

World Journal of *Clinical Cases*

World J Clin Cases 2022 October 6; 10(28): 9970-10390



Contents

Thrice Monthly Volume 10 Number 28 October 6, 2022

REVIEW

- 9970 COVID-19 and the heart

Xanthopoulos A, Bourazana A, Giamouzis G, Skoularigki E, Dimos A, Zagouras A, Papamichalis M, Leventis I, Magouliotis DE, Triposkiadis F, Skoularigis J

- 9985 Role of short chain fatty acids in gut health and possible therapeutic approaches in inflammatory bowel diseases

Caetano MAF, Castelucci P

MINIREVIEWS

- 10004 Review of the pharmacological effects of astragaloside IV and its autophagic mechanism in association with inflammation

Yang Y, Hong M, Lian WW, Chen Z

ORIGINAL ARTICLE

Clinical and Translational Research

- 10017 Effects of targeted-edited oncogenic insulin-like growth factor-1 receptor with specific-sgRNA on biological behaviors of HepG2 cells

Yao M, Cai Y, Wu ZJ, Zhou P, Sai WL, Wang DF, Wang L, Yao DF

Retrospective Study

- 10031 Analysis of the successful clinical treatment of 140 patients with parathyroid adenoma: A retrospective study

Peng ZX, Qin Y, Bai J, Yin JS, Wei BJ

- 10042 Efficacy of digital breast tomosynthesis combined with magnetic resonance imaging in the diagnosis of early breast cancer

Ren Y, Zhang J, Zhang JD, Xu JZ

- 10053 Prevention and management of adverse events following COVID-19 vaccination using traditional Korean medicine: An online survey of public health doctors

Kang B, Chu H, Youn BY, Leem J

- 10066 Clinical outcomes of targeted therapies in elderly patients aged
- ≥ 80
- years with metastatic colorectal cancer

Jang HR, Lee HY, Song SY, Lim KH

- 10077 Endovascular treatment vs drug therapy alone in patients with mild ischemic stroke and large infarct cores

Kou WH, Wang XQ, Yang JS, Qiao N, Nie XH, Yu AM, Song AX, Xue Q

Clinical Trials Study

- 10085** One hundred and ninety-two weeks treatment of entecavir maleate for Chinese chronic hepatitis B predominantly genotyped B or C

Xu JH, Wang S, Zhang DZ, Yu YY, Si CW, Zeng Z, Xu ZN, Li J, Mao Q, Tang H, Sheng JF, Chen XY, Ning Q, Shi GF, Xie Q, Zhang XQ, Dai J

Observational Study

- 10097** Dementia-related contact experience, attitudes, and the level of knowledge in medical vocational college students

Liu DM, Yan L, Wang L, Lin HH, Jiang XY

SYSTEMATIC REVIEWS

- 10109** Link between COVID-19 vaccines and myocardial infarction

Zafar U, Zafar H, Ahmed MS, Khattak M

CASE REPORT

- 10120** Successful treatment of disseminated nocardiosis diagnosed by metagenomic next-generation sequencing: A case report and review of literature

Li T, Chen YX, Lin JJ, Lin WX, Zhang WZ, Dong HM, Cai SX, Meng Y

- 10130** Multiple primary malignancies – hepatocellular carcinoma combined with splenic lymphoma: A case report

Wu FZ, Chen XX, Chen WY, Wu QH, Mao JT, Zhao ZW

- 10136** Metastatic multifocal melanoma of multiple organ systems: A case report

Maksimaityte V, Reivytyte R, Milaknyte G, Mickys U, Razanskiene G, Stundys D, Kazenaite E, Valantinas J, Stundiene I

- 10146** Cavernous hemangioma of the ileum in a young man: A case report and review of literature

Yao L, Li LW, Yu B, Meng XD, Liu SQ, Xie LH, Wei RF, Liang J, Ruan HQ, Zou J, Huang JA

- 10155** Successful management of a breastfeeding mother with severe eczema of the nipple beginning from puberty: A case report

Li R, Zhang LX, Tian C, Ma LK, Li Y

- 10162** Short benign ileocolonic anastomotic strictures - management with bi-flanged metal stents: Six case reports and review of literature

Kasapidis P, Mavrogenis G, Mandrekas D, Bazerbachi F

- 10172** Simultaneous bilateral floating knee: A case report

Wu CM, Liao HE, Lan SJ

- 10180** Chemotherapy, transarterial chemoembolization, and nephrectomy combined treated one giant renal cell carcinoma (T3aN1M1) associated with Xp11.2/TFE3: A case report

Wang P, Zhang X, Shao SH, Wu F, Du FZ, Zhang JF, Zuo ZW, Jiang R

- 10186** Tislelizumab-related enteritis successfully treated with adalimumab: A case report

Chen N, Qian MJ, Zhang RH, Gao QQ, He CC, Yao YK, Zhou JY, Zhou H

- 10193** Treatment of refractory/relapsed extranodal NK/T cell lymphoma with decitabine plus anti-PD-1: A case report
Li LJ, Zhang JY
- 10201** Clinical analysis of pipeline dredging agent poisoning: A case report
Li YQ, Yu GC, Shi LK, Zhao LW, Wen ZX, Kan BT, Jian XD
- 10208** Follicular lymphoma with cardiac involvement in a 90-year-old patient: A case report
Sun YX, Wang J, Zhu JH, Yuan W, Wu L
- 10214** Twin reversed arterial perfusion sequence-a rare and dangerous complication form of monochorionic twins: A case report
Anh ND, Thu Ha NT, Sim NT, Toan NK, Thuong PTH, Duc NM
- 10220** Potential otogenic complications caused by cholesteatoma of the contralateral ear in patients with otogenic abscess secondary to middle ear cholesteatoma of one ear: A case report
Zhang L, Niu X, Zhang K, He T, Sun Y
- 10227** Myeloid sarcoma with ulnar nerve entrapment: A case report
Li DP, Liu CZ, Jeremy M, Li X, Wang JC, Nath Varma S, Gai TT, Tian WQ, Zou Q, Wei YM, Wang HY, Long CJ, Zhou Y
- 10236** Alpha-fetoprotein-producing hepatoid adenocarcinoma of the lung responsive to sorafenib after multiline treatment: A case report
Xu SZ, Zhang XC, Jiang Q, Chen M, He MY, Shen P
- 10244** Acute mesenteric ischemia due to percutaneous coronary intervention: A case report
Ding P, Zhou Y, Long KL, Zhang S, Gao PY
- 10252** Persistent diarrhea with petechial rash - unusual pattern of light chain amyloidosis deposition on skin and gastrointestinal biopsies: A case report
Bilton SE, Shah N, Dougherty D, Simpson S, Holliday A, Sahebjam F, Grider DJ
- 10260** Solitary splenic tuberculosis: A case report
Guo HW, Liu XQ, Cheng YL
- 10266** Coronary artery aneurysms caused by Kawasaki disease in an adult: A case report and literature review
He Y, Ji H, Xie JC, Zhou L
- 10273** Double filtration plasmapheresis for pregnancy with hyperlipidemia in glycogen storage disease type Ia: A case report
Wang J, Zhao Y, Chang P, Liu B, Yao R
- 10279** Treatment of primary tracheal schwannoma with endoscopic resection: A case report
Shen YS, Tian XD, Pan Y, Li H
- 10286** Concrescence of maxillary second molar and impacted third molar: A case report
Su J, Shao LM, Wang LC, He LJ, Pu YL, Li YB, Zhang WY

- 10293** Rare leptin in non-alcoholic fatty liver cirrhosis: A case report
Nong YB, Huang HN, Huang JJ, Du YQ, Song WX, Mao DW, Zhong YX, Zhu RH, Xiao XY, Zhong RX
- 10301** One-stage resection of four genotypes of bilateral multiple primary lung adenocarcinoma: A case report
Zhang DY, Liu J, Zhang Y, Ye JY, Hu S, Zhang WX, Yu DL, Wei YP
- 10310** Ectopic pregnancy and failed oocyte retrieval during *in vitro* fertilization stimulation: Two case reports
Zhou WJ, Xu BF, Niu ZH
- 10317** Malignant peritoneal mesothelioma with massive ascites as the first symptom: A case report
Huang X, Hong Y, Xie SY, Liao HL, Huang HM, Liu JH, Long WJ
- 10326** Subperiosteal orbital hematoma concomitant with abscess in a patient with sinusitis: A case report
Hu XH, Zhang C, Dong YK, Cong TC
- 10332** Postpartum posterior reversible encephalopathy syndrome secondary to preeclampsia and cerebrospinal fluid leakage: A case report and literature review
Wang Y, Zhang Q
- 10339** Sudden extramedullary and extranodal Philadelphia-positive anaplastic large-cell lymphoma transformation during imatinib treatment for CML: A case report
Wu Q, Kang Y, Xu J, Ye WC, Li ZJ, He WF, Song Y, Wang QM, Tang AP, Zhou T
- 10346** Relationship of familial cytochrome P450 4V2 gene mutation with liver cirrhosis: A case report and review of the literature
Jiang JL, Qian JF, Xiao DH, Liu X, Zhu F, Wang J, Xing ZX, Xu DL, Xue Y, He YH
- 10358** COVID-19-associated disseminated mucormycosis: An autopsy case report
Kyuno D, Kubo T, Tsujiwaki M, Sugita S, Hosaka M, Ito H, Harada K, Takasawa A, Kubota Y, Takasawa K, Ono Y, Magara K, Narimatsu E, Hasegawa T, Osanai M
- 10366** Thalidomide combined with endoscopy in the treatment of Cronkhite-Canada syndrome: A case report
Rong JM, Shi ML, Niu JK, Luo J, Miao YL
- 10375** Thoracolumbar surgery for degenerative spine diseases complicated with tethered cord syndrome: A case report
Wang YT, Mu GZ, Sun HL

LETTER TO THE EDITOR

- 10384** Are pregnancy-associated hypertensive disorders so sweet?
Thomopoulos C, Ilias I
- 10387** Tumor invasion front in oral squamous cell carcinoma
Cuevas-González JC, Cuevas-González MV, Espinosa-Cristobal LF, Donohue Cornejo A

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Kaleem Ullah, FCPS, MBBS, Assistant Professor, Solid Organ Transplantation and Hepatobiliary Surgery, Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat 66070, Sindh, Pakistan. drkaleempk@gmail.com

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 abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Journal Citation Reports/Science Edition, Current Contents®/Clinical Medicine, PubMed, PubMed Central, Scopus, Reference Citation Analysis, China National Knowledge Infrastructure, China Science and Technology Journal Database, and Superstar Journals Database. The 2022 Edition of Journal Citation Reports® cites the 2021 impact factor (IF) for WJCC as 1.534; IF without journal self cites: 1.491; 5-year IF: 1.599; Journal Citation Indicator: 0.28; Ranking: 135 among 172 journals in medicine, general and internal; and Quartile category: Q4. The WJCC's CiteScore for 2021 is 1.2 and Scopus CiteScore rank 2021: General Medicine is 443/826.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: *Xu Guo*; Production Department Director: *Xiang Li*; 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

Thrice Monthly

EDITORS-IN-CHIEF

Bao-Gan Peng, Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati, Ja Hyeon Ku

EDITORIAL BOARD MEMBERS

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

PUBLICATION DATE

October 6, 2022

COPYRIGHT

© 2022 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>



Multiple primary malignancies – hepatocellular carcinoma combined with splenic lymphoma: A case report

Fa-Zong Wu, Xiao-Xiao Chen, Wei-Yue Chen, Qiao-Hong Wu, Jian-Ting Mao, Zhong-Wei Zhao

Specialty type: Oncology

Provenance and peer review:

Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0

Grade B (Very good): B

Grade C (Good): 0

Grade D (Fair): D

Grade E (Poor): 0

P-Reviewer: Kumar SKY, India;
Manrai M, India

Received: February 24, 2022

Peer-review started: February 24, 2022

First decision: April 19, 2022

Revised: May 9, 2022

Accepted: August 21, 2022

Article in press: August 21, 2022

Published online: October 6, 2022



Fa-Zong Wu, Xiao-Xiao Chen, Wei-Yue Chen, Qiao-Hong Wu, Jian-Ting Mao, Zhong-Wei Zhao, Key Laboratory of Imaging Diagnosis and Minimally Invasive Intervention Research, The Fifth Affiliated Hospital of Wenzhou Medical University, Lishui Hospital of Zhejiang University, Lishui 323000, Zhejiang Province, China

Corresponding author: Zhong-Wei Zhao, MD, Chief Doctor, Key Laboratory of Imaging Diagnosis and Minimally Invasive Intervention Research, The Fifth Affiliated Hospital of Wenzhou Medical University, Lishui Hospital of Zhejiang University, No. 289 Kuocang Road, Liandu District, Lishui 323000, Zhejiang Province, China. zhaozw79@163.com

Abstract

BACKGROUND

Primary liver cancer is one of the most common malignant tumours, while primary splenic lymphoma is a rare malignancy. Thus, cases of hepatocellular carcinoma (HCC) combined with splenic lymphoma are extremely rare.

CASE SUMMARY

We present a 62-year-old woman who was admitted to the Interventional Radiology Department with a lump in the spleen and liver as well as multiple enlarged lymph nodes visible by ultrasound. Contrast-enhanced computed of the abdomen revealed a circular, low-density, shallow mass (approximately 2.6 cm in diameter) in the left intrahepatic lobe and multiple round, low-density shadows in the spleen with clear boundaries (maximum diameter 7.6 cm). Based on the characteristic clinical symptoms and explicit radiological findings, the clinical diagnosis was HCC with metastasis to the liver portal, retroperitoneal lymph nodes, and spleen. After transcatheter arterial chemoembolization and sequential radiofrequency ablation, the -fetoprotein level returned to the normal range, and the hepatitis B cirrhosis improved. In addition, splenic tumour biopsy confirmed the diagnosis of primary malignant lymphoma, which went into remission after chemotherapy.

CONCLUSION

HCC with primary splenic non-Hodgkin lymphoma is extremely rare and easily misdiagnosed. Better understanding would facilitate early diagnosis, treatment and prognosis.

Key Words: Multiple primary malignancies; Hepatocellular carcinoma; Splenomegaly; Extra-hepatic primary malignancy; Magnetic resonance imaging; Primary non-Hodgkin's

lymphoma; Case report

©The Author(s) 2022. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: This case of hepatocellular carcinoma with splenic primary non-Hodgkin lymphoma is extremely rare and easily misdiagnosed. A better understanding of such cases would facilitate early diagnosis, treatment and prognosis.

Citation: Wu FZ, Chen XX, Chen WY, Wu QH, Mao JT, Zhao ZW. Multiple primary malignancies – hepatocellular carcinoma combined with splenic lymphoma: A case report. *World J Clin Cases* 2022; 10(28): 10130-10135

URL: <https://www.wjgnet.com/2307-8960/full/v10/i28/10130.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v10.i28.10130>

INTRODUCTION

Multiple primary malignancies (MPMs) are defined as more than one synchronous or metachronous cancer in the same individual[1]. If the tumours originate from different sites and/or belong to different histological or morphological groups, they are considered MPMs. The incidence of MPMs in the cancer population varies between 2.4% and 8% but up to 17% within 20 years of follow-up[2].

Primary liver cancer is one of the most common malignant tumours. With improvements in clinical diagnosis and treatment, the diagnosis rate of hepatocellular carcinoma (HCC) complicated with extra-hepatic primary malignancy (EHPM) has increased[3,4]. In China, the stomach, colorectal, nose, pharynx, and lung are primary EHPM sites associated with hepatic malignancy, accounting for 60.7% of all EHPM cases[5]. Primary splenic lymphoma is a rare malignancy that constitutes approximately 1.1% of all cases of non-Hodgkin lymphoma (NHL)[6]. There is little evidence of HCC combined with splenic lymphoma.

This report describes a rare case of HCC combined with splenic lymphoma.

CASE PRESENTATION

Chief complaints

A 62-year-old female patient with blurred vision in the right eye for > 3 mo was admitted to the Ophthalmology Department in Lishui Hospital of Zhejiang University.

History of present illness

The patient with blurred vision in the right eye for > 3 mo was admitted to the Ophthalmology Department in Lishui Hospital of Zhejiang University.

History of past illness

This patient was a hepatitis B carrier with cirrhosis of the liver for > 2 years. She reported that she had never smoked tobacco or drunk alcohol.

Personal and family history

No specific cancer history was recorded on her pedigree.

Physical examination

Abdominal ultrasound showed intrahepatic hypoechoic nodules, multiple hypoechoic deposits in the spleen, and multiple enlarged retroperitoneal lymph nodes. The physical examination revealed that she had a palpable tender mass with a smooth surface 4 cm under the left ribcage. Contrast-enhanced computed tomography (CT) of the abdomen revealed a circular low-density shallow mass (approximately 2.6 cm diameter) on the left intrahepatic leaves; arterial phase lesions were significantly enhanced with a relatively low density in the portal phase, which is typical for liver cancer with fast forward and backward characteristics. Multiple circular low-density shadows were detected in the spleen with clear boundaries (maximum diameter 7.6 cm), and the CT value was 34 HU. The enhancement of the lesion was lightly heterogeneous and had a low density compared with the normal spleen parenchyma. Multiple enlarged lymph nodes were detected around the liver portal vein and

retroperitoneal space with partial fusion conglomeration, which revealed cells suspected for HCC with possible metastasis to the liver portal, retroperitoneal lymph nodes, and spleen.

Laboratory examinations

Hepatitis B virus (HBV) markers were HBsAg+, HBeAb+, HBcAb+, serum -fetoprotein (AFP) 1394.3 ng/mL, and HBV DNA < 500 copies/mL. Immunohistochemical staining of the lesion sample was positive for CD20, PAX5, Bcl-2, Bcl-6 and CD10, and partially positive for Mum-1 and Ki67 (70% cells); CD21 staining for follicular dendritic cell network damage was positive, while CD3 and CD45RO were negative.

Imaging examinations

Positron emission tomography (PET)/CT disclosed an enlarged spleen with multiple confluent mass lesions. Radiation absorption was unusually high with a maximum standardized uptake value (SUV) of 16.2 in the spleen. Multiple enlarged lymph nodes were observed in the neck, left clavicle, axilla, right hilum, mediastinum, liver hilum and peritoneum, lower abdominal cavity, left pelvic wall, and inguinal region. There was increased radiation uptake in those regions with a maximum SUV of 15.9. In the peritoneum, lymph nodes were partly fused, with unclear boundaries and partial pressure on the surrounding (Figure 1).

FINAL DIAGNOSIS

Based on these findings, the patient was diagnosed with splenic primary NHL.

TREATMENT

The patient was recommended to be treated with hepatic arteriography and transcatheter arterial chemoembolization (TACE) (Figure 2A). Liver CT showed dense lipiodol deposition in the lesions (Figure 2B). To further consolidate treatment, CT-guided percutaneous radiofrequency ablation was performed on the hepatic lesion (Figure 2C). One month after treatment, the AFP level of the patient had returned to the normal range, and the tumour had regressed completely (Figure 2D).

Approximately 3 mo after treatment, magnetic resonance imaging of the upper abdomen showed complete necrosis of the left hepatic lobe lesions, and the hepatic portal vein, spleen and retroperitoneal lymph nodes were significantly enlarged. The largest spleen lesion reached 12.6 cm in diameter (Figure 3A). Further evaluation by splenic biopsy showed a patchy distribution of tumour cells and the disappearance of normal structures, which was considered diffuse large B-cell lymphoma (Figure 3B). Immunohistochemical staining of the lesion sample was positive for CD20, PAX5, Bcl-2, Bcl-6 and CD10 and partially positive for Mum-1 and Ki67 (70% cells). CD21 staining for FDC network damage was positive, while CD3 and CD45RO were negative. PET/CT revealed an enlarged spleen with multiple confluent masses. Radiation absorption was unusually high, with a maximum SUV of 16.2 in the spleen. Multiple enlarged lymph nodes were observed in the neck, left clavicle, axilla, right hilum, mediastinum, liver hilum and peritoneum, lower abdominal cavity, left pelvic wall, and inguinal region. There was increased radiation uptake in those regions, with a maximum SUV of 15.9. In the peritoneum, the lymph nodes were partly fused, with unclear boundaries and partial pressure on the surroundings. Based on these findings, the patient was diagnosed with splenic primary non-Hodgkin's lymphoma.

Next, the patient received R-CHOP combined chemotherapy in June 2015: Rituximab 600 mg, vindesine (VDS) 4 mg and idarubicin needle (IDA) 20 mg on d 1; cyclophosphamide IFO2.0 on d 1-3; prednisone 90 mg on d 1-5. One month after chemotherapy, abdominal enhanced CT showed that the enlarged hilar and retroperitoneal lymph nodes had disappeared, and the spleen lesions were significantly reduced. Due to financial difficulties, the patient declined further use of rituximab and underwent a CHOP regimen (IFO2.0 on d 1-3; VDS 4 mg and liposomal doxorubicin 40 mg on d 1; prednisone 90 mg on d 1-5) on August 20, September 17, October 17, and November 22, 2015. The splenic lesion was further reduced (Figure 3C), and the patient is now on regular follow-up and in good health (Figure 3D).

OUTCOME AND FOLLOW-UP

One month after chemotherapy, abdominal enhanced CT showed that the enlarged hilar and retroperitoneal lymph nodes had disappeared, and the spleen lesions were significantly reduced.

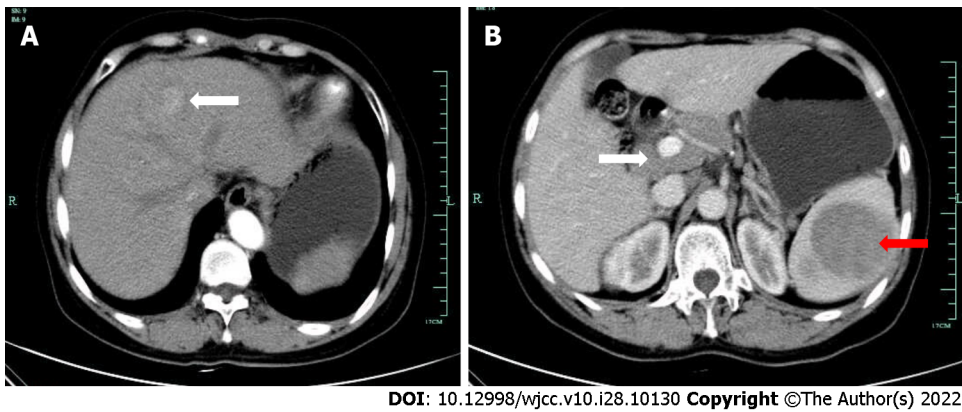


Figure 1 Patient's enhanced computed tomography images. A: Enhanced computed tomography examination showed a mass with a diameter of approximately 2.6 cm on the left liver lobe on January 13, 2015; B: The splenic portal phase showed multiple circular low-density shadow areas with a maximum diameter of approximately 7.6 cm (red arrow); multiple enlarged lymph nodes were detected around the liver hilum and retroperitoneum with partial fusion conglomeration (white arrow).

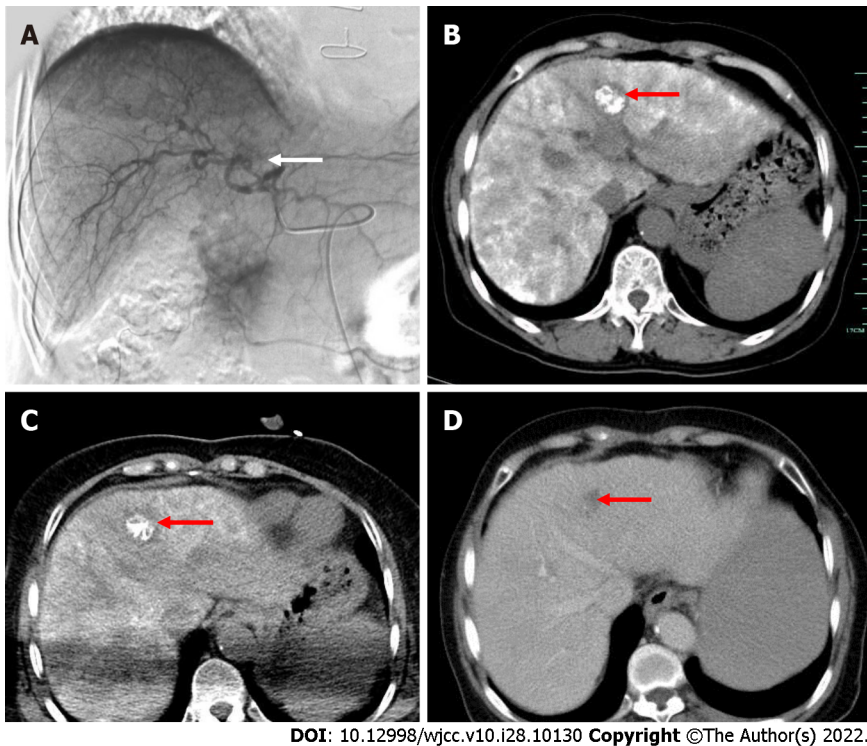
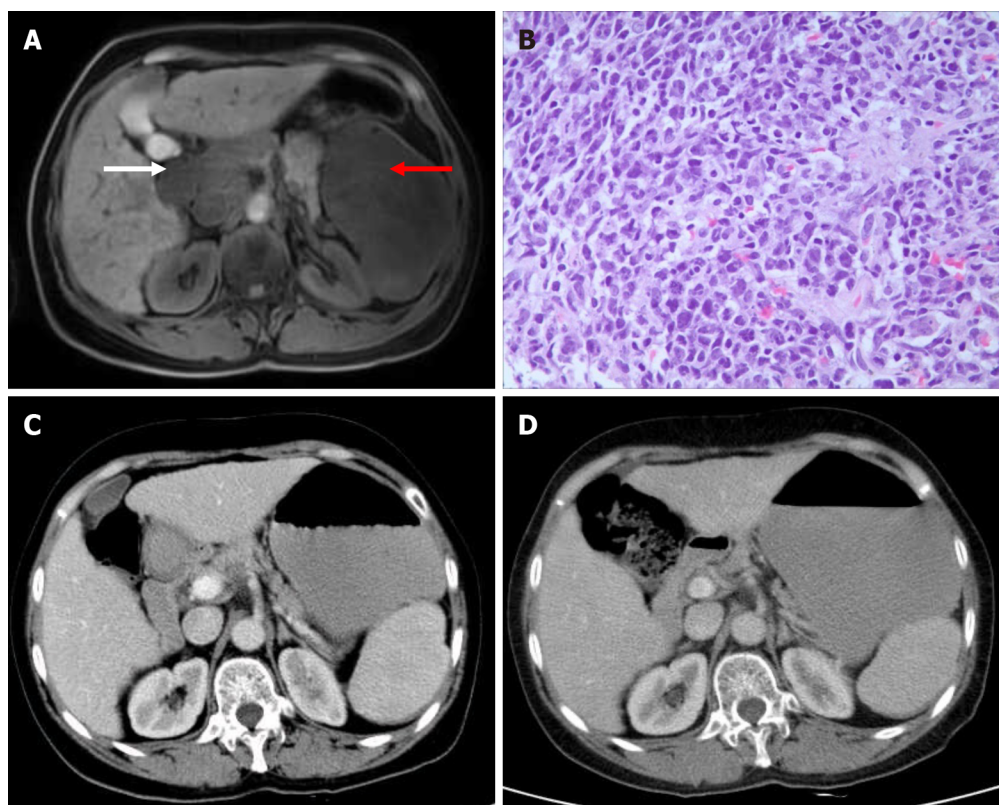


Figure 2 Patient's digital subtraction angiography and computed tomography images. A: Hepatic arteriography, transcatheter arterial chemoembolization (TACE), and hepatic artery digital subtraction angiography imaging showed abnormal staining (white arrow) on the left hepatic artery on January 29, 2015; B: Dense lipiodol deposition in the left lobe lesions was observed two days after TACE by computed tomography (CT) scanning (red arrow); C: CT-guided percutaneous radiofrequency ablation was performed on the hepatic lesion (red arrow); D: One month after the procedure, the tumour had regressed completely (red arrow).

DISCUSSION

Multiple primary malignancies (MPMs) are defined as two or more unrelated primary malignant tumours that originate from different organs and occur in the same patient simultaneously or successively. The case reported here had a medical history of chronic hepatitis B and elevated serum AFP. Primary small hepatic carcinoma in the left lobe and primary NHL in the spleen were confirmed by enhanced CT, hepatic artery digital subtraction angiography imaging, and splenic biopsy. According to the latest National Comprehensive Cancer Network Hepatobiliary Cancers Clinical Practice Guidelines[7], these findings meet the diagnostic criteria for MPMN. Cases of primary hepatic tumour combined with splenic lymphoma are rare. Due to the lack of experience, the patient was initially misdiagnosed with primary hepatic carcinoma with metastasis to the hepatic portal, retroperitoneal



DOI: 10.12998/wjcc.v10.i28.10130 Copyright ©The Author(s) 2022.

Figure 3 Patient's magnetic resonance, pathology, and computed tomography images. A: Axial magnetic resonance imaging showed large lumps with low signals in the spleen (red arrow) on May 22, 2015. Lymph nodes were integrated into a group around the hilum and peritoneum (white arrow); B: Pathological examination of the splenic mass showed a patchy distribution of tumour cells and the disappearance of normal structures (haematoxylin-eosin staining 400 ×); C: Portal phase hepatic enhanced computed tomography (CT) examination after two rounds of R-CHOP treatment on August 19, 2015. Compared with before treatment (Figure 1), the splenic lesions and enlarged lymph nodes in the liver hilum and peritoneum had shrunk, and the tumour had disappeared; D: CT scan of the patient at the last follow-up. There was no sign of tumour recurrence at follow-up.

lymph node, and spleen. Primary liver cancer transfers intrahepatically through the intrahepatic portal vein system, hepatic vein, and hilar lymph nodes. Distant metastasis commonly occurs in the lung and is extremely rare in the spleen. A large number of macrophages and lymphocytes, including cytotoxic T cells with direct killing effects, are present inside the spleen, making it unsuitable for cancer cell growth [8]. After the intrahepatic lesion was cured, the serum AFP gradually returned to normal. However, the spleen, hepatic portal vein, and retroperitoneal lymph nodes were enlarged, inconsistent with the AFP level, ruling out the possibility of liver cancer metastasis. Additionally, splenic lesion biopsy confirmed a diagnosis of NHL.

The majority of primary splenic NHL originates from B cells, characterizing splenomegaly. Compared with other imaging examinations, PET/CT has a high sensitivity for NHL lesions. It can detect not only infringed lymph nodes but also pathological changes outside the junction. Therefore, this technique is important for diagnosis, staging, treatment planning, and efficacy evaluation in malignant lymphoma [9]. Recently, researchers found that the hepatitis B rate is high in NHL patients [10], suggesting a relationship between both pathologies. The onset of most liver cancer cases is caused by hepatitis B cirrhosis in China. The diagnosis of primary liver cancer with lymph node metastasis should be concurrent, and it needs to be differentiated from NHL. Currently, imaging and pathological examination standards are lacking for the diagnosis of primary splenic NHL. Histological examination remains the gold standard for diagnosis. Therefore, timely lesion biopsy, even repeatedly, may be necessary.

TACE combined with conventional radiofrequency ablation could achieve a curative effect locally in early small hepatic carcinoma. NHL is a systemic malignant tumour. Appropriate chemotherapy should be prescribed for patients with HBV infection, minimizing liver damage with antiviral drugs. In this case, a good response was achieved after chemotherapy.

CONCLUSION

Primary hepatic carcinoma combined with primary splenic lymphoma is rare. The understanding of

EHPM should be improved to avoid misdiagnosis, and timely splenic biopsy should be performed for the accurate diagnosis of primary splenic lymphoma.

FOOTNOTES

Author contributions: Wu FZ and Chen XX contributed equally to this work; Chen WY, Mao JT and Wu QH are responsible for case analysis; Chen XX analysed the data and wrote the manuscript; Zhao ZW checks and revises the manuscript; all authors have read and approve the final manuscript.

Supported by the Medical and Health Technology Plan of Zhejiang Province, No. 2020KY1086 and No. 2022ZH086.

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

Conflict-of-interest statement: The authors have no conflict of interest to declare.

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

Country/Territory of origin: China

ORCID number: Fa-Zong Wu 0000-0001-5798-1848; Xiao-Xiao Chen 0000-0002-6692-2214; Wei-Yue Chen 0000-0001-6922-8888; Jian-Ting Mao 0000-0002-3370-9388; Zhong-Wei Zhao 0000-0001-6246-9523.

S-Editor: Yan JP

L-Editor: Kerr C

P-Editor: Yan JP

REFERENCES

- 1 **Shan S**, She J, Xue ZQ, Su CX, Ren SX, Wu FY. Clinical characteristics and survival of lung cancer patients associated with multiple primary malignancies. *PLoS One* 2017; **12**: e0185485 [PMID: 28957405 DOI: 10.1371/journal.pone.0185485]
- 2 **Sakellakis M**, Peroukides S, Iconomou G, Boumpoucheropoulou S, Kalofonos H. Multiple primary malignancies: a report of two cases. *Chin J Cancer Res* 2014; **26**: 215-218 [PMID: 24826064 DOI: 10.3978/j.issn.1000-9604.2014.02.15]
- 3 **Hong S**, Jeong SH, Lee SS, Chung JW, Yang SW, Chung SM, Jang ES, Kim JW, Kim JH, Kim H, Cho JY, Yoon YS, Han HS. Prevalence and outcomes of extrahepatic primary malignancy associated with hepatocellular carcinoma in a Korean population. *BMC Cancer* 2015; **15**: 146 [PMID: 25884376 DOI: 10.1186/s12885-015-1169-1]
- 4 **Kee KM**, Wang JH, Wang CC, Cheng YF, Lu SN. Hepatocellular Carcinoma associated with Extra-hepatic Primary Malignancy: its Secular change, Clinical Manifestations and Survival. *Sci Rep* 2016; **6**: 30156 [PMID: 27444261 DOI: 10.1038/srep30156]
- 5 **Kai K**, Miyoshi A, Kitahara K, Masuda M, Takase Y, Miyazaki K, Noshiro H, Tokunaga O. Analysis of Extrahepatic Multiple Primary Malignancies in Patients with Hepatocellular Carcinoma according to Viral Infection Status. *Int J Hepatol* 2012; **2012**: 495950 [PMID: 23251807 DOI: 10.1155/2012/495950]
- 6 **Abdelwahed Hussein MR**. Non-Hodgkin's lymphoma of the oral cavity and maxillofacial region: a pathologist viewpoint. *Expert Rev Hematol* 2018; **11**: 737-748 [PMID: 30058399 DOI: 10.1080/17474086.2018.1506326]
- 7 **Benson AB**, D'Angelica MI, Abbott DE, Anaya DA, Anders R, Are C, Bachini M, Borad M, Brown D, Burgoyne A, Chahal P, Chang DT, Cloyd J, Covey AM, Glazer ES, Goyal L, Hawkins WG, Iyer R, Jacob R, Kelley RK, Kim R, Levine M, Palta M, Park JO, Raman S, Reddy S, Sahai V, Schefter T, Singh G, Stein S, Vauthey JN, Venook AP, Yopp A, McMillian NR, Hochstetler C, Darlow SD. Hepatobiliary Cancers, Version 2.2021, NCCN Clinical Practice Guidelines in Oncology. *J Natl Compr Canc Netw* 2021; **19**: 541-565 [PMID: 34030131 DOI: 10.6004/jnccn.2021.0022]
- 8 **Kilani-Jaziri S**, Mokdad-Bzeouich I, Krifa M, Nasr N, Ghedira K, Chekir-Ghedira L. Immunomodulatory and cellular anti-oxidant activities of caffeic, ferulic, and p-coumaric phenolic acids: a structure-activity relationship study. *Drug Chem Toxicol* 2017; **40**: 416-424 [PMID: 27855523 DOI: 10.1080/01480545.2016.1252919]
- 9 **Shaikh F**, Chan AC, Awan O, Jerath N, Reddy C, Khan SA, Graham MM. Diagnostic Yield of FDG-PET/CT, MRI, and CSF Cytology in Non-Biopsiable Neurolymphomatosis as a Herd Sign of Recurrent Non-Hodgkin's Lymphoma. *Cureus* 2015; **7**: e319 [PMID: 26487995 DOI: 10.7759/cureus.319]
- 10 **Juárez-Salcedo LM**, Sokol L, Chavez JC, Dalia S. Primary Gastric Lymphoma, Epidemiology, Clinical Diagnosis, and Treatment. *Cancer Control* 2018; **25**: 1073274818778256 [PMID: 29779412 DOI: 10.1177/1073274818778256]



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>

