A case of acute liver failure in HIV/HBV co-infection

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The Third People’s Hospital of Shenzhen
May 12th, 2017
History of present illness
Patient basic information

• Name: Mr Li
• Gender: male
• Age: 26 years old
• Occupation: staff
• Date of admission: 2017-02-25
• fever for a week, bad appetite with yellowish urine for 5 days.
• The patient had been diagnosed with HIV infection over 5 years previously but had not been on ART.

• **December 4, 2016**: First hospitalization, diagnosed as “AIDS: pneumonia、thrush; HbeAg-Positive hepatitis B chronic ; Drug dermatitis”. After treatment the patient got normal body temperature and relieved from cough.

• **December 30, 2016**: He asked to discharge.
• **January 19, 2017**, the patient began to ART. Because of severe drug dermatitis, he only take the only medicine: Lopinavir/Ritonavir.

• **February 18, 2017**, the patient began to irregular fever with the highest temperature 38.5 °C, associated with mild chills, did not go to hospital for consultation.

• **February 20, 2017**, He found that his urine appeared dark yellow, accompanied by nausea, poor appetite and fatigue.
• No symptom of cough, vomiting, headache, abdominal pain, diarrhea and sleep disorder.

• Besides Lopinavir/Ritonavir, he did not take any other medicine.

• Body weight declines.
Past History
• 13 years ago, diagnosed with chronic hepatitis B.

• During the first hospitalization he had drug induced dermatitis, specific reason was not detected.

• No history of TB.

• No allergy history of food.
History of Epidemiology
• History of methamphetamine abuse for 5 years and has given up for 2 years, denied history of intravenous drug use.
• Have sex with men for many years.
• No history of Surgery.
• No history of blood transfusion.
Individual History
• Never alcoholic abused or smoking.
Physical examination

- T36.5℃  P113/min  R 21/min  BP115/89 mmHg
- moderate nourished
- Clear Consciousness
- Skin and sclera was stained yellow
- No rash and spider angioma
- No oral leukoplakia
- Superficial lymph nodes were not touched
Physical examination

- Abdomen: Flat and soft. No abdominal wall varicose. No tenderness or rebound tenderness on abdomen. Liver and spleen was untouched. Shifting dullness negative.
- Physiological response was normal.
- The ability to solve mathematical problems is normal.
Lab Examination
# Blood Test

<table>
<thead>
<tr>
<th>Date</th>
<th>WBC 109/L</th>
<th>NEUT 109/L</th>
<th>LYM-PH 109/L</th>
<th>EO %</th>
<th>RBC 106/L</th>
<th>HB g/L</th>
<th>PLT 109/L</th>
<th>HCT %</th>
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<tbody>
<tr>
<td>2016-12-6</td>
<td>5.77</td>
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<td>0</td>
<td>4.69</td>
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<td>181</td>
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<td>4.73</td>
<td>138</td>
<td>174</td>
<td>41.6</td>
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## Blood Test

<table>
<thead>
<tr>
<th>DATE</th>
<th>CRP mg/L</th>
<th>PCT ng/ml</th>
<th>ESR mm/H</th>
<th>IgE</th>
<th>Tispot (INF-γ)</th>
<th>G (1,3-β-D glucan)</th>
<th>GM (galactomannan)</th>
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<tbody>
<tr>
<td>2016-12-5</td>
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<td>------</td>
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## Liver function

<table>
<thead>
<tr>
<th>Date</th>
<th>PA g/L</th>
<th>ALB g/L</th>
<th>TB umol/L</th>
<th>DB umol/L</th>
<th>ALT u/L</th>
<th>AST u/L</th>
<th>ALP u/L</th>
<th>GGT u/L</th>
<th>CHE u/L</th>
<th>LDH u/L</th>
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<td>3.7</td>
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<tr>
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<td>35.6</td>
<td>11.5</td>
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<td>29.1</td>
<td>201</td>
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<td>112</td>
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<td>140</td>
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<td>1024</td>
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<td>53</td>
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</table>
# Liver function

<table>
<thead>
<tr>
<th>Date</th>
<th>PTA %</th>
<th>PT Sec</th>
<th>FIB g/L</th>
<th>APTT Sec</th>
<th>TT Sec</th>
<th>AT-Ⅲ %</th>
<th>D-DIC μg/ml</th>
<th>AMON μmol/L</th>
<th>AFP μg/L</th>
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</thead>
<tbody>
<tr>
<td>2016-12-05</td>
<td>99</td>
<td>13</td>
<td>5.9</td>
<td>36.5</td>
<td>19.6</td>
<td>74</td>
<td>0.52</td>
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<td>⎯</td>
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<tr>
<td>2017-02-25</td>
<td>27</td>
<td>29</td>
<td>2.65</td>
<td>46.4</td>
<td>19</td>
<td>⎯</td>
<td>⎯</td>
<td>34</td>
<td>⎯</td>
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<tr>
<td>2017-02-26</td>
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<td>28</td>
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<tr>
<td>2017-02-27</td>
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<td>36</td>
<td>2.18</td>
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<td>17</td>
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<tr>
<td>2017-02-28</td>
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<td>⎯</td>
<td>⎯</td>
<td>⎯</td>
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</tbody>
</table>
## Hepatitis related examination

<table>
<thead>
<tr>
<th>Date</th>
<th>HbsAg</th>
<th>HbsAb</th>
<th>HbeAg</th>
<th>HbeAb</th>
<th>HbcAb</th>
<th>HbcAb IgM</th>
<th>HBV DNA IU/ml</th>
<th>CD4+ /ul</th>
<th>CD4+ /CD8+</th>
<th>HIV RNA IU/ml</th>
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</thead>
<tbody>
<tr>
<td>2016-12</td>
<td>+</td>
<td>—</td>
<td>+</td>
<td>—</td>
<td>+</td>
<td>—</td>
<td>5.76 E+3</td>
<td>9</td>
<td>0.01</td>
<td>8.18 E+5</td>
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<tr>
<td>2017-02</td>
<td>+</td>
<td>—</td>
<td>+</td>
<td>—</td>
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<td>5.61 E+9</td>
<td>33</td>
<td>0.04</td>
<td>1.05 E+3</td>
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</tbody>
</table>
# Hepatitis related examination

<table>
<thead>
<tr>
<th>Date</th>
<th>HAV-Ab</th>
<th>HCV-Ab</th>
<th>HCV-RNA</th>
<th>HDV-Ab</th>
<th>HEV -Ab</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-12-5</td>
<td>negative</td>
<td>negative</td>
<td>negative</td>
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<tr>
<td>2017-2-25</td>
<td>negative</td>
<td>negative</td>
<td>negative</td>
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</tr>
</tbody>
</table>
## Other virological examinations

<table>
<thead>
<tr>
<th>Date</th>
<th>Blood CMV DNA IU/ml</th>
<th>Urine CMV DNA IU/ml</th>
<th>Blood EB DNA IU/ml</th>
<th>TORCH</th>
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</thead>
<tbody>
<tr>
<td>2016-12-5</td>
<td>4690</td>
<td>5.38E+7</td>
<td>negative</td>
<td>CMV IgG+ HSV IgG+</td>
</tr>
<tr>
<td>2017-2-25</td>
<td>---</td>
<td>9.93E+4</td>
<td>1.26e+3</td>
<td>CMV IgG+ HSV IgG+</td>
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</tbody>
</table>
Image Examination
Abdominal Ultrasound

- the right lobe of the liver diameter of 148mm, the liver volume becomes larger.

- Intrahepatic echo thickening, the liver sounds suggest diffuse damage

- The diameter of the portal vein is 11 mm.

- There is no fluid in the abdominal cavity.
FibroScan®
Examination report

INSTITUTION

E (kPa)
Median
IQR*
IQR*/med

6.2
0.3
5%

* IQR: Interquartile range

Comment

Probe must be calibrated every six months in order to maintain the performance characteristics of the device. FibroScan® is a medical diagnostic tool. The examination must be carried out by a certified operator. The result must be interpreted by a practitioner who is a liver specialist, according to the clinical context of the patient, taking into account the number of valid measurements, their scatter (IQR), and the success rate. www.echosens.com

Note: The results can only be used for clinical purposes and should not be used for other purposes.
Pulmonary lesions improved significantly.
Initial Diagnosis

➢ Acute on chronic liver failure
➢ HbeAg-Positive hepatitis B chronic
➢ AIDS: IRIS?
➢ Pneumonia improved
Treatment

➢ Stop HAART
➢ Telbivudine
➢ Dexamethasone
➢ Prostaglandin, adenosylmethionine
   Aspartate ornithine
➢ Nutritional therapy
Disease outcome

➢ The patient did not improve the condition

➢ Patient with hepatic encephalopathy on February 27

➢ We recommended that patient be treated with artificial liver treatment, but his family refused. After discussions with his family, he was placed on comfort care and died on March 1.
Summary of this case

- HIV/HBV coinfected patient
- The ART regiment has only one medicine: Lopinavir/Ritonavir
- No anti-HBV treatment
- After ART—abnormal liver function and increased HBV-DNA
- Besides Lopinavir/Ritonavir, he did not take any other medicine.
- Opportunity infection has been controlled and no basis for new infections.
- No other liver disease is combined.
Final diagnosis

- Acute on chronic liver failure
  Hepatic encephalopathy
- HbeAg positive chronic hepatitis B virus
- AIDS
  HBV - related IRIS
  EBV infection
  CMV infection
- Secondary neutropenia
Summary-HIV/HBV coinfection

• It is estimated that 14.6% of HIV-infected patients in China are with chronical HBV

• Liver enzyme elevations in HIV/HBV coinfection patients after starting HAART are common. HIV/HBV coinfection patients have higher rates of liver-related morbidity and mortality (advanced cirrhosis, hepatocellular carcinoma, and end-stage liver failure)


Lepelletier C. First description of past Hepatitis B Virus infection acute reactivation occurring in a HIV infected patient as manifestation of immunere constitution inflammatory syndrome. J Infec Chemother.2016 Jul;22(7):490-4
Summary-HIV/HBV coinfection

- People coinfected with HIV and HBV and evidence of severe chronic liver disease should be considered a priority for ART.

- For patients who have not been treated with ART, avoid the use of single-drug (entecavir) in the treatment of HBV. Telbivudine can be chosen to use alone.

- The ART principle of HIV/HBV coinfection: Use of at least two agents with activity against HBV (TDF + 3TC or FTC) in terms of improved viral load response and reduced development of HBV drug resistance.
Summary - HIV/HBV coinfection

- It is critical to closely monitor the clinical status, HBV DNA and liver enzymes of HIV/HBV infection patients after initiation of ART in order to identify cases of hepatotoxicity in early stage.

- One question is whether it is possible to determine if the hepatic injury is from drug toxicity or HBV IRIS and whether this changes management of the patient.
hepatic injury

- Medical side effects: antiretroviral drugs, antibiotics, Non-steroidal anti-inflammatory drugs.
- Viral replication interference between HBV and HIV
- Coinfection patients are at risk for HBV immune reconstitution inflammatory syndrome (IRIS). But the mechanism is not clear.
- Primary infection in the liver: TB, fungal, bacterial
- Other infection: HAV, HCV, HEV, CMV, EBV
- Other Liver disease: Alcoholic hepatitis, Non-alcoholic fatty hepatitis
Summary-HIV/HBV coinfection

- We should pay attention to the merger of HBV related treatment and monitoring in HIV/HBV coinfections.
- If the patient appears Liver enzyme elevations, try to clarify the reasons for increased liver enzymes.
- Avoid the use of monotherapy to treat HIV/HBV coinfections.
Thank you for your attention