, Sierra M, López-Karpovitch X, Herrera MF. Laparoscopic splenectomy for primary immune thrombocytopenia: clinical outcome and prognostic factors. *J Laparoendosc Adv Surg Tech A* 2014; **24**: 466-470 [PMID: 24905792 DOI: 10.1089/lap.2013.0267]
 - 13 **Qu Y**, Xu J, Jiao C, Cheng Z, Ren S. Long-term outcomes of laparoscopic splenectomy versus open splenectomy for idiopathic thrombocytopenic purpura. *Int Surg* 2014; **99**: 286-290 [PMID: 24833154 DOI: 10.9738/INTSURG-D-13-00175.1]
 - 14 **Rijcken E**, Mees ST, Bisping G, Krueger K, Bruewer M, Senninger N, Mennigen R. Laparoscopic splenectomy for medically refractory immune thrombocytopenia (ITP): a retrospective cohort study on longtime response predicting factors based on consensus criteria. *Int J Surg* 2014; **12**: 1428-1433 [PMID: 25448666 DOI: 10.1016/j.ijsu.2014.10.012]
 - 15 **Neunert C**, Lim W, Crowther M, Cohen A, Solberg L Jr, Crowther MA; American Society of Hematology. The American Society of Hematology 2011 evidence-based practice guideline for immune thrombocytopenia. *Blood* 2011; **117**: 4190-4207 [PMID: 21325604 DOI: 10.1182/blood-2010-08-302984]
 - 16 **Bavunoğlu I**, Eşkazan AE, Ar MC, Cengiz M, Yavuzer S, Salihoğlu A, Öngören Ş, Tunçkale A, Soysal T. Treatment of patients with immune thrombocytopenia admitted to the emergency room. *Int J Hematol* 2016; **104**: 216-222 [PMID: 27129318 DOI: 10.1007/s12185-016-2003-5]
 - 17 **Salama A**, Kiesewetter H, Kalus U, Movassaghi K, Meyer O. Massive platelet transfusion is a rapidly effective emergency treatment in patients with refractory autoimmune thrombocytopenia. *Thromb Haemost* 2008; **100**: 762-765 [PMID: 18989518 DOI: 10.1160/TH08-06-0418]
 - 18 **Spahr JE**, Rodgers GM. Treatment of immune-mediated thrombocytopenia purpura with concurrent intravenous immunoglobulin and platelet transfusion: a retrospective review of 40 patients. *Am J Hematol* 2008; **83**: 122-125 [PMID: 17874448 DOI: 10.1002/ajh.21060]
 - 19 **British Committee for Standards in Haematology, Blood Transfusion Task Force**. Guidelines for the use of platelet transfusions. *Br J Haematol* 2003; **122**: 10-23 [PMID: 12823341 DOI: 10.1046/j.1365-2141.2003.04468.x]
 - 20 **Habermalz B**, Sauerland S, Decker G, Delaitre B, Gigot JF, Leandros E, Lechner K, Rhodes M, Silecchia G, Szold A, Targarona E, Torelli P, Neugebauer E. Laparoscopic splenectomy: the clinical practice guidelines of the European Association for Endoscopic Surgery (EAES). *Surg Endosc* 2008; **22**: 821-848 [PMID: 18293036 DOI: 10.1007/s00464-007-9735-5]
 - 21 **Chen X**, Peng B, Cai Y, Zhou J, Wang Y, Wu Z, Chen S. Laparoscopic splenectomy for patients with immune thrombocytopenia and very low platelet count: is platelet transfusion necessary? *J Surg Res* 2011; **170**: e225-e232 [PMID: 21816423 DOI: 10.1016/j.jss.2011.06.031]
 - 22 **Cai Y**, Liu X, Peng B. Should we routinely transfuse platelet for immune thrombocytopenia patients with platelet count less than $10 \times 10^9/L$ who underwent laparoscopic splenectomy? *World J Surg* 2014; **38**: 2267-2272 [PMID: 24722866 DOI: 10.1007/s00268-014-2560-9]
 - 23 **Takeuchi D**, Koide N, Suzuki A, Ishizone S, Shimizu F, Tsuchiya T, Kumeda S, Miyagawa S. Postoperative complications in elderly patients with gastric cancer. *J Surg Res* 2015; **198**: 317-326 [PMID: 26033612 DOI: 10.1016/j.jss.2015.03.095]
 - 24 **Li B**, Liu HY, Guo SH, Sun P, Gong FM, Jia BQ. Impact of early postoperative enteral nutrition on clinical outcomes in patients with gastric cancer. *Genet Mol Res* 2015; **14**: 7136-7141 [PMID: 26125924 DOI: 10.4238/2015.June.29.7]
 - 25 **Young MT**, Troung H, Gebhart A, Shih A, Nguyen NT. Outcomes of laparoscopic feeding jejunostomy tube placement in 299 patients. *Surg Endosc* 2016; **30**: 126-131 [PMID: 25801114 DOI: 10.1007/s00464-015-4171-4]
 - 26 **Senkal M**, Koch J, Hummel T, Zumtobel V. Laparoscopic needle catheter jejunostomy: modification of the technique and outcome results. *Surg Endosc* 2004; **18**: 307-309 [PMID: 14708043 DOI: 10.1007/s00464-003-9060-6]

P- Reviewer: Morini S, Zhu X, Zhu YL **S- Editor:** Ji FF
L- Editor: Wang TQ **E- Editor:** Bian YN





Published by **Baishideng Publishing Group Inc**
7901 Stoneridge Drive, Suite 501, Pleasanton, CA 94588, USA
Telephone: +1-925-223-8242
Fax: +1-925-223-8243
E-mail: bpgoffice@wjgnet.com
Help Desk: <http://www.f6publishing.com/helpdesk>
<http://www.wjgnet.com>

