

Case Report

Fish Bile Toxicity and Severe Acute Renal Failure- A Case Report

*Rahman MA,¹ Rahman MA,² Begum MUH,³ Uddin MS,⁴ Monira S⁵

1. **Col Dr. Md. Anisur Rahman**
MBBS, FCPS (Medicine)
OJT- Interventional Gastroenterology (India)
Classified Specialist in Medicine and Gastroenterology
Dept. of Medicine
CMH, Rangpur Cantonment
2. **Brig Gen Dr. Md. Ashiqur Rahman**
MBBS, MPH
Director
Rangpur Medical College Hospital
3. **Dr. Most. Umme Habiba Begum**
MBBS, FCPS (Paediatrics)
Professor, Dept. of Paediatrics
Rangpur Community Medical College
4. **Maj Dr. Md. Selim Uddin**
MBBS, FCPS (Medicine)
Classified Medicine Specialist
CMH, Rangpur Cantonment
5. **Maj Dr. Most. Sirajum Monira**
MBBS
Graded Medicine Specialist
CMH, Rangpur Cantonment

Correspondence to:

Col Dr. Md. Anisur Rahman
MBBS, FCPS (Medicine)
OJT- Interventional Gastroenterology (India)
Classified Specialist in Medicine and Gastroenterologist
Dept. of Medicine
CMH Rangpur Cantonment



Submission Date : 25 February 2026
Accepted Date : 16 March 2026

Introduction:

Fish gall bladder is frequently consumed in India, China, Japan and other Asian countries.¹⁻² People from some parts of India and China believe that fish gall bladder can improve vision and treat rheumatism. Chinese populations also believe that it can cure bronchial asthma.³ Due to these popular believes, people used to consume it. But ingestion of fish gall bladder has been observed

Abstract:

Fish gall bladder with bile is consumed in some countries of south-east Asia including Bangladesh. People used to consume it with different belief to cure some common diseases. Labeorohita, commonly known as 'rohu' fish and other carp fish species of fresh water fish are consumed commonly. But the fish bile contains sodium cyprinolsulphate which is believed to be toxic for human. The fish bile toxicity induced by the said toxin leads to a variety of manifestations ranging from gastro intestinal upset, hepatic dysfunctions and even severerrenal failure which can be fatal and may lead to mortality unless timely intervention is done. We are presenting here a case of multi-organ dysfunction syndrome (MODS) in a 55 years old female after consuming fish bile of two large 'Rohu' fish requiring repeated haemodialysis for complete cure.

with acute renal injury and acute hepatitis from China, Japan, USA and India.⁴⁻¹⁰ Recent studies have shown that fish bile can damage the kidney, heart, liver, and the gastrointestinal tract leading to multiple organ dysfunction syndrome (MODS).¹¹ In recent years there area number of case reports about fish gall bladder poisoning in India, China and Japan leading to acute renal failure (ARF), acute liver injury, multi-organ

dysfunction syndrome (MODS) and so increasing mortality.¹²⁻¹⁴ In Bangladesh, there are very few reports of fish bile poisoning ever reported online in recent years. We are presenting here a case of multi-organ dysfunction syndrome (MODS) in a 55 years old woman after consuming fish gall bladder of two large 'Rohu' fish. This report may create awareness among general people and physicians of Bangladesh about fish bile toxicity and may have positive role in guidance of diagnosis and management in fish bile toxicity.

Case Report:

A 55 years old woman was admitted to the hospital with the history of abdominal pain, nausea, vomiting, and high colour urine output. She also complained of fever and anorexia. All these symptoms began after consumption of fish Gall bladder of 'Rohu fish'. She took gall bladder of two large Rohu fish. She took those fish gall bladder with a belief that would enhance her eye sight. Her toxicity symptoms was started within an hour of fish gallbladder ingestion. He had no history of previous remarkable chronic illness like diabetes mellitus (DM), hypertension, liver disease or renal disease and did not used to take any medicine chronically. Clinically she was ill-looking, anxious, with puffy face. She was mildly anaemic and moderately icteric; her pulse was 88 beats/min, blood pressure-150/90 mmHg, respiration 22 breaths/ min. Abdomen examination revealed epigastric tenderness. Cardiovascular, respiratory, nervous system and other systemic examination was normal. Her initial investigations revealed haemoglobin 10.2g/dl, total count of white blood cell $-13.4 \times 10^9/L$, serum urea-187mg/dl, serum creatinine -12.5 mg/dl, serum alanine aminotransferase (ALT)- 107 U/L, serum aspartate aminotransferase (AST)- 40U/L, serum alkaline phosphatase- 225 U/L, serum electrolytes- normal, serum uric acid- 8.8mg/dl and serum calcium- 8.4mg/dl. She was admitted in intensive care unit of our hospital. Her clinical and laboratory parameters were reviewed in hospital regularly. She was admitted in hospital for about one month and there after received treatment as outpatient basis including haemodialysis for about two months. She underwent seventeen sessions of haemodialysis and received required symptomatic treatments. After two months of conservative treatment and

haemodialysis her clinical symptoms and all laboratory parameters became normalized.

Discussion:

Fish bile has long been considered having therapeutic benefits and is used in folk medicine in some Asian countries like Japan, China, some parts of India and also Bangladesh. In some regions of these countries, raw fish gall bladder is consumed by some people with different beliefs like visual improvement, cure for gastric diseases, rheumatism or aphrodisiac especially among the younger population. Labeorohita, which is commonly known as 'Rohu' fish is a very popular fresh water carp fish, commonly consumed in Asian countries including Bangladesh. People of this region of Asia usually used to consume gall bladder of large carp fishes like 'Rohu' fish. Fish bile including Rohu fish contains 5 α -cyprinol sulfate (5 α -cholestane-3 α , 7 α , 12 α , 26, 27-pentol 26-sulfate) which is an important carp fish toxin. It is believed that this 5 α -cyprinol sulfate could be the responsible toxin for carp fish bile poisoning in humans that can cause nephrotoxicity and hepatotoxicity.¹⁵ Sodium cyprinolsulphate is stable to heat and alcohol. Consumption of the fish gall bladder with bile whether cooked, raw or liquor-soaked can confer poisoning effects to human.¹⁶⁻¹⁷

The toxicity induced by the fish bile leads to a variety of manifestations ranging from gastro intestinal upset like nausea, vomiting, anorexia, abdominal pain and tenderness, acute diarrhoea etc. It can cause mild to moderate hepatic manifestations with a range of severe and life threatening renal impairment or multi organ dysfunction syndrome (MODS). Hepatic dysfunction causes anorexia, high colour urine output due to increased serum bilirubin and abnormal liver enzymes with or without clinical jaundice. Liver function of the patient usually returns to normal after successful treatment. Acute renal failure is the most commonly reported effect of fish bile poisoning. It is believed that the fish bile causes serious damage to renal tubules. But the exact pathomechanism of toxicity is not well-established. The fish gallbladder of the Cyprinidae fish family like 'Rohu' fish contains 5 alpha-cyprinol sulfate which is hepatotoxic and nephrotoxic. Mild poisoning may cause some gastrointestinal problems; moderate poisoning usually affects liver and kidneys, and severe

poisoning may causes multiorgan failure.¹⁸⁻¹⁹ Histological findings of kidney and liver tissue specimens from fish bile poisoning patients usually show acute tubular necrosis (ATN) and focal hepatitis. These histopathological features may be attributed to the toxin with both nephrotoxic and hepatotoxic properties rather than to an infective agent in the uncooked bile.²⁰ Electron microscopy of renal biopsy sample of fish bile toxicity patient showed that mitochondria crista of epithelial cells in the proximal renal tubules had decreased or disappeared and extended renal mesangium. The glomerular cells were swollen and podocytes were partially fused and lysosomes were broken. From electron microscopic findings it is believed that the toxin in fish gallbladder damages or breaks lysosomes, meanwhile inhibiting cytochrome oxidase and blocking the cellular energy metabolism causing necrosis of the proximal tubular epithelial cells.¹⁹ Severe renal dysfunction may be fatal with severe metabolic acidosis and electrolyte abnormality requiring urgent haemodialysis. Our patient developed severe acute renal failure leading to anuria on the 7th day of fish gallbladder consumption and required sixteen in-hospital haemodialysis. She also needed one session of haemodialysis during the outpatient state and then gradually all parameters became normalized after about two months.

Prognosis of the fish bile poisoning varies depending on type of consumed fish, number and size of gall bladder,¹⁵ amount of consumption, and co-morbidity of patients. The incidence of acute renal failure in fish bile poisoning is variable ranging 55%–100%. Mortality is also variable may be up to 91.7%.

Treatment of fish bile toxicity is largely supportive. However, severe nephro toxicity causing anuria or severe metabolic acidosis often requires hemodialysis like our case. Multiorgan dysfunction requires supportive management and follow-up to bridge recovery gradually.

Reference:

1. D. S. W. Cahn, C. K. Yeung, and M. K. Chan, "Acute renal failure after eating raw fish gall bladder," *British Medical Journal*: 185; 290 (6472).
2. M. K. Mohapatra, R. N. Sahoo, B. Sahoo, and G. C. Das, "Acute renal failure associated with freshwater fish bile toxin," *Tropical and Geographical Medicine*:1995; 47(2); 94–95.
3. Z. I. Wang, X. L. Cheng, and L. M. Reng, "Fish gall bladder poisoning damage liver, renal and heart," *Chinese Journal of Integrative Medicine*:1991; 3; 238–239.
4. Chow CL, Yip LL, Yung KH, Chiu KW. Toxic material from the gallbladder of the grass carp fish. *Toxicon*: 1981; 19: 567-9.
5. Cheng JT, Chen WY, Yen TS, Hsieh BS, Hsu HC. Acute renal failure due to ingestion of raw bile of Grass Carp. *J Formosan Med Assoc* 1976; 75: 149-57.
6. Park SK, Kang SK, Kim DG. Toxic acute renal failure and hepatitis after ingestion of raw carp bile. *Nephron* 1990; 56: 188-93.
7. Y. Yamamoto, S. Fujimoto et al, O. Wakisaka. "Acute renal failure caused by ingestion of the carp gall bladder-a report of 3 cases, with special reference to the reported cases in Japan," *Nihon NaikaGakkaiZasshi*, 1988; 77(8):1268–1273.
8. Acute Hepatitis and Renal Failure Following Ingestion of Raw Carp Gallbladders – Maryland and Pennsylvania, 1991 and 1994; *MMWR weekly* 1995; 44(30); 565-566.
9. M. Nayak, P. C. Bhattacharyya and A. Barkataky; Acute renal failure following consumption of fish gall bladder. *Indian J Nephrol*. 2009; 19(4):161-2.
10. Sahoo B, Sahoo RN, Mohapatra MK, Das GC.; Acute renal failure associated with freshwater fish toxin. *Trop Geogr Med*.1995;47(2):94-5.
11. Xiao G, Deng Y, Jin Y. Multiple organ dysfunction syndrome due to ingestion of fish gall bladder. *Chinese Medical Journal*. 2002;115(7):1020–1022.
12. Chan YC, Kung SW, Tse ML, Lau FL, Chau TL, Tam MKP. Acute renal failure and hepatitis following ingestion of carp gallbladder. *ClinToxicol*. 2008; 46: 753-757.
13. Yuan F, Hou W, Wang D. Clinical analysis of 156 cases of multiple organ failure caused by fish bile. *Toxicol Rep*. 2015; 2: 1194-1199.
14. Wakisaka O, Yamamoto Y, Fujimoto S, Kaseda N, Maehara T, Aso K. Acute renal failure, caused by ingestion of carp gall bladder – A case report of 13 cases in Japan.

- Nippon NaikaGakkatZasshib. 1988;77: 1268–73.
15. Asakawa M, Noguchi T. Food Poisonings by Ingestion of Cyprinid Fish. *Toxins*. 2014; 6(2):539-555.
 16. Shi CZ, Fan QX, Mao YF. Study on the toxic components of fish bile. *J Tongji Med Univ*. 1992;21:168-171.
 17. Wang Z, Yan W, Lu S, Li J, Chen Q, Wang L. Analysis of factors related to prognosis and death of fish bile poisoning in China: A retrospective study. *Basic ClinPharmacol Toxicol*. 2020;127:419–428.
 18. Y.C. Chan, S.W. Kung, M.L. Tse. Acute renal failure and hepatitis following ingestion of carp gallbladder *ClinToxicol*, 2008; 46; 753-757
 19. N.R. Pandey, S. Khakurel, B. Yu Yao. Acute renal failure after consumption of fish gall bladder *Case Rep Emerg Med*, 2014: 1-2.
 20. Y.F. Lin, S.H. Lin. Simultaneous acute renal and hepatic failure after ingesting raw carp gall bladder *Nephrol Dial Transplant*, 1999; 14:2011-2012.