

World Journal of *Clinical Cases*

World J Clin Cases 2020 January 26; 8(2): 245-486



MINIREVIEWS

- 245 Awareness during emergence from anesthesia: Features and future research directions
Cascella M, Bimonte S, Amruthraj NJ

ORIGINAL ARTICLE**Case Control Study**

- 255 Risk factors for adverse cardiac events in adults with fulminant myocarditis during hospitalization
Kang TD, Ren YL, Zhao H, Ning SQ, Liu WX

Retrospective Study

- 264 Malignant tumors associated with Peutz-Jeghers syndrome: Five cases from a single surgical unit
Zheng Z, Xu R, Yin J, Cai J, Chen GY, Zhang J, Zhang ZT

Observational Study

- 276 Pathogens causing diarrhoea among Bangladeshi children with malignancy: Results from two pilot studies
Karim S, Begum F, Islam A, Tarafdar MA, Begum M, Islam MJ, Malik B, Ahsan MS, Khatami A, Rashid H
- 284 One-year rotational relapse frequency following conventional circumferential supracrestal fiberotomy
Al-Jasser R, Al-Jewair T, Al-Rasheed A

SYSTEMATIC REVIEW

- 294 LINX® reflux management system to bridge the “treatment gap” in gastroesophageal reflux disease: A systematic review of 35 studies
Schizas D, Mastoraki A, Papoutsis E, Giannakoulis VG, Kanavidis P, Tsilimigras D, Ntourakis D, Lyros O, Liakakos T, Moris D

CASE REPORT

- 306 Recurrent lymphoma presenting as painless, chronic intussusception: A case report
Giroux P, Collier A, Nowicki M
- 313 Role of a wireless surface electromyography in dystonic gait in functional movement disorders: A case report
Oh MK, Kim HS, Jang YJ, Lee CH
- 318 Cervicogenic exophthalmos: Possible etiology and pathogenesis
Wu CM, Liao HE, Hsu SW, Lan SJ
- 325 Catheter ablation of premature ventricular complexes associated with false tendons: A case report
Yang YB, Li XF, Guo TT, Jia YH, Liu J, Tang M, Fang PH, Zhang S

- 331 *OFD1* mutation induced renal failure and polycystic kidney disease in a pair of childhood male twins in China
Zhang HW, Su BG, Yao Y
- 337 Japanese encephalitis following liver transplantation: A rare case report
Qi ZL, Sun LY, Bai J, Zhuang HZ, Duan ML
- 343 Malignant solitary fibrous tumor of the pancreas with systemic metastasis: A case report and review of the literature
Geng H, Ye Y, Jin Y, Li BZ, Yu YQ, Feng YY, Li JT
- 353 Esophageal bronchogenic cyst excised by endoscopic submucosal tunnel dissection: A case report
Zhang FM, Chen HT, Ning LG, Xu Y, Xu GQ
- 362 Mesh repair of sacrococcygeal hernia *via* a combined laparoscopic and sacrococcygeal approach: A case report
Dong YQ, Liu LJ, Fu Z, Chen SM
- 370 Durable response to pulsatile icotinib for central nervous system metastases from *EGFR*-mutated non-small cell lung cancer: A case report
Li HY, Xie Y, Yu TT, Lin YJ, Yin ZY
- 377 Argon-helium cryoablation for thoracic vertebrae with metastasis of hepatocellular carcinoma-related hepatitis B: A case report
Tan YW, Ye Y, Sun L
- 382 Brainstem folding in an influenza child with Dandy-Walker variant
Li SY, Li PQ, Xiao WQ, Liu HS, Yang SD
- 390 Irreversible electroporation for liver metastasis from pancreatic cancer: A case report
Ma YY, Shi JJ, Chen JB, Xu KC, Niu LZ
- 398 Cryoablation for liver metastasis from solid pseudopapillary tumor of the pancreas: A case report
Ma YY, Chen JB, Shi JJ, Niu LZ, Xu KC
- 404 Goodpasture syndrome and hemorrhage after renal biopsy: A case report
Li WL, Wang X, Zhang SY, Xu ZG, Zhang YW, Wei X, Li CD, Zeng P, Luan SD
- 410 Eye metastasis in lung adenocarcinoma mimicking anterior scleritis: A case report
Chen HF, Wang WX, Li XF, Wu LX, Zhu YC, Du KQ, Xu CW
- 415 Myocarditis presenting as typical acute myocardial infarction: A case report and review of the literature
Hou YM, Han PX, Wu X, Lin JR, Zheng F, Lin L, Xu R

- 425 Excellent response of severe aplastic anemia to treatment of gut inflammation: A case report and review of the literature
Zhao XC, Zhao L, Sun XY, Xu ZS, Ju B, Meng FJ, Zhao HG
- 436 Spontaneous regression of stage III neuroblastoma: A case report
Liu J, Wu XW, Hao XW, Duan YH, Wu LL, Zhao J, Zhou XJ, Zhu CZ, Wei B, Dong Q
- 444 Efficacy of comprehensive rehabilitation therapy for checkrein deformity: A case report
Feng XJ, Jiang Y, Wu JX, Zhou Y
- 451 Analysis of pathogenetic process of fungal rhinosinusitis: Report of two cases
Wang LL, Chen FJ, Yang LS, Li JE
- 464 Utility of multiple endoscopic techniques in differential diagnosis of gallbladder adenomyomatosis from gallbladder malignancy with bile duct invasion: A case report
Wen LJ, Chen JH, Chen YJ, Liu K
- 471 Transorbital nonmissile penetrating brain injury: Report of two cases
Xue H, Zhang WT, Wang GM, Shi L, Zhang YM, Yang HF
- 479 Multiple organ dysfunction and rhabdomyolysis associated with moonwort poisoning: Report of four cases
Li F, Chen AB, Duan YC, Liao R, Xu YW, Tao LL

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Forhad Chowdhury, FCPS, Assistant Professor, Department of Neurosurgery, National institute of neurosciences and hospital, Dhaka 1207, Bangladesh

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 PubMed, PubMed Central, Science Citation Index Expanded (also known as SciSearch®), and Journal Citation Reports/Science Edition. The 2019 Edition of Journal Citation Reports cites the 2018 impact factor for *WJCC* as 1.153 (5-year impact factor: N/A), ranking *WJCC* as 99 among 160 journals in Medicine, General and Internal (quartile in category Q3).

RESPONSIBLE EDITORS FOR THIS ISSUE

Responsible Electronic Editor: *Ji-Hong Liu*
 Proofing Production Department Director: *Xiang Li*

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, Bao-Gan Peng, Sandro Vento

EDITORIAL BOARD MEMBERS

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

EDITORIAL OFFICE

Jin-Lei Wang, Director

PUBLICATION DATE

January 26, 2020

COPYRIGHT

© 2020 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 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>

Japanese encephalitis following liver transplantation: A rare case report

Zhi-Li Qi, Li-Ying Sun, Jing Bai, Hai-Zhou Zhuang, Mei-Li Duan

ORCID number: Li-Ying Sun (0000-0003-1101-7994).

Author contributions: Qi ZL was the patient's competent physician, reviewed the literature, and contributed to manuscript drafting; Bai J and Zhuang HZ were the patient's attending physicians and contributed to manuscript drafting; Sun LY obtained informed consent and provided important intellectual content; Duan ML was responsible for revision of the manuscript; all authors gave 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.

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 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

Zhi-Li Qi, Li-Ying Sun, Jing Bai, Hai-Zhou Zhuang, Mei-Li Duan, Department of Intensive Care Unit, Beijing Friendship Hospital, Capital Medical University, Beijing 100050, China

Li-Ying Sun, Beijing Key Laboratory of Tolerance Induction and Organ Protection in Transplantation, Beijing Friendship Hospital, Capital Medical University, Beijing 100050, China

Corresponding author: Mei-Li Duan, MD, PhD, Chief Doctor, Department of Intensive Care Unit, Beijing Friendship Hospital, Capital Medical University, 95 Yong An Road, Xi Cheng District, Beijing 100050, China. 13001058598@163.com

Abstract

BACKGROUND

Japanese encephalitis (JE) is a serious public health concern with a high mortality rate in many Asian countries. For many years, JE virus (JEV) was considered the major cause of viral encephalitis in Asia. Although most JE cases are asymptomatic, the case fatality rate approaches 30%, and approximately 30%–50% of survivors have long-term neurological sequelae. To the best of our knowledge, JEV infection has never been reported following liver transplantation.

CASE SUMMARY

We report a case of a woman who underwent liver transplantation for autoimmune liver disease but presented with fever and neurological symptoms 13 d after transplantation. Magnetic resonance imaging revealed JEV infection, and positive immunoglobulin M antibody to JEV in blood and cerebrospinal fluid confirmed JE. The patient was treated with antiviral agents, immune regulation, and organ function support. No neurological sequelae were present after 1 year of follow-up.

CONCLUSION

Imaging and lumbar puncture examination should be performed as soon as possible in patients with fever and central nervous system symptoms after liver transplantation, and the possibility of atypical infection should be considered, which is helpful for early diagnosis and improved prognosis.

Key words: Liver transplantation; Japanese encephalitis virus; Neurological complications; Infection; Case report

©The Author(s) 2020. Published by Baishideng Publishing Group Inc. All rights reserved.

original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Received: November 10, 2019

Peer-review started: November 10, 2019

First decision: November 19, 2019

Revised: November 25, 2019

Accepted: December 6, 2019

Article in press: December 6, 2019

Published online: January 26, 2020

P-Reviewer: Govindarajan GK

S-Editor: Wang YQ

L-Editor: Filipodia

E-Editor: Liu JH



Core tip: Japanese encephalitis is a serious public health concern with a high mortality rate in many Asian countries. We describe a rare case of a woman who underwent liver transplantation and was subsequently diagnosed with Japanese encephalitis. This case highlights the need for performing imaging and lumbar puncture examination as soon as possible in patients with fever and central nervous system symptoms after liver transplantation.

Citation: Qi ZL, Sun LY, Bai J, Zhuang HZ, Duan ML. Japanese encephalitis following liver transplantation: A rare case report. *World J Clin Cases* 2020; 8(2): 337-342

URL: <https://www.wjgnet.com/2307-8960/full/v8/i2/337.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v8.i2.337>

INTRODUCTION

Liver transplantation is a fundamental therapeutic solution to end-stage liver disease^[1,2]. However, infection is a major complication that causes significant morbidity and mortality after transplantation^[3]. Despite advances in surgical techniques, liver transplant recipients are at high risk of infection because of immunosuppression. Bacteria, fungi, viruses, and parasites can cause infection both before and after transplantation^[4]. As such, early recognition, along with timely and accurate diagnosis and treatment, plays a key role in the prognosis of infected individuals.

Japanese encephalitis (JE) is a serious public health concern with a high mortality rate in many Asian countries^[5]. For many years, JE virus (JEV) was considered the major cause of viral encephalitis in Asia, with approximately 67900 cases reported each year. Although most JE cases are asymptomatic, the case fatality rate approaches 30%, and approximately 30%–50% of survivors have long-term neurological sequelae^[6]. However, there has been no previous report of JE after liver transplantation^[7].

CASE PRESENTATION

Chief complaints

A 67-year-old woman with autoimmune hepatitis cirrhosis was admitted for liver transplantation. At 13 d post-surgery, the patient developed fever of 38.4 °C. The next day, she complained of fatigue, nausea, and vomiting after eating.

History of past illness

This patient presented with myalgia, arthritis and arthralgias, photosensitivity, oral ulcers, keratoconjunctivitis sicca, and positive antinuclear antibody test 11 years ago, and she was diagnosed with systemic lupus erythematosus (SLE) then. Her arthralgias were improving with treatment, but right upper quadrant abdominal pain was worsening. Abdominal ultrasound showed evidence of cirrhosis 5 years ago, and she started to have recurrent hematemesis and melena 1 year ago. She underwent gastroscopic esophageal varices ligation 1 year ago as well as surgical aortic valve replacement due to severe aortic valve stenosis. She was diagnosed with SLE related autoimmune hepatitis with decompensated liver cirrhosis.

History of present illness

Her admission diagnosis was SLE related autoimmune hepatitis with decompensated liver cirrhosis, the Model for End-stage Liver Disease score was 38^[8]. An appropriate donation after circulatory death was available on the day of admission, and the patient underwent orthotopic liver transplantation. The surgery time was 6 h 25 min, with intraoperative blood loss of 500 mL and transfusion of 400 mL of red blood cells. The patient was removed from the ventilator upon transfer to the intensive care unit (ICU) after surgery. Following surgery, cefepime was administered to prevent infection, along with methylprednisolone and tacrolimus to prevent graft rejection. Epstein-Barr virus test and 1, 3-β-D-Glucan Assay were positive, and *Enterococcus faecalis* was cultured from intraoperative donor liver lavage fluid and postoperative drainage fluid. As a result, ganciclovir, vancomycin, and micafungin were successively added to the treatment regimen to prevent infection, and liver function

improved. Doppler ultrasonography on postoperative day 4 indicated the transplanted liver was normal in shape and size, with an anterior to posterior diameter of about 8.4 cm in the right lobe, homogeneous parenchyma echo, non-dilated internal and external bile ducts, and normal liver blood flow. The patient was transferred to a general ward 4 d after the operation.

Physical examination

By the afternoon of postoperative day 13, the patient's body temperature increased to 38.9 °C, and she showed lethargy and weakness. From postoperative days 15 to 19, the patient showed persistent fever, with a temperature up to 42 °C. She developed progressive consciousness disorder, which gradually developed into shallow coma with no response to pain stimulation, neck resistance (+), continuous limb and trunk tremors, and higher limb muscle tension. The patient was returned to the ICU on day 19 post-surgery. At this point, the patient had a Glasgow coma scale score of 6, indicative of deep coma with intermittent convulsions, and a temperature of 38.6 °C.

Laboratory examinations

On day 13 post-surgery, routine blood examination showed the following results: white blood cell (WBC) count, $11.67 \times 10^9/L$; granulocyte percentage, 90.8%; hemoglobin, 87 g/L; and platelet count, $58 \times 10^9/L$. Blood gas results were: pH, 7.42; PCO_2 , 33 mmHg; PO_2 , 66 mmHg; and base excess (BE), -3.2. Biochemical test results were: aspartate aminotransferase, 17 U/h; alanine aminotransferase, 8 U/h; albumin, 36 g/L; total bilirubin, 13.93 $\mu\text{mol/L}$ (3.4–17.1 $\mu\text{mol/L}$); creatinine, 62 $\mu\text{mol/L}$; lactic acid, 0.5 mmol/L; K^+ , 4.01 mmol/L; and Na^+ , 129 mmol/L.

On the day of return to the ICU, blood test results were: WBC count, $7.45 \times 10^9/L$; granulocyte percentage, 85.4%; hemoglobin, 74 g/L; and platelet count, $88 \times 10^9/L$. Blood gas results were: pH, 7.45; PCO_2 , 32 mmHg; PO_2 , 158 mmHg; and BE, -1.9. Biochemical test results were: Aspartate aminotransferase (AST), 14 U/h; alanine aminotransferase, 4 U/h; albumin, 36 g/L; total bilirubin, 12.06 $\mu\text{mol/L}$; creatinine, 87 $\mu\text{mol/L}$; lactic acid, 0.5 mmol/L; K^+ , 4.51 mmol/L; and Na^+ , 131 mmol/L.

Imaging examinations

On day 13 post-surgery, chest computed tomography revealed lung bronchiectasis with infection and pleural effusion. Head computed tomography showed lacunar infarction. Head magnetic resonance imaging revealed abnormal signals in the bilateral thalamus and caudate nucleus, bilateral temporal sulcus gyrus, and parahippocampal gyrus, along with infectious lesions, leading us to suspect JEV infection (Figure 1).

Further diagnostic work-up

On the day after return to the ICU, lumbar puncture revealed that cerebrospinal fluid pressure was 70 mmH₂O; cerebrospinal fluid white blood cell count, $140 \times 10^6/L$ ($0-8 \times 10^6/L$); total albumin 244.67 mg/dL (15–45 mg/dL); and glucose, 4.96 mmol/L (2.24–3.92 mmol/L).

Microbiological identification of the causative agent

Serum and cerebrospinal fluid samples taken on day 20 were positive for JEV antibodies. And autoimmune encephalitis panel tests were negative in serum and cerebrospinal fluid, including N-methyl-D-aspartate receptor (NMDAR), leucine-rich glioma inactivated 1 (LGI1), alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptor 1 (AMPA1), AMPAR2, gamma-aminobutyric acid B receptor (GABA-B receptor), contactin-associated protein-like 2 (Caspr2).

FINAL DIAGNOSIS

The final diagnosis of the present case was JE.

TREATMENT

We applied acyclovir treatment and intravenous immunoglobulin. Midazolam was administered to control convulsions. On postoperative day 19, patient had a normal PO_2 and PCO_2 with Glasgow coma scale score of 6, and oropharyngeal airway and head of bed elevation were performed initially. In the following day, endotracheal intubation was undertaken due to deteriorated PCO_2 to protect the patient's airway. To prevent allograft rejection, methylprednisolone 25 mg q6 h intravenously (iv) (taper to 8 mg po once daily on day 7 post-surgery), tacrolimus 1.5 mg po q12 h,

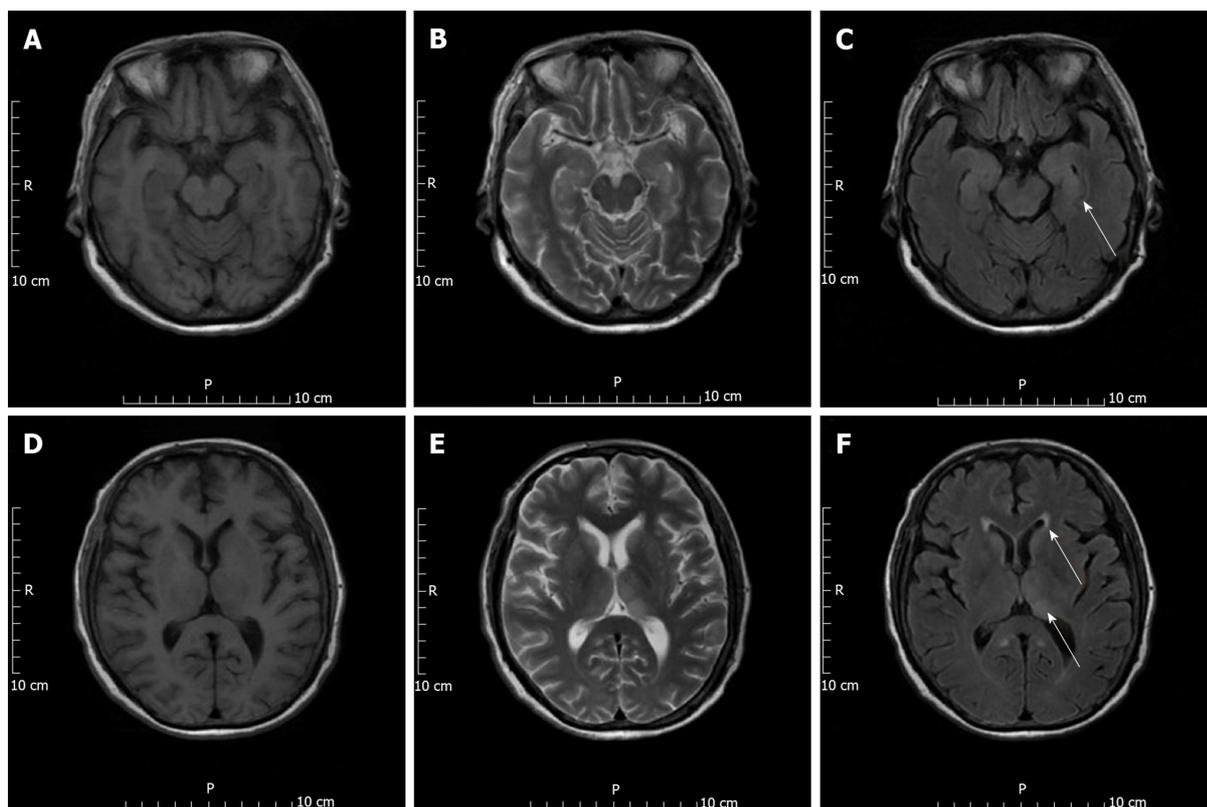


Figure 1 Enhanced magnetic resonance imaging scan of the patient’s brain on post-transplantation day 19. A, B, D, E: Lesions can be seen in T1 image (A, D) and T2 image (B, E); C: Hyperintense lesion is seen in this T2 fluid attenuated inversion recovery image in parahippocampal gyrus; F: Hyperintense lesions are seen in this T2 fluid attenuated inversion recovery image in the bilateral thalamus and caudate nucleus. Arrows indicate the lesions.

mycophenolate mofetil 750 mg po q12 h, and basiliximab 20 mg on day 0 and day 4 post-surgery were administered. On day 19 post-surgery, while patient’s mental status deteriorated, tacrolimus was discontinued, methylprednisolone doses were given 20 mg iv once daily, and mycophenolate mofetil was maintained at 750 mg q12 h po. Other treatments mainly included anti-infective agents and maintaining a stable internal environment. Anti-rejection regimen was changed to mycophenolate mofetil and methylprednisolone.

OUTCOME AND FOLLOW-UP

The patient’s mental status is improved; GCS score returned from 6 points back to 12 points; body temperature peak decreased; meningeal irritation disappeared; and limb muscle strength gradually recovered. On day 27 post-surgery, the patient was extubated and transferred to a general surgery ward on day 32. At 1 year post-surgery, the patient showed no signs of infection, had stable organ function, was conscious, and had no neurological sequelae.

DISCUSSION

Infectious complications are a major cause of morbidity and mortality following liver transplantation, despite recent advances in organ transplantation. Infection can be caused by bacteria, fungi, viruses, and even parasites. Infections occurring soon after transplantation are likely to be acquired during surgery from the donor organ or as a result of nosocomial pathogens. Opportunistic infections occur later and reflect the impact of immunosuppressive drugs. The risk of infection at any time after transplantation is determined by the status of immunosuppression, epidemiological exposure, vaccination, and chemoprophylaxis of the recipient^[9].

The most common clinical manifestation of JE is acute encephalitis. After an incubation period of 5-15 d, initial symptoms are usually nonspecific and may include fever, diarrhea, and chills, followed by headache, vomiting, and general weakness. Changes in mental state, focal neurological dysfunction (including paresis,

hemiplegia, quadriplegia, or cerebral palsy), or motor impairment can occur in the following days, with many patients falling into a coma and some requiring supplementary ventilation. In our case, on day 13 after liver transplantation, the patient developed fever, headache, general weakness, altered mental state, and hemiplegia, and then fell into a coma requiring mechanical ventilation. The clinical manifestations were consistent with JE. The patient had hyponatremia, and cerebrospinal fluid examination revealed elevated WBC count, elevated protein concentration, and a normal glucose concentration. Magnetic resonance imaging suggested abnormal signal lesions in the thalamus and caudate nucleus head, bilateral temporal sulcus gyrus, and parahippocampal gyrus, which also met the laboratory indicators and imaging characteristics of JE. Positive immunoglobulin M antibody test results for serum and cerebrospinal fluid samples from the patient also confirmed recent JEV infection. Treatment of JE mainly involves supportive therapy, including control of intracranial pressure, maintenance of cerebral perfusion pressure, control of seizures, and prevention of complications^[7].

JEV and West Nile virus (WNV) both belong to the genus *Flavivirus*. There are several previous reports of WNV infection following organ transplantation^[10-12]. For example, Winston *et al*^[10] described four solid-organ transplant recipients with donor-derived WNV infection from a common donor residing in a region of increased WNV activity. Two of the four transplant recipients died. Testing of the organ donor for WNV infection was not performed as part of the organ donor screening process. JE following liver transplantation has not previously been reported, and the organ donor in the current study was also not tested for JEV infection during the screening process.

One of the most interesting aspects of the current case is the origin of the JEV. In determining this, we considered several possibilities. The first was the transmission of infection *via* mosquito bites following liver transplantation. However, the patient was admitted to the ICU after surgery, where there was little chance of a mosquito bite. Additionally, there was no epidemic transmission of JEV in Beijing at the time of infection, so it was unlikely to be transmitted *via* mosquito bites. The second possibility was that the donor was the source of infection. Recent studies have shown that donor-derived infections (DDIs) in the United States occur in < 1% of all transplant procedures. However, despite the low incidence of DDIs, when transmission does occur, it can result in significant morbidity and mortality^[13]. In the current case, the donor died of cerebral hemorrhage following traumatic brain injury. Donation occurred 2 d after trauma. No intracranial infection was observed in the donor, and there was no indication of JE. The recipient developed a fever 11 d after transplantation. Given that the incubation period for JE is commonly 4-21 d, donor latent infection cannot be excluded. The third possibility was that the patient contracted the virus prior to surgery and was in the incubation period of infection. After surgery, immunosuppressive agents were administered to the patient. Most immunosuppressive drugs target T lymphocytes, which are the primary mediators of an immunogenic reaction against the graft, leading to rejection. Modern immunosuppressive regimens include two or more drugs that target the immune system at different levels. Higher levels of immunosuppression mean a higher risk of infection, with rates of infection typically highest in the early post-transplantation period^[14]. As time passes and the level of immunosuppression is reduced, liver recipients are less prone to infection^[15]. Unfortunately, the lack of screening for JEV in the donor and recipient prior to transplantation meant that we were unable to identify the source of infection, which is a weakness of this study.

Conventional screening makes it difficult to detect pathogens such as trypanosomes, human immunodeficiency virus, WNV, hepatitis C virus, *Mycobacterium tuberculosis*, rabies virus, and multidrug-resistant bacteria. In addition, donor assessment must be completed within a short window of time. The allocation and transportation of organs limit our ability to assess each potential risk. Therefore, transmission events from donors are not completely avoidable^[16].

There were some limitations to this case report. There was no cerebrospinal fluid pathogen detection at the onset of the disease, and re-examination should be conducted after recovery with magnetic resonance imaging.

CONCLUSION

As far as we know, JE following liver transplantation has not previously been reported. Although JE is a serious public health concern with high mortality rate in Asia, this case is unique due to lack of definitely epidemiological contact. We highly suspect it is related to patient's immunocompromised status. Imaging and lumbar puncture examination should be performed as soon as possible when patients present

with fever and central nervous system symptoms post liver transplantation, which is helpful for early diagnosis and improves prognosis.

REFERENCES

- 1 **Martin P**, DiMartini A, Feng S, Brown R, Fallon M. Evaluation for liver transplantation in adults: 2013 practice guideline by the American Association for the Study of Liver Diseases and the American Society of Transplantation. *Hepatology* 2014; **59**: 1144-1165 [PMID: 24716201 DOI: 10.1002/hep.26972]
- 2 **European Association for the Study of the Liver**. EASL Clinical Practice Guidelines: Liver transplantation. *J Hepatol* 2016; **64**: 433-485 [PMID: 26597456 DOI: 10.1016/j.jhep.2015.10.006]
- 3 **Abad CL**, Lahr BD, Razonable RR. Epidemiology and risk factors for infection after living donor liver transplantation. *Liver Transpl* 2017; **23**: 465-477 [PMID: 28176451 DOI: 10.1002/lt.24739]
- 4 **Kim SI**. Bacterial infection after liver transplantation. *World J Gastroenterol* 2014; **20**: 6211-6220 [PMID: 24876741 DOI: 10.3748/wjg.v20.i20.6211]
- 5 **Zhang H**, Wang Y, Li K, Mehmood K, Gui R, Li J. Epidemiology of Japanese Encephalitis in China (2004-2015). *Travel Med Infect Dis* 2019; **28**: 109-110 [PMID: 30267769 DOI: 10.1016/j.tmaid.2018.09.011]
- 6 **Heffelfinger JD**, Li X, Batmunkh N, Grabovac V, Diorditsa S, Liyanage JB, Pattamadilok S, Bahl S, Vannice KS, Hyde TB, Chu SY, Fox KK, Hills SL, Marfin AA. Japanese Encephalitis Surveillance and Immunization - Asia and Western Pacific Regions, 2016. *MMWR Morb Mortal Wkly Rep* 2017; **66**: 579-583 [PMID: 28594790 DOI: 10.15585/mmwr.mm6622a3]
- 7 **Tiroumourouane SV**, Raghava P, Srinivasan S. Japanese viral encephalitis. *Postgrad Med J* 2002; **78**: 205-215 [PMID: 11930023 DOI: 10.1136/pmj.78.918.205]
- 8 **Freeman RB**, Wiesner RH, Harper A, McDiarmid SV, Lake J, Edwards E, Merion R, Wolfe R, Turcotte J, Teperman L; UNOS/OPTN Liver Disease Severity Score, UNOS/OPTN Liver and Intestine, and UNOS/OPTN Pediatric Transplantation Committees. The new liver allocation system: moving toward evidence-based transplantation policy. *Liver Transpl* 2002; **8**: 851-858 [PMID: 12200791 DOI: 10.1053/jlts.2002.35927]
- 9 **Chhabra P**, Ranjan P, Bhasin DK. Simultaneous Occurrence of Varicella Zoster Virus-Induced Pancreatitis and Hepatitis in a Renal Transplant Recipient: A Case Report and Review of Literature. *Perm J* 2017; **21**: 16-083 [PMID: 28333601 DOI: 10.7812/TPP/16-083]
- 10 **Winston DJ**, Vikram HR, Rabe IB, Dhillon G, Mulligan D, Hong JC, Busuttill RW, Nowicki MJ, Mone T, Civen R, Teclé SA, Trivedi KK, Hocevar SN; West Nile Virus Transplant-Associated Transmission Investigation Team. Donor-derived West Nile virus infection in solid organ transplant recipients: report of four additional cases and review of clinical, diagnostic, and therapeutic features. *Transplantation* 2014; **97**: 881-889 [PMID: 24827763 DOI: 10.1097/TP.0000000000000024]
- 11 **Inojosa WO**, Scotton PG, Fuser R, Giobbia M, Paolin A, Maresca MC, Brunello A, Nascimben E, Sorbara C, Rigoli R, Berti R, Gajo GB, Giometto B. West Nile virus transmission through organ transplantation in north-eastern Italy: a case report and implications for pre-procurement screening. *Infection* 2012; **40**: 557-562 [PMID: 22544764 DOI: 10.1007/s15010-012-0263-4]
- 12 **Rabe IB**, Schwartz BS, Farnon EC, Josephson SA, Webber AB, Roberts JP, de Mattos AM, Galloway BJ, van Slyck S, Messenger SL, Yen CJ, Bloch EM, Drew CP, Fischer M, Glaser CA; WNV Transplant Investigation Team. Fatal transplant-associated west nile virus encephalitis and public health investigation-california, 2010. *Transplantation* 2013; **96**: 463-468 [PMID: 23823653 DOI: 10.1097/TP.0b013e31829b4142]
- 13 **Ison MG**, Nalesnik MA. An update on donor-derived disease transmission in organ transplantation. *Am J Transplant* 2011; **11**: 1123-1130 [PMID: 21443676 DOI: 10.1111/j.1600-6143.2011.03493.x]
- 14 **Chelala L**, Kovacs CS, Taegge AJ, Hanounch IA. Common infectious complications of liver transplant. *Cleve Clin J Med* 2015; **82**: 773-784 [PMID: 26540328 DOI: 10.3949/ccjm.82a.14118]
- 15 **Fishman JA**. Infection in solid-organ transplant recipients. *N Engl J Med* 2007; **357**: 2601-2614 [PMID: 18094380 DOI: 10.1056/NEJMra064928]
- 16 **Zhang JR**, Sun LY, Zhu ZJ, Wei L, Zeng ZG, Qu W, Liu Y, Song W, Zhang L, He EH, Xu RF, Fang L. The effect of donor-derived infections on liver transplantation recipients. *Shiyong Qiguan Yizhi Dianzizazhi* 2018; **6**: 17-20 [DOI: 10.3969/j.issn.2095-5332.2018.01.005]



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>

