The Benign Childhood Acute Myositis Due to Rotavirus Infections: Case Report

Rotavirüs Enfeksiyonuna Bağlı Çocukluk Çağının Selim Akut Miyoziti: Olgu Sunumu

Rotavirus Infection Myositis

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Öz

Çocukluk çağının akut selim miyoziti özellikle okul çağındaki genellikle erkek çocukları etkileyen, alt ekstremitenin distal kaslarını simetrik olarak tutarak yürüme güçlüğüne neden olan ve kendiliğinden düzelen bir klinik durumdur. Akut dönemde, ilerleyerek çocuğun yürümesini engellemesi ve ağrıya yol açmasıyla hekim ve ana babaları telaşlandırabilir. En sık influenza viruslarına bağlı olarak ortaya çıkmaktadır. Ancak diğer virüsler ile de nadiren görülmektedir. Tipik laboratuvar bulgusu kreatinfosfokinaz düzeyindeki yükselmedir. Ayırıcı tanıda Guillain-Barré sendromu, müsküler distrofiler, dermatomiyozit, piyomiyozit ve büyüme ağrıları vardır. Bu yazıda 5,5 yaşındaki bir kız hastada rotavirüs enfeksiyonuna ikincil olarak gelişen akut myozit tablosu sunulmuştur.

Anahtar Kelimeler

Rotavirüs Enfeksiyonları; Çocuk; Myozit; Gastroenterit; Komplikasyonlar

Abstract

Benign acute childhood myositis usually affects males, especially school children, causes difficulty in walking by keeping the distal muscles of lower extremity symmetrically, and is a clinical condition that resolves spontaneously. In the acute stage, it can alarm the physician and the parents by blocking the child's walking and leading to pain. It arises most frequently due to influenza viruses, while it is rarely seen with other viruses. The typical laboratory finding is an increase in the level of keratin phosphokinase. The differential diagnosis includes Guillain-Barré syndrome, muscular dystrophy, dermatomyositis, pyomyositis, and growing pain. This paper presents an acute myositis case developing secondarily in a rotavirus infection in a 5.5-year-old female patient.

Keywords

Rotavirus Infection; Child; Myositis; Gastroenteritis; Complications.

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Introduction

Rotavirus infection in childhood is the most common cause of acute gastroenteritis. Although it mainly locates in the intestinal tract, it may rarely manifests itself outside of the intestinal tract. Also, neurologic complications, encephalitis, febrile convulsion and aseptic meningitis have been detected.

Benign Acute Childhood Myositis (BACM) is a clinical condition of bilateral calf pain that develops suddenly immediately after viral infections, usually affects school-age children, is characterized by walking difficulties, and resolves spontaneously [1]. Usually developings due to post-infectious pathogens, myositis associated with rotaviruses is rarely reported [2]. A typical laboratory finding is a high level of serum keratin phosphokinase (CPK) [3]. Knowing detailed characteristics of benign acute childhood myositis will prevent unnecessary tests and treatments.

In the literature, only four cases of myositis associated with rotavirus infection have been reported to date [4]. In this paper, we present a case of benign acute childhood myositis developing secondarily associated with rotavirus gastroenteritis infection in a 5.5-year-old.

Case Report

A 5.5-year-old girl presented with fever, fatigue, weakness, and vomiting to the emergency clinic in our hospital. Upon determining the CPK of the patient to be 9806 U/L, the patient was brought to the neurology clinic. Three days later, as her current complaints increased, she was brought to our emergency department. In addition to the patient's previous complaints, diarrhea, inability to walk, and pain in both thighs had already begun. Due to malnutrition and general weakness of the patient, she was admitted to our Child Health and Diseases Department in the hospital. In her physical examination, the general physical state of the patient was moderate. The patient's vital findings were stable. In her neurological examination, vulnerability to palpation on both sides of the quadriceps muscle was observed. However, no swelling, redness, or laceration was detected. In muscle strength examination, all extremities were detected as normal. There was no loss of sensation. Deep tendon reflexes were normoactive. Laboratory examinations of the patient's blood count, erythrocyte sedimentation rate, and C-reactive protein were normal. Biochemical tests performed on the patient are shown in Table 1. Rotavirus antigen was found positive in the stool test. The patient was diagnosed with BACM associated with rotavirus. The patient was discharged from the hospital with a marked improvement in her general condition. A week later, her physical examination and lab findings were found to be normal.

Table 1. The course of the laboratory findings of our patient.

	AST N:0-31U/L	ALT N:0-34 U/L	LDH N:0-247 U/L	GGT 0-32 U/L	CPK 0-145 U/L
1st day of disease	290	88	652	16	9806
3st day of disease	174	80	466	16	2728
6st day of disease	56	49	286	15	175
discharge after 1 week	28	24	242	16	102

Discussion

BACM was defined for the first time in 1957 by Lundberg [1]. as a sudden calf pain and inability to walk described in 74 children following a viral upper respiratory tract infection, often occurring after the 1-5 day prodromal period and resolving spontaneously [2]. The pain is particularly pronounced when the patient first gets up in the morning. In the etiology, there are often Influenza type A and B viruses, RSV, adenoviruses, HSV, EBV, or CMV [4,5]. In our case, we did not test these when forming the differential diagnosis because there were no symptoms suggestive of viral upper respiratory tract infection.

Since patients complain about an inability to walk, stand up, and step onto their feet, all families become extremely worried about their children and refer to the emergency departments of hospitals. Rajajee et al. reported that cases of BACM are most frequently directed to the clinic with a preliminary diagnosis of GBS [5]. However, in GBS, a two-sided muscle weakness and pain moving upward is observed, decreased deep tendon reflexes are detected in physical examination, and serum CPK level is within normal limits.

The majority of patients with myositis associated with rotavirus are over 2 years of age [5]. On the other hand, most children with rotavirus gastroenteritis are under 2 years of age. In a case series examining 40 patients diagnosed with BACM, 55% of them were male, an average onset time of symptoms was 5.3 days, and the duration of the prodromal phase symptoms was 3.97 days [5].

There are many culprits likely to lead to muscle pain in children. During the course of viral infections, a widespread myalgia can be seen. However, BACM typically presents with bilateral gastrocnemius muscle involvement. Important clues in differentiating BACM from muscular dystrophy is the apparent lack of pain in muscular dystrophy due to increased serum CPK and no improvement in clinical findings during the course of the disease. There are several typical skin conditions that can cause similar clinical findings in children, such as dermatomyositis, which presents with a progressive bilateral proximal muscle weakness, an increased CPK level, EMG changes, unusual muscle biopsy findings, edema, and purplish color change in the eyelids [6].

For the diagnosis of BACM, the most typical diagnostic finding is an increased CPK level in the serum [3]. Moderate degree CPK has been reported to range from 558 to 6800. In our case, the CPK level was 9806. It is recommended that, due to the possibility of increased muscle cell damage, diagnosticians should be alert to rhabdomyolysis and kidney failure and should monitor the pain and urine color [7]. In our case, renal function tests and urine analyses that were performed because of these possibilities were normal.

The mechanism responsible for BACM associated with rotavirus has not yet been determined. However, it can be characterized as damage resulting from direct invasion of immunological reactions triggered by virus particles inside the muscle tissue [8]. Since the symptoms are short-term and improve spontaneously, further examinations such as electromyography and muscle biopsy have been rarely consulted [5].

To summarize: BACM is a clinical condition with viral infection that is self-limiting in the healing process, with a prognosis that

is very good and does not require clinical treatment. The observation of rapid improvement in clinical findings is significant for differentiating BACM, which doesn't require further tests and resolves spontaneously, from other diseases that may have more severe courses and will require different treatment options.

Competing interests

The authors declare that they have no competing interests.

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