

# Influenza B Virus Infection Complicated by Rhabdomyolysis: A Case Report

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## Abstract

Influenza virus infection is with initial symptoms with fever, dry cough and muscle soreness. In some cases, influenza virus infection also brings complications with neurologic problems, heart diseases, hypoxemic respiratory failure, etc. Rhabdomyolysis, which precipitated by compression injury, alcohol ingestion or seizures, leads to acute kidney injury with myoglobinuria and elevated serum creatine phosphokinase level. Symptoms of rhabdomyolysis would include muscle pain, vomiting, weakness and confusion, and severe rhabdomyolysis may result in death. Influenza B virus infection may cause serious renal complication. We would demonstrate a case with rhabdomyolysis secondary to influenza B virus infection. (J Intern Med Taiwan 2017; 28: 309-312)

**Key Words:** Influenza, ICU, Mechanical ventilation, Rhabdomyolysis, Dialysis

## Introduction

Rhabdomyolysis causes acute kidney injury with myoglobinuria and elevated serum creatine phosphokinase (CPK) level. This characteristic is quite different from myonecrosis and pyomyositis related to muscle injury or abscess formation. Influenza virus infection brought a great impact in Taiwan, and has complications with neurologic, heart diseases, and hypoxemic respiratory failure.<sup>1,2</sup> Rhabdomyolysis caused by influenza A virus was reported with high morbidity and mortality.<sup>3</sup>

However, rhabdomyolysis secondary to influenza B virus infection was seldom reported. We would present a case with rhabdomyolysis secondary to influenza B virus infection.

## Case Report

A previously healthy 49-year-old man visited the emergent department (ED) of our hospital with 2-day history of fever, sore throat, myalgia and cola-colored urine. He denied recent trauma, drug use, seizure attack or family history of muscle disease. At ED, his heart rate was 79 beats per

minute, systolic and diastolic blood pressure were 141/85 mmHg, respectively. Physical examination revealed otherwise unremarkable except for tenderness when palpation of the muscle groups of thighs. Initial laboratory survey showed: blood urea nitrogen (BUN): 30.4mg/dL (reference range: 6–21 mg/dL), creatinine: 2.22mg/dL (reference range: 0.64–1.27mg/dL), sodium: 137mEq/L (reference range: 134–148 mEq/L), potassium: 4.0mEq/L (reference range: 3.6–5.0mEq/L) and calcium 8.8mg/dL (reference range: 7.9–9.9mg/dL). The myoglobin level was 62246 ng/mL (reference range: 17–106 ng/mL), and CPK level was 137200 U/L (reference range: 20–200U/L). The urinalysis was positive with 2+ blood (reference range: <20), and red blood cells > 500 /uL(reference range: <20uL). There was no definite pneumonia patch over initial chest X-ray (CXR) at ED (Figure 1). Due to symptoms of fever, sore throat and myalgia, influenza was suspected by the primary care physician. The result of rapid testing for Influenza B by nasal swab was positive. Oseltamivir was prescribed, and the influenza B virus infection was confirmed by polymerase chain reaction (PCR) later.



Figure 1. Chest X-ray showed no pneumonia patch.

Ten hours later, the CXR showed increased bilateral infiltration (Figure 2). Because of progressive dyspnea and hypoxic respiratory failure, the patient received endotracheal tube intubation with mechanical ventilation on day one. However, anuria developed and the following creatinine level was 7.12 mg/dL 56 hours later. He received temporary hemodialysis for acute kidney injury resulted from rhabdomyolysis. After 7-day of mechanical ventilation, the patient was extubated. Hemodialysis was discontinued 16 days later due to improved renal function with increased urine output. He was finally discharged and returned to daily work without sequelae. His BUN and creatinine levels returned to the basal values 2 months later after discharge.

## Discussion

The classic triad of rhabdomyolysis includes myalgia, red-to-brown or dark urine and muscle weakness. However, less than 10% of patients present with all three classic features. Myalgia usually present early in influenza disease with respiratory symptoms whereas myositis or rhabdomyolysis caused by influenza occur during or after resolution of respiratory symptoms. Although myalgia is common in influenza disease, severe



Figure 2. Chest X-ray showed bilateral lower lungs infiltration.

myositis with the following rhabdomyolysis appears to be extremely rare in adults. The mechanism of muscle involvement in patients with influenza infection is poorly understood. The most commonly proposed mechanism is direct muscle invasion by viral particles. Several studies demonstrated isolation of influenza virus from muscle biopsy specimens in patients with influenza associated myositis.<sup>4,5</sup>

Almost all rhabdomyolysis caused by influenza infections reported in the medical literature are with type A virus; those associated with type B virus are very rare.<sup>3,6</sup> Hu and his colleague reported that childhood myositis is more frequent with influenza B than with influenza A (33.9% versus 5.5% respectively).<sup>7</sup> The acute myositis associated with influenza B infection occurred mainly in school aged children and affected muscles of lower extremities.<sup>7</sup> It appears when respiratory symptoms of influenza are about to resolve. Myalgia, muscle swelling and tenderness may render children refuse to walk for several days and resolved gradually. If muscle pain, swelling, and tenderness worsen rapidly or the condition does not resolve within a few days, a rare condition of influenza B virus associated rhabdomyolysis is needed to be taken into consideration. Our case is extraordinarily unusual in its association with influenza B virus and severe rhabdomyolysis with following acute kidney injury requiring dialysis in an adult patient. In conclusion,

although rapidly progressive pneumonia and respiratory failure are severe complications of influenza B virus infection, clinicians should be aware that influenza B virus may be complicated with severe rhabdomyolysis and acute kidney injury in adults.

## Ethics Approval

This study was approved by the Institutional Review Board (IRB No.: 201700424B0) of our hospital.

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# B型流感病毒感染續發的橫紋肌溶解症：病例報告

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## 摘 要

流感病毒感染會帶來神經系統疾病，心臟病，低氧呼吸衰竭等併發症。由壓迫性損傷，酒精攝入或癲癇發作引起的橫紋肌溶解會導致急性腎損傷，伴有肌紅蛋白尿和血清的肌酸磷酸激酶升高。B型流感病毒感染可能引起嚴重的腎臟併發症。我們報告一個續發於B型流感病毒感染後橫紋肌溶解症的病例。