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Haff disease complicated by multiple organ failure after crayfish consumption: a case study

Doença de Haff complicada por falência de múltiplos órgãos após ingestão de lagostim: estudo de caso

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ABSTRACT

Haff disease is a syndrome consisting of unexplained rhabdomyolysis. Patients suffering from Haff disease report having eaten fish within 24 hours before the onset of illness. Most patients survive and recover quickly. The present study is the first report of Haff disease complicated by multiple organ failure after crayfish consumption. A 66-year-old Chinese man ate cooked crayfish on the night of June 23, 2013. He arrived at our hospital 2 days later and was admitted to the intensive care unit. After admission, the patient was diagnosed with Haff disease complicated by multiple organ failure. Despite supportive and symptomatic treatments, the condition of the patient deteriorated, and he died due to his illness.

Haff disease is a rare clinical syndrome that is sometimes misdiagnosed. Early diagnosis and proper treatment are essential to prevent progression to multiple organ failure.

Keywords: Rhabdomyolysis; Astacoidea; Eating; Case reports

INTRODUCTION

Haff disease was first reported in the Baltic region in 1924 and is defined as unexplained rhabdomyolysis in a person who consumed fish within 24 hours before the onset of symptoms.[1] Since the first report, outbreaks of Haff disease have been reported in Sweden, the former Soviet Union, the United States, Brazil, and China.[2-5] Haff disease is a rare clinical syndrome. If patients receive prompt treatment, the prognosis is good. This paper reports a case of severe Haff disease complicated by multiple organ failure caused by eating crayfish.

CASE PRESENTATION

A 66-year-old man with a 20-year history of hypertension ate cooked crayfish from a local seafood market on the night of June 23, 2013. Twelve hours later, he began to feel back pain and was misdiagnosed with lumbar disc disease. The patient felt better after analgesic therapy at a local hospital. At 8:00 on the morning of June 25, 2013, the patient developed diffuse myalgia accompanied by weakness and rigidity of the limbs, oliguria, coffee-colored urine, and shortness of breath. He arrived at our hospital and was admitted to the intensive care unit (ICU). Physical examination upon admission revealed a body temperature of 37° C, pulse of 110 beat/min, respiratory rate of 30/min, blood pressure of 100/60mmHg, bilateral slight yellowing of the sclera, rapid and shallow respirations, and a few rales in the lungs bilaterally. The patient

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presented obvious full-body muscular tenderness, but no neurological abnormalities, splenomegaly, or hepatomegaly were observed. Laboratory tests revealed elevated white blood cell count at 20.10×10^9/L (Table 1). Urobilirubin and urobilinogen were negative. Electrocardiography revealed sinus tachycardia. Computed tomography (CT) revealed exudate in the right middle lung lobe, the lingula of the left lung, and the lower lobes bilaterally. Distension and fluid retention were observed in the esophagus and stomach, as well as reduced liver density. Low-density shadowing and exudation and swelling changes were present in muscle tissues (latissimus dorsi, subscapular muscle, bilateral psoas major, iliopsoas, gluteus maximus, and abdominal muscles), accompanied by unclear muscle borders (Figure 1).

Table 1 - Test results at hospital admission

Tests	Results	Normal range
White blood cells (/L)	$0.10x10^9$	$3.9\text{-}9.2x10^9$
Hemoglobin (g/L)	92	131-172
Blood platelet cells (/L)	$157x10^9$	$85\text{-}303x10^9$
Alanine aminotransferase (U/L)	4446.7	<65
Total bilirubin (μmol/L)	81.9	2-21
Blood urea nitrogen (mmol/L)	5.40	2.8-8.2
Serum creatinine (μmol/L)	296	41-144
Potential of hydrogen	6.79	7.37-7.45
Arterial partial pressure of carbon dioxide (mmHg)	74.70	35-46
Arterial partial pressure of oxygen (mmHg)	127.20	70-100
Base excess (mmol/L)	-21.30	-2-2
Arterial oxygen saturation (%)	94.30	95-98
Kaolin partial thromboplastin time (s)	79.10	25-45
Prothrombin time (s)	36.50	11-15
Fibrinogen (g/L)	0.57	2-4
Double-dimer (mg/L)	16.00	0-0.5
N-terminal pro-brain natriuretic peptide (pg/mL)	1059.0	0-900
Myoglobin (ng/mL)	181.00	0-80
Creatine kinase (U/L)	358.6	38-174
C-reactive protein (mg/L)	27.6	0-5
Total	122	100

After admission, the patient was diagnosed with Haff disease complicated by multiple organ failure. Treatment included endotracheal intubation with artificial ventilation, infusions of dopamine and norepinephrine to increase blood pressure, methylprednisolone to inhibit the inflammatory response, omeprazole to prevent stress ulcers, sodium bicarbonate to alkalize the urine, and other supportive and symptomatic treatments. Despite treatment, the condition of the patient deteriorated and he died at 22:00 on the evening of June 25, 2013.

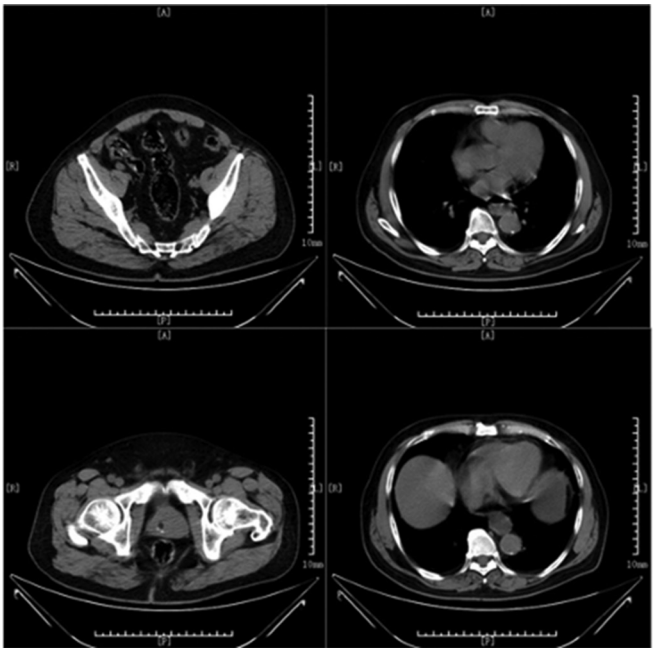

Figure 1 - Computed tomography showing low-density shadows, exudation and swelling changes in muscle tissues (latissimus dorsi and subscapular muscle, bilateral psoas major muscles, iliopsoas, gluteus maximus, and abdominal muscles) accompanied by unclear muscle borders.

DISCUSSION

Haff disease is a syndrome consisting of unexplained rhabdomyolysis characterized by sudden, extreme muscular rigidity, diffuse myalgia, chest pain, shortness of breath, full-body numbness and weakness, and coffee-colored urine, as well as elevated serum creatine kinase, myoglobin, transaminases, and lactate dehydrogenase. Generally, neurological abnormalities, fever, splenomegaly, or hepatomegaly are not observed.[1-5] All patients suffering from Haff disease report a history of eating fish (pomfret, buffalo, or crayfish) within 24 hours before the onset of illness.[6,7] A few patients have died from Haff disease, but most survive and recover quickly.

The present case is the first report of Haff disease complicated by multiple organ failure after crayfish consumption. The outcome of this case of severe Haff disease may be the consequence of an initial misdiagnosis and treatment delay. The patient was initially misdiagnosed with lumbar disc disease and received only analgesic therapy. Multiple organ failure developed because of the

delayed treatment. Early diagnosis and proper treatment are essential to improving the prognosis for patients with Haff disease.

The etiology of Haff disease remains unclear. One possible cause is an unknown heat-stable biological toxin that accumulates in the implicated food, but the toxin has not yet been identified. This putative biological toxin causes rhabdomyolysis, renal dysfunction, and coagulation abnormalities, and it damages the liver, respiratory system, and gastrointestinal tract. Striated muscle damage leads to full-body myalgia, weakness, and muscle rigidity. Carbon dioxide retention and respiratory failure occur due to respiratory muscle weakness. When Haff disease is suspected, proper treatment should be initiated as soon as possible to prevent deterioration in the condition of the patient. A CT scan of our patient revealed low-density shadow, exudation, and swelling changes in the muscle tissues throughout the body. CT can be performed as a painless, noninvasive method of confirming a diagnosis of Haff disease.

CONCLUSION

This is the first report of Haff disease complicated by multiple organ failure after crayfish consumption. Early diagnosis and proper treatment are essential to prevent progression to multiple organ failure. Computed tomography can be used to confirm a diagnosis of Haff disease.

RESUMO

A doença de Haff é uma síndrome que consiste de rabdomiólise não explicada. Pacientes que apresentam a doença de Haff relatam ter ingerido pescado nas últimas 24 horas antes do início da doença. A maioria dos pacientes sobrevive apresentando breve recuperação. O presente artigo é o primeiro relato de doença de Haff complicada por falência de múltiplos órgãos após ingestão de lagostim. Um homem chinês de 66 anos de idade ingeriu lagostim cozido na noite de 23 de junho de 2013. Chegou ao hospital 2 dias mais tarde, sendo admitido à unidade de terapia intensiva. Após a admissão, o paciente recebeu o diagnóstico de doença de Haff complicada por falência de múltiplos órgãos. Apesar dos tratamentos de suporte e sintomático, a condição do paciente deteriorou, vindo o mesmo a falecer em consequência da doença. A doença de Haff é uma rara síndrome clínica que é, às vezes, mal diagnosticada. O diagnóstico precoce e o tratamento adequado são essenciais para prevenir a progressão para falência de múltiplos órgãos.

Descritores: Rabdomiólise; Astacoidea; Ingestão de alimentos; Relatos de casos

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