Outbreak Reports

A Cluster of Haff Disease Associated with Consumption of *Cyprinus carpio rubrofuscus* — Heyuan City, Guangdong Province, China, 2026

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Summary

What is already known about this topic?

Haff disease is a foodborne rhabdomyolysis syndrome. In China, most reported cases are associated with crayfish, whereas freshwater fish-associated cases are rare, with only two previously documented clusters.

What is added by this report?

This cluster confirmed *Cyprinus carpio rubrofuscus* (red-tailed carp) as a Haff disease vector, representing the second carp-associated cluster in China and the first from the Dongjiang River Basin. All five consumers of cooked carp developed rhabdomyolysis (attack rate: 100%, 5/5; Fisher's exact test, *P*=0.0079), whereas the two non-consumers remained healthy, indicating that the unidentified causative factor was heat-stable.

What are the implications for public health practice?

Clinicians evaluating patients with unexplained rhabdomyolysis should routinely ask about recent consumption of aquatic products. Local health authorities should include wild-caught freshwater fish in risk communication.

ABSTRACT

Introduction: Haff disease is a rare foodborne rhabdomyolysis syndrome with only scattered reports linked to freshwater fish in China.

Methods: On April 25, 2026, a cluster of five suspected Haff disease cases following a family dinner was reported to Longchuan County Center for disease control and prevention in Heyuan City, Guangdong Province. Epidemiological investigation was conducted.

Results: Among the seven diners, five met the criteria for suspected cases (four were confirmed). All five patients had consumed *Cyprinus carpio rubrofuscus* (attack rate: 100%, 5/5); two non-consumers remained healthy (Fisher's exact test, *P*=0.0079). The median incubation period was 11.3 hours (range: 4.2–13.2 hours). All patients recovered after symptomatic treatment. The illness occurred after the consumption of cooked carp, indicating that the unidentified causative factor was heat-stable.

Conclusion: This is the second documented carp-associated Haff disease cluster in China, and the first from the Dongjiang River Basin. These findings suggest that clinicians should consider a detailed dietary history of aquatic product consumption when evaluating unexplained rhabdomyolysis.

Haff disease involves unexplained rhabdomyolysis that occurs within 24 h of eating certain seafood, especially fish (*1*–*2*). The typical symptoms include muscle pain and markedly elevated serum creatine kinase (CK) levels. Internationally, the associated fish species include burbots, buffalo fish (*Ictiobus cyprinellus*), and freshwater pomfrets (*1*). In China, most cases have been linked to crayfish (*Procambarus clarkii*) (*3*), with only two documented clusters of freshwater fish: a carp cluster in Guangxi Zhuang Autonomous Region (*4*) and a freshwater pomfret outbreak in Guangdong Province (*5*). This report describes a cluster of Haff disease cases linked to the consumption of *Cyprinus carpio rubrofuscus* (*6*), locally known as red-tailed carp, in Longchuan County, Heyuan City, Guangdong Province, in April 2026.

INVESTIGATION AND RESULTS

Cluster Detection

On April 25, 2026, at 17:30, a local hospital in Longchuan County reported that five villagers from a town presented with vomiting, abdominal pain, and limb soreness after a family dinner on April 24.

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Laboratory tests revealed elevated CK and creatine kinase-MB (CK-MB) levels.

Case Definitions

Case definitions were adapted from previous Haff disease investigations (*2*,*7*).

Suspected case Any person who dined with an affected family member on April 24 and subsequently developed unexplained muscle pain, vomiting, or diarrhea.

Clinically confirmed case A suspected case with serum CK levels exceeding 5 times the upper limit of normal (ULN; >950 U/L, based on a local reference range of 190 U/L).

Epidemiological Features

The cluster involved five cases from an extended family that, together with two other people, shared dinner at approximately 20:30 on April 24; no other meals were shared. The first case occurred at 00:40 on April 25 and the last at 09:40, consistent with point-source exposure. The median incubation period was 11.3 hours (range: 4.2–13.2 hours). The patients ranged in age from 35 to 69 years (three males and two females). All five patients and the fishermen reported normal daily labor activities with no history of strenuous exercise or muscle trauma 3 days before symptom onset.

Clinical Characteristics

Five suspected cases were identified (attack rate: 100%, 5/5), and four met the clinically confirmation criteria. Common symptoms of suspected cases included myalgia (100%, 5/5), vomiting (80%, 4/5), chest tightness (60%, 3/5), abdominal pain (40%, 2/5), and diarrhea (20%, 1/5); no cases presented with dark urine. The CK levels ranged from 1,181.2 to 12,428.2 U/L (6–65 × ULN). The CK-MB levels ranged from 37.5 to 926.3 U/L. All patients recovered after three to eight days of supportive treatment.

Food Exposure Investigation

The implicated meal included chicken, vegetables, fried tofu, shrimp, and an approximately 2.5-kg wild carp given by a friend who caught it in a small inlet of a local reservoir earlier that day. Two preparation methods were used for carp: 1) Raw carp fillets ("Yu Sheng") — sliced raw flesh; 2) Cooked carp parts — steamed mixture of bones, tail, head, skin, and roe.

Of the seven diners, five consumed carp (three ate both raw and cooked portions; two ate only cooked portions), and all ate chicken, vegetables, fried tofu, and shrimp. Four of the five carp consumers drank homemade jujube wine during their meals. None of the unaffected individuals consumed carp. Notably, the friend who caught the carp, along with another fisherman, consumed two smaller carp (approximately 500–1,000 g each) and several tilapia from the same location on the same day without becoming ill. Photographic identification confirmed the fish to be *Cyprinus carpio rubrofuscus*, locally known as red-tailed carp, and confirmed the shrimp to be the East Asian River prawn, *Macrobrachium nipponense*.

Statistical Analysis

An epidemiological investigation was conducted among the seven diners (Table 1). Carp consumption was strongly associated with illness; all five consumers developed Haff disease compared with neither of the two non-consumers (Fisher's exact test, two-sided P=0.0079). The relative risk could not be calculated because of zero events among non-consumers. All five cases consumed cooked carp, and three cases additionally consumed raw carp fillets; all consumers developed illness regardless of the preparation method.

Environmental Investigation

Carp were harvested from the secluded inlet of a

TABLE 1. A cluster of suspected Haff disease associated with consumption of *Cyprinus carpio rubrofuscus* among ill and well co-diners — Heyuan City, Guangdong Province, April 2026.

Exposure	No. of exposed	No. of ill	Attack rate (%)
Did not consume any carp	2	0	0
Consumed any carp	5	5	100
Consumed raw carp fillets only	0	0	0
Consumed cooked carp parts only	2	2	100
Consumed both raw carp fillets and cooked carp parts	3	3	100
Total diners	7	5	71

local reservoir. The water was clear.

Public Health Response

Following confirmation of the cluster, the local County Center for Disease Control and Prevention (CDC) promptly notified local hospitals to consider Haff disease in patients with rhabdomyolysis and to obtain detailed exposure information, including a 3-day retrospective dietary history, drinking water history, physical activity, and occurrence of infectious illness. In addition, the prefecture-level CDC conducted a case search through the Foodborne Disease Surveillance System from April 24 to 26 and found no other patients with similar symptoms or a history of consuming the same fish in the city. The county government advised residents to avoid eating wild-caught carp from the local reservoir inlet during the ongoing investigation.

DISCUSSION

This cluster met the established criteria for Haff disease (*2*,*7*): 1) onset of rhabdomyolysis within 24 h of fish consumption; 2) similar clinical symptoms among co-exposed individuals; 3) all individuals who ate the carp became sick (100% attack rate); and 4) exclusion of other food items (chicken, vegetables, tofu, and shrimp) as potential causes.

All five patients ate cooked carp, whereas the non-consumers remained healthy. This suggests that cooking did not eliminate the unidentified causative factors, consistent with earlier reports on Haff disease (*2*). The fisherman who ate the smaller *Cyprinus carpio rubrofuscus* from the same waters did not become ill, whereas all consumers of the approximately 2.5-kg carp became ill. Whether fish size influenced illness could not be determined from this cluster alone, and because the smaller fish were completely consumed, the triggering substances could not be compared between them. Strenuous exercise is a recognized trigger of rhabdomyolysis (*8*); however, all five cases and the fishermen reported only routine daily labor in the three days before they got sick, so exercise is unlikely to have contributed to illness in this cluster.

The principal contribution of this cluster was the confirmation of *Cyprinus carpio rubrofuscus* (red-tailed carp) as an additional vector of Haff disease, with the first report from the Dongjiang River basin. This suggests that freshwater fish other than crayfish may be an underestimated source of Haff disease in South China. The cause of Haff disease has remained unidentified for nearly a century (*1*). We retained leftover fish samples, which could be tested in the future using non-targeted metabolomics.

This cluster had only five cases; therefore, we could not perform dose–response or subgroup analyses. In addition, the carp were prepared using two methods (raw fillets and cooked parts, including roe), so we could not determine whether roe or other parts of the fish caused the illness.

When evaluating unexplained rhabdomyolysis, clinicians should obtain a thorough dietary history of aquatic products regardless of cooking method (*1*,*9*). Haff disease surveillance in the region should include freshwater fish, rather than focusing solely on crayfish. Public health messages are needed to warn residents of the risks of consuming wild-caught freshwater fish. Further research on the environmental and chemical triggers of Haff disease in freshwater ecosystems of China is important.

Ethical statement: Ethical review and approval were not required for this investigation, as it was conducted as part of routine public health emergency response activities under the Food Safety Law of the People's Republic of China on the Prevention and Treatment of Foodborne Diseases.

Conflicts of interest: None declared.

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