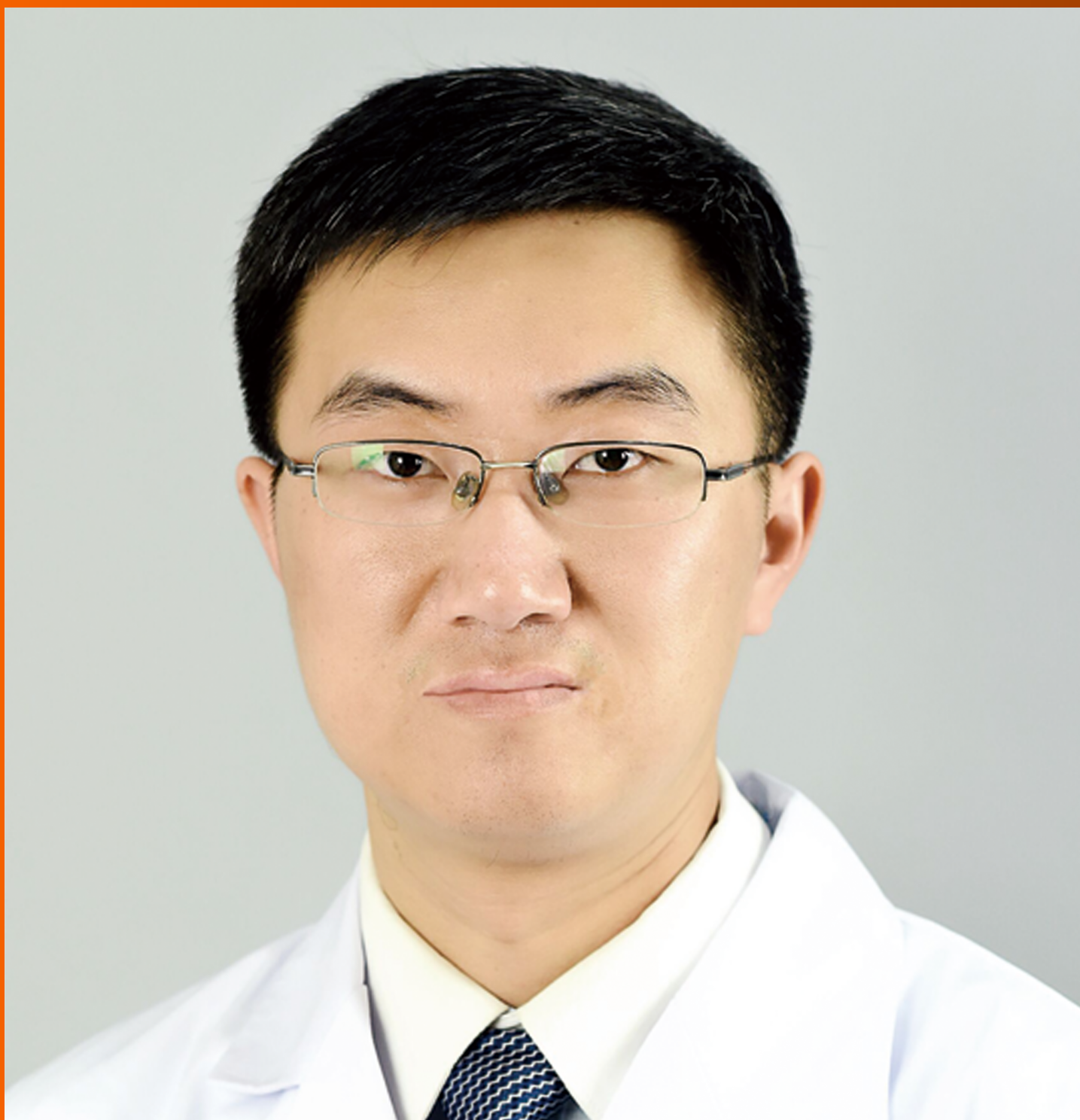


# World Journal of *Clinical Cases*

*World J Clin Cases* 2019 February 26; 7(4): 405-547



**MINIREVIEWS**

- 405** Immune checkpoint inhibitor-induced colitis: A comprehensive review  
*Som A, Mandaliya R, Alsaadi D, Farshidpour M, Charabaty A, Malhotra N, Mattar MC*

**ORIGINAL ARTICLE****Basic Study**

- 419** Formalin fixation on HER-2 and PD-L1 expression in gastric cancer: A pilot analysis using the same surgical specimens with different fixation times  
*Kai K, Yoda Y, Kawaguchi A, Minesaki A, Iwasaki H, Aishima S, Noshiro H*

**Case Control Study**

- 431** Nested case-control study of multiple serological indexes and Brighton pediatric early warning score in predicting death of children with sepsis  
*Xie X, Li M, Xiong TT, Wang R, Xiao L*

**Retrospective Study**

- 441** Intestinal endometriosis: Diagnostic ambiguities and surgical outcomes  
*Bong JW, Yu CS, Lee JL, Kim CW, Yoon YS, Park IJ, Lim SB, Kim JC*

**Randomized Controlled Trial**

- 452** Efficacy of 1.2 L polyethylene glycol plus ascorbic acid for bowel preparations  
*Tamaki H, Noda T, Morita M, Omura A, Kubo A, Ogawa C, Matsunaka T, Shibato M*

**CASE REPORT**

- 466** Congenital analbuminemia in a patient affected by hypercholesterolemia: A case report  
*Suppressa P, Carbonara C, Lugani F, Campagnoli M, Troiano T, Minchiotti L, Sabbà C*
- 473** Primary leiomyosarcoma of the thyroid gland with prior malignancy and radiotherapy: A case report and review of literature  
*Vujosevic S, Krnjevic D, Bogojevic M, Vuckovic L, Filipovic A, Dunđerović D, Sopta J*
- 482** Endoscopic resection for residual lesion of metastatic gastric cancer: A case report  
*Hayashi K, Suzuki S, Ikehara H, Okuno H, Irie A, Esaki M, Kusano C, Gotoda T, Moriyama M*
- 489** Peritoneal cavernous hemangiomas: A case report  
*Fu LY, Chen HY, Diao XL, Wang ZJ*
- 494** Recurrent acute liver failure associated with novel SCYL1 mutation: A case report  
*Li JQ, Gong JY, Knisely AS, Zhang MH, Wang JS*

- 500** Therapeutic plasma exchange and continuous renal replacement therapy for severe hyperthyroidism and multi-organ failure: A case report  
*Ba JH, Wu BQ, Wang YH, Shi YF*
- 508** Hydrochloric acid enhanced radiofrequency ablation for treatment of large hepatocellular carcinoma in the caudate lobe: Report of three cases  
*Deng HX, Huang JH, Lau WY, Ai F, Chen MS, Huang ZM, Zhang TQ, Zuo MX*
- 516** Long-term follow-up of a patient with venlafaxine-induced diurnal bruxism treated with an occlusal splint: A case report  
*Chen JM, Yan Y*
- 525** Primary hepatic leiomyosarcoma successfully treated by transcatheter arterial chemoembolization: A case report  
*Zhu KL, Cai XJ*
- 532** Anterior cervical corpectomy decompression and fusion for cervical kyphosis in a girl with Ehlers-Danlos syndrome: A case report  
*Fang H, Liu PF, Ge C, Zhang WZ, Shang XF, Shen CL, He R*
- 538** Rhombencephalitis caused by *Listeria monocytogenes* with hydrocephalus and intracranial hemorrhage: A case report and review of the literature  
*Liang JJ, He XY, Ye H*

**ABOUT COVER**

Editorial Board Member of *World Journal of Clinical Cases*, Xi Jin, PhD, Associate Professor, Doctor, Department of Gastroenterology, Institution of Gastroenterology, the First Affiliated Hospital, School of Medicine Zhejiang University, Zhejiang Province, Hangzhou 310003, China

**AIMS 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 Case Report, Clinical Management, Editorial, Field of Vision, Frontier, Medical Ethics, Original Articles, Meta-Analysis, Minireviews, and Review, in the fields of allergy, anesthesiology, cardiac medicine, clinical genetics, clinical neurology, critical care, dentistry, dermatology, emergency medicine, endocrinology, family medicine, gastroenterology and hepatology, etc.

**INDEXING/ABSTRACTING**

The *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).

**RESPONSIBLE EDITORS FOR THIS ISSUE**

Responsible Electronic Editor: *Wen-Wen Tan*

Proofing 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**

Semimonthly

**EDITORS-IN-CHIEF**

Dennis A Bloomfield, Sandro Vento

**EDITORIAL BOARD MEMBERS**

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

**EDITORIAL OFFICE**

Jin-Lai Wang, Director

**PUBLICATION DATE**

February 26, 2019

**COPYRIGHT**

© 2019 Baishideng Publishing Group Inc

**INSTRUCTIONS TO AUTHORS**

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

**GUIDELINES FOR ETHICS DOCUMENTS**

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

**GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH**

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

**PUBLICATION MISCONDUCT**

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

**ARTICLE PROCESSING CHARGE**

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

**STEPS FOR SUBMITTING MANUSCRIPTS**

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

**ONLINE SUBMISSION**

<https://www.f6publishing.com>



## Peritoneal cavernous hemangiomas: A case report

Li-Yuan Fu, Hong-Yu Chen, Xiao-Li Diao, Zhen-Jun Wang

**ORCID number:** Li-Yuan Fu (0000-0003-1560-6083); Hong-Yu Chen (0000-0002-3660-8523); Xiao-Li Diao (0000-0001-6885-9354); Zhen-Jun Wang (0000-0003-4905-1055).

**Author contributions:** Fu LY and Chen HY collected the patient's clinical data and wrote the paper; Diao XL provided pathological data; Wang ZJ provided guidance.

**Supported by** National High-Tech R and D Program of China (863 Program), No. 2015AA033602; and 1351 Personnel Training Program of Beijing Chao-yang Hospital Affiliated to Capital Medical University, No. CYXZ-2017-09.

**Informed consent statement:**

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.

**CARE Checklist (2016) statement:**

The guidelines of the CARE Checklist (2016) have been adopted.

**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: <https://creativecommons.org/licenses/by-nc/4.0/>

**Li-Yuan Fu, Hong-Yu Chen, Zhen-Jun Wang,** Department of General Surgery, Beijing Chaoyang Hospital, Capital Medical University, Beijing 100020, China

**Xiao-Li Diao,** Department of Pathology, Beijing Chaoyang Hospital, Capital Medical University, Beijing 100020, China

**Corresponding author:** Zhen-Jun Wang, MD, Doctor, Professor, Surgeon, Department of General Surgery, Beijing Chaoyang Hospital, Capital Medical University, Beijing 100020, China. [drzhenjun@163.com](mailto:drzhenjun@163.com)

**Telephone:** +86-10-85231604

### Abstract

#### BACKGROUND

Cavernous hemangiomas in the liver and spleen has been reported, but it occurs less commonly in the peritoneum. Here we report a case of peritoneal cavernous hemangiomas and share some valuable information about this disease.

#### CASE SUMMARY

A 57-year-old Chinese man had a huge abdominal mass with abdominal distention and a significant reduction of food consumption. An enhanced abdominal and pelvic computed tomography and positron emission tomography-computed tomography revealed multiple cystic masses on the peritoneum, greater omentum, small intestinal mesentery and the surface of the spleen, and a high maximum standardized uptake value of the largest cystic lesion. Exploratory laparotomy was performed, and multiple cystic masses were found on the surface of the peritoneum, greater omentum, mesentery of the small intestine, and surface of the liver and spleen. Dark red bloody cystic fluid was present in the cystic tumor. Pathological examination showed that in the stromal components, the irregular vascular wall was thin. The vessel lumen was interlinked, and the lumen was lined with flat endothelium. According to the intraoperative findings and pathologic results, the patient was diagnosed with peritoneal cavernous hemangiomas.

#### CONCLUSION

The possibility of peritoneal cavernous hemangiomas should be considered when multiple cystic masses are found in the abdominal cavity by preoperative examination.

**Key words:** Peritoneum; Hemangiomas; Cavernous hemangiomas; Cystic lesion; Case report

<http://creativecommons.org/licenses/by-nc/4.0/>

**Manuscript source:** Unsolicited manuscript

**Received:** September 21, 2018

**Peer-review started:** September 24, 2018

**First decision:** November 1, 2018

**Revised:** December 25, 2018

**Accepted:** December 29, 2018

**Article in press:** December 29, 2018

**Published online:** February 26, 2019

©The Author(s) 2019. Published by Baishideng Publishing Group Inc. All rights reserved.

**Core tip:** Cavernous hemangiomatosis in the liver and spleen has been reported, but it rarely occurs diffusely in the abdominal cavity. In 2011, Ribback *et al* reported a case of nodular hemangiomatosis of pleura and peritoneum. We report here a case of peritoneal cavernous hemangiomatosis, along with its pathological type and positron emission tomography-computed tomography findings, for the first time. This case may help us to better understand this disease with regard to clinical manifestations and laboratory examination, imaging and pathologic results.

**Citation:** Fu LY, Chen HY, Diao XL, Wang ZJ. Peritoneal cavernous hemangiomatosis: A case report. *World J Clin Cases* 2019; 7(4): 489-493

**URL:** <https://www.wjgnet.com/2307-8960/full/v7/i4/489.htm>

**DOI:** <https://dx.doi.org/10.12998/wjcc.v7.i4.489>

## INTRODUCTION

Hemangiomatosis can occur simultaneously in the thoracic and abdominal cavities<sup>[1]</sup>. Peritoneal cavernous hemangiomatosis occurs only in the abdominal cavity. Cystic lesions are widely distributed in the peritoneum, and dark red bloody cystic fluid is found in the lesions. The diagnosis of peritoneal cavernous hemangiomatosis mainly depends on pathological examination. Herein, we report a case of peritoneal cavernous hemangiomatosis and provide some valuable information about this disease.

## CASE PRESENTATION

### Chief complaints

A 57-year-old man was admitted to our hospital for evaluation of a huge abdominal mass causing abdominal distension and a significant reduction of food consumption for nearly 2 mo.

### History of past illness

His past history was unremarkable.

### Personal and family history

His family history was unremarkable.

### Physical examination upon admission

Physical examination revealed a huge, tough mass. The upper boundary of the mass was below the right costal margin. The lower boundary, which was in the pelvic cavity, was hard to touch. The surface of the mass was smooth. The mass was unmovable, and there was no tenderness associated with the mass.

### Laboratory examinations

Routine blood parameters were within the normal range. Tumor marker measurement results were as follows: Carcinoembryonic antigen, 0.00 ng/mL; alpha-fetoprotein, 4.10 ng/mL; CA19-9, 9.80 U/mL; and CA72-4, 1.19 U/mL. An enhanced abdominal and pelvic computed tomography scan revealed a right mid-lower abdominal cystic lesion of 35.6 cm × 14.3 cm × 9.6 cm compressing the intestine and right ureter. Multiple small cystic masses appeared on the peritoneum, greater omentum, small intestinal mesentery, and the surface of the spleen (Figure 1A). Perihepatic effusion was also present. There was a huge mass in the abdominal cavity and the gastrointestinal tract structure was displaced. In order to exclude the extensive metastasis of gastrointestinal tumors, the patient underwent positron emission tomography-computed tomography. The examination revealed a high maximum standardized uptake value (SUVmax) of the largest cystic lesion. The SUVmax of the lesion was 2.7. Mild radioactivity uptake was seen in the multiple cystic lesions on the peritoneum, omentum, small bowel mesentery, and surface of the liver and spleen. Possible preoperative diagnosis was peritoneal metastasis of appendix mucinous tumor.



**Figure 1 Clinical, pathological and immunohistochemical results.** A: The white arrows indicate the abdominal masses; B: The inner cystic wall resected during the operation; C: CD31 staining was positive for the endothelial cells. Magnification  $\times 100$ .

Explorative laparotomy revealed multiple dark red masses on the small intestinal mesentery, peritoneum, and greater omentum, and surface of the liver and spleen. The diameter of the masses ranged from 2 cm to 5 cm. Dark red bloody cystic fluid was seen when the thin wall was incised. A huge soft tumor was found in the right abdominal cavity. The huge cystic lesion was tightly adhered to the small intestine and ascending colon, making it difficult to be separated from the organs. Dark red bloody cystic fluid was present in the mass. An incisional biopsy of the cystic wall and some other smaller cystic lesions was obtained (Figure 1B). Intraoperative frozen section showed that the inner cystic wall was lined with flat endothelium without atypia. However, the high SUVmax and the wide distribution of the masses indicated the possibility of malignancy. Although the sensitivity and specificity of intraoperative frozen pathological examination was very high, we used treatments for malignant tumors considering that the malignant possibility could not be completely excluded after a consultation with the pathologist. We then performed complete aspiration of the seroperitoneum and successively embrocated iodine and carbolic acid on the inner wall of the largest mass. The patient underwent hyperthermic perfusion with 4000 mL normal saline at 43 °C for 1 hr immediately after surgery.

Pathological examination showed that within the stromal components, the irregular vascular wall was thin. The vessel lumen was interlinked, and the lumen was lined with flat endothelium without heterogeneity. Hemorrhage and hemosiderin were present in the stromal components. Immunohistochemical staining of the endothelial cells showed positivity for CD31 and ERG and negativity for D2-40 (Figure 1C). The Ki-67 value was 2%. The diagnosis was peritoneal cavernous hemangiomatosis according to the intraoperative findings and pathologic results.

## FINAL DIAGNOSIS

According to the pathological examination, the final diagnosis was peritoneal cavernous hemangiomatosis.

## TREATMENT

Explorative laparotomy was performed because of multiple abdominal masses causing abdominal distension and the diagnosis was not clear. After surgery, the patient underwent hyperthermic perfusion immediately because the possibility of a malignant disease cannot be completely excluded.

## OUTCOME AND FOLLOW-UP

The patient returned to Shanxi Province after operation and did not go to our hospital for examination. He underwent an abdominal ultrasound examination in a local hospital 2 wk previously. The result showed that multiple cystic masses still existed in the abdominal cavity, but the patient had no discomfort.

## DISCUSSION

Here, we report a case of peritoneal cavernous hemangiomatosis. Cavernous hemangiomatosis can occur in the parenchymal viscera such as liver<sup>[2]</sup> or spleen<sup>[3]</sup>. In 2011, Ribback *et al*<sup>[1]</sup> reported a case of nodular hemangiomatosis of the pleura and peritoneum; however, the advanced pathological type of the hemangiomatosis was not described.

According to the pathology and immunohistochemistry results, the lesion in the present case was composed of vascular components without lymphatic components. Therefore, we excluded the diagnosis of lymphangioma<sup>[4]</sup> and other lymphangiogenic tumors. We also excluded the diagnosis of epithelioid hemangioma since the vascular lumen was lined with flat endothelium without lymphocytes, eosinophils, or the formation of lymphoid follicles, and imaging examination did not show any abnormal soft tissue mass and bone destruction<sup>[5,6]</sup>. Platelet count was not decreased in this patient and no spindle tumor cells or fissured lacuna were found in pathological examination, allowing us to further exclude the diagnosis of kaposiform hemangioendothelioma<sup>[7,8]</sup>. The diagnosis of multicystic mesothelioma was also excluded as the mass contained dark red cystic fluid and the inner cystic wall was lined with flat endothelial cells instead of cubic mesothelial cells<sup>[9]</sup>. Pathological examination showed that the lumen was lined with flat endothelium without heterogeneity, and immunohistochemical examination showed that the Ki-67 value of the endothelial cells was 2%. We excluded the possibility of malignant tumors. The cystic lesions were diffusely located on the surface of the greater omentum, peritoneum, mesentery of the small intestine, and organs including the liver and spleen. No invasion of the intestinal wall or parenchyma of the liver and spleen occurred. Therefore, the final diagnosis was peritoneal cavernous hemangiomatosis.

Although a huge cystic lesion was located in the abdominal cavity, the platelet count and coagulation function tests were within the reference ranges. Thus, Kasabach-Merritt syndrome was excluded<sup>[10]</sup>. We also excluded Maffucci's syndrome because no deformity or activity limitation of the extremities was found<sup>[11]</sup>. Finally, we excluded Klippel-Trenaunay syndrome because the patient had no nevus vascularis, lower extremity deformity, or superficial varicosities<sup>[12]</sup>.

No clear treatments for peritoneal hemangiomatosis have been established. We treated the patient with hyperthermic perfusion because of the malignant clinical manifestation of the tumor. However, the patient developed palpitation after the hyperthermic perfusion. Consequently, we stopped the hyperthermic perfusion treatment. Propranolol can be used to treat gastrointestinal hemangiomatosis<sup>[13]</sup> and hepatic hemangiomatosis<sup>[14]</sup>. We believe that propranolol may be an effective agent to treat the disease such as that described in the present case.

## CONCLUSION

The possibility of peritoneal cavernous hemangiomatosis should be considered when multiple cystic masses are found in the abdominal cavity by preoperative examination.

## REFERENCES

- 1 Ribback S, Thiele A, Rosenberg C, Friesecke S, Neumann V, Tannapfel A, Dombrowski F. Nodular hemangiomatosis of pleura and peritoneum. *Pathol Res Pract* 2011; **207**: 718-721 [PMID: 21978481 DOI: 10.1016/j.prp.2011.08.006]
- 2 Guerra A, Infante A, Rinninella E, Spinelli I, Mazziotti MA, De Gaetano AM, Pompili M, Bonomo L. A peculiar case of diffuse hemangiomatosis of the left hepatic lobe in an asymptomatic adult patient: case report and literature review. *Eur Rev Med Pharmacol Sci* 2017; **21**: 1593-1597 [PMID: 28429345]
- 3 Steininger H, Pfofe D, Marquardt L, Sauer H, Markwat R. Isolated diffuse hemangiomatosis of the spleen: case report and review of literature. *Pathol Res Pract* 2004; **200**: 479-485 [PMID: 15310152 DOI: 10.1016/j.prp.2004.04.004]
- 4 Takeda A, Ito H, Nakamura H. Large Omental Cystic Lymphangioma Masquerading as Mucinous Ovarian Neoplasia in an 8-Year-Old Premenarchal Girl: The Findings from Diagnostic Imaging and Laparoscopic-Assisted Excision. *J Pediatr Adolesc Gynecol* 2017; **30**: 659-662 [PMID: 28629796 DOI: 10.1016/j.jpag.2017.06.003]
- 5 Hejmadi RK, Gey van Pittius D, Stephens M, Chasty R, Braithwaite M. Angiolymphoid hyperplasia with eosinophilia (epithelioid haemangioma) occurring within multiple deep lymph nodes and presenting with weight loss and raised CA-125 levels. *Virchows Arch* 2006; **448**: 366-368 [PMID: 16315021 DOI: 10.1007/s00428-005-0119-8]
- 6 Weissferdt A, Moran CA. Epithelioid hemangioendothelioma of the bone: a review and update. *Adv Anat Pathol* 2014; **21**: 254-259 [PMID: 24911250 DOI: 10.1097/PAP.000000000000027]
- 7 Putra J, Gupta A. Kaposiform haemangioendothelioma: a review with emphasis on histological

- differential diagnosis. *Pathology* 2017; **49**: 356-362 [PMID: 28438388 DOI: 10.1016/j.pathol.2017.03.001]
- 8 **Cashell J**, Smink GM, Helm K, Xavier F. Kaposiform hemangioendothelioma with Kasabach-Merritt phenomenon in an infant: Successful treatment with prednisolone, vincristine, and addition of sirolimus. *Pediatr Blood Cancer* 2018; **65**: e27305 [PMID: 30070028 DOI: 10.1002/pbc.27305]
  - 9 **Nizri E**, Baratti D, Guaglio M, Sinukumar S, Cabras A, Kusamura S, Deraco M. Multicystic mesothelioma: Operative and long-term outcomes with cytoreductive surgery and hyperthermic intra peritoneal chemotherapy. *Eur J Surg Oncol* 2018; **44**: 1100-1104 [PMID: 29703622 DOI: 10.1016/j.ejso.2018.03.004]
  - 10 **Shimizu Y**, Komura T, Seike T, Omura H, Kumai T, Kagaya T, Ohta H, Kawashima A, Harada K, Kaneko S, Unoura M. A case of an elderly female with diffuse hepatic hemangiomatosis complicated with multiple organic dysfunction and Kasabach-Merritt syndrome. *Clin J Gastroenterol* 2018; **11**: 411-416 [PMID: 29845554 DOI: 10.1007/s12328-018-0871-3]
  - 11 **Fanburg JC**, Meis-Kindblom JM, Rosenberg AE. Multiple enchondromas associated with spindle-cell hemangioendotheliomas. An overlooked variant of Maffucci's syndrome. *Am J Surg Pathol* 1995; **19**: 1029-1038 [PMID: 7661276 DOI: 10.1097/0000478-199509000-00006]
  - 12 **Wang ZK**, Wang FY, Zhu RM, Liu J. Klippel-Trenaunay syndrome with gastrointestinal bleeding, splenic hemangiomas and left inferior vena cava. *World J Gastroenterol* 2010; **16**: 1548-1552 [PMID: 20333801 DOI: 10.3748/wjg.v16.i12.1548]
  - 13 **Akcam M**, Pirgon O, Salman H, Kockar C. Multiple gastrointestinal hemangiomatosis successfully treated with propranolol. *J Pediatr Gastroenterol Nutr* 2015; **60**: e16 [PMID: 23575304 DOI: 10.1097/MPG.0b013e31829530af]
  - 14 **Bosemani T**, Puttgen KB, Huisman TA, Tekes A. Multifocal infantile hepatic hemangiomas--imaging strategy and response to treatment after propranolol and steroids including review of the literature. *Eur J Pediatr* 2012; **171**: 1023-1028 [PMID: 22234480 DOI: 10.1007/s00431-011-1671-7]

**P- Reviewer:** Abdel-Hamid SMM, Chatzizacharias N, Hashimoto R, Kocazeybek B

**S- Editor:** Ji FF **L- Editor:** Filipodia **E- Editor:** Tan WW







Published By 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](mailto:bpgoffice@wjgnet.com)  
Help Desk: <https://www.f6publishing.com/helpdesk>  
<https://www.wjgnet.com>

