Case Report

Acute Renal Failure after Consumption of Fish Gall Bladder

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A case of acute renal failure after consumption of fish gall bladder as traditional medical remedy is reported. The patient fully recovered with conservative treatment. The risk of acute kidney failure and even multiple organ dysfunction syndrome following ingestion of fish gall bladder is highlighted.

1. Introduction

In India, especially in Assam, people believe that fish gall bladder can improve vision and treat rheumatism. Chinese populations have a similar view and believe it improves eyesight and cure asthma [1]. Due to frequent consumption of fish gall bladder, fish bile poisoning cases care reported more commonly in China, India, Japan, and other Asian countries [2–4]. There were many reports about fish gall bladder poisoning leading to acute renal failure (ARF), acute liver injury, and therefore increasing mortality [5]. The incidence of ARF in fish bile poisoning is 55%–100%, while the mortality rate accounts 91.7%. Recently, studies have shown that fish gall bladder can also damage the heart, liver, and gastrointestinal tract and lead to multiple organ dysfunction syndrome (MODS) [1]. This is a case of gall bladder poisoning leading to acute renal failure in Chinese patient. This report is a whole new perspective on the pathogenesis of acute renal failure on complements about cases of poisoning in fish guts. This has a positive role in guiding treatment of fish bile poisoning, with obvious effect to improve its prognosis.

2. Case Features

A 56-years-old Chinese woman with past medical history of chronic bronchitis presented to a community hospital after consumption of grass carp fish gall bladder. Fish gall bladder was about 2 × 2 cm. Initial symptoms were nausea, vomiting, abdominal cramps, and watery diarrhea. After the onset of the symptoms she was treated in community level hospital with intravenous infusion for three days which did not improve her condition. After 5 days, she was presented in Tianjin Medical University General Hospital, Emergency Medical Center, for better management. On examination vital signs were stable. However, oliguria or anuria was observed in 24 hours and showed no edema.

Blood works revealed the following: WBC: 7.82 × 10^9/L, N: 80.91%, and HB: 168 g/L; ABG revealed the following: PH: 7.50, PO_2: 153 mmHg, Lac: 1.4 mmol/L, HCO_3^- : 25.7 mmol/L, and BE: 2.7 mmol/L. Urinanalysis reported: RBC: 0/HPF, WBC: 0/HPF, pathological casts: 0/LPF, specific gravity: <1.005, PH: 6.3; biochemistry reported the following: Cr: 277 umol/L, BUN: 13.31 mmol/L, ALT: 95 U/L, AST: 35 U/L, and TBL: 85.9 mmol/L.

After admission intravenously reduced glutathione 1.2 grams was administrated once a day for live protection and injection of 9AA compound amino acid 250 mL was administrated once a day as supplement amino acids and intravenous pantoprazole 40 mg was administrated twice a day. Oral sodium bicarbonate tablets 1g were given thrice a day as it promotes fish bile toxins from the urethra, oral lactulose 10 mL was given thrice a day to promote fish bile toxins from the intestinal tract; and traditional Chinese medicine (Niaoduqing) was also given to protect renal function. After admission hemodialysis was performed three times. On second
day of admission urine output increased to 1800ml and bio-
chemistry reviewed Cr: 303 umol/L, BUN: 19.2 mmol/L, Na:
127 mmol/L, Cl: 88 mmol/L, and AG: 23.73. After the 11th day
of admission, urine volume reaches 7600 mL/24 h, On arterial
blood gas (ABG) Examination: PH: 7.41, PO2: 90 mmHg,
Lac: 0.7 mmol/L; HCO3−: 21.6 mmol/L; BE: −2.6 mmol/L; On
Urine examination: RBC: 7/HPF, WBC: 6/HPF, pathological
tube: 0/LPF, gravity: <1.005, PH: 6.3; On stool routine exam-
ination: occult blood negative.

Considering ARF adequate rehydration and electrolyte
balance was maintained. While continuing the above drugs,
1000 mL of 5% Dextrose and sodium chloride injection
and 0.9% sodium chloride injection 500 mL were given for
adequate rehydration, and intravenous 10% potassium chlor-
ide 15 mL and oral salt capsules were administrated to main-
tain rehydration and electrolyte balance. However, patient
still complained of recurrent vomiting and nausea. Therefore,
fibrotic endoscopy was planned which showed chronic gastr-
tis and duodenal inflammation, and systematic treatment was
also given.

After a month of admission, urine volume was 2000 mL/
24 h, Cr: 124 umol/L, BUN: 71 mmol/L; ALT: 45 U/L, AST:
30 U/L, GGT45 U/L; Patients started normal diet. Her vom-
itating symptoms improvement and was then discharged.

3. Discussions

Most of the fish poising contains ciguatoxin [6] and mackerel
poison, which are common in marine coral fish. Grass
carp is usually without the toxin and does not have the characteristics of perishable mackerel [7]. However, grass
carp bile contains highly virulent bile toxins, which cannot
be damaged easily by ethanol or heat. One of the major toxic
components is water soluble sodium cyprinol sulphate, which
can lead to multiple organ dysfunctions [5]. Renal failure is
the most commonly reported effects of fish bile poisoning
[8]. It is believed that the fish bile results into serious damage
to renal tubules. Deng et al. [9] found that light microscopy
showed damages to epithelial cells in the proximal tubule
and focal destruction of epithelial cells. Electron microscopy
showed that mitochondria crista of epithelial cells in the
proximal tubules had decreased or disappeared and the renal
mesangium was extended. Glomerular cells were swollen and
podocytes were partially fused; lysosomes were broken. Par-
tial podotyic processes are fused. It is believed that the toxin
in fish gall bladder damages or breaks lysosomes, meanwhile
inhibiting cytochrome oxidase and blocking cellular energy
metabolism, so as to cause necrosis of the proximal tubular
epithelial cells. From our case, we can hypoise that due to
frequent vomiting, diarrhea and insufficient intake there was
significant decreased blood volume, leading to kidney blood
stasis which worsen renal failure. Therefore, for these patients
on dialysis, active rehydration should have significant role in
prognosis.

Recently, studies have shown that fish gall bladder can
also damage the heart, liver, and gastrointestinal tract and
lead to multiple organ dysfunction syndrome (MODS) in
addition to ARF [9]. The effect of fish bile in human body
mechanism needs further study and physicians should have
more attention in management of fish bile poising for better
prognosis.

Conflict of Interests

The authors declare that they have no conflict of interests.

Authors’ Contribution

Nishant Raj Pandey and Bian Yu Yao contributed equally to this work.

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