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Proximal lower limb weakness in adult viral myositis: An unusual case presentation

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ABSTRACT

Background. Viral myositis predominantly affects children, manifesting as sudden calf pain. It is rare in adults and often manifests as myalgia and weakness in the proximal upper and lower limbs, resolving slowly. We report an atypical presentation of post-viral myositis in an adult, characterized by pronounced weakness and minimal tenderness in the proximal lower limbs, which resolved after administration of methylprednisolone.

Case report. A 24-year-old male experienced sudden lower extremity weakness, impairing his ability to stand from a squatting position and climb stairs, with minimal thigh pain. Examination revealed minimal tenderness and marked proximal inferior paraparesis. Elevated monocyte counts and CK were noted. Needle EMG indicated myogenic lesion. The patient received intravenous methylprednisolone and had complete resolution.

Conclusions. Viral myositis can happen in adults with atypical presentations dominated by proximal lower limb weakness. Physicians should consider viral myositis in adults with a history of flu-like symptoms and acute limb weakness.

Keywords: myositis, viral, atypical presentation

Abbreviations:

ANA	Anti-nuclear Antibody
CK	Creatine Kinase

CRP	C-reactive Protein
EMG	Electromyography
NRS	Numeric Rating Scale

INTRODUCTION

Myositis or inflammatory myopathy is inflammation of the skeletal muscles, which may present in an acute, subacute, or chronic manner. This condition is characterized by myalgia, tenderness, swelling, or weakness of the extremities that manifests as difficulty in ambulation, stair climbing, or lifting objects overhead. Myositis is typically associated with autoimmune diseases, while infectious myositis is considered a rare cause of this disease [1, 2]. Infectious myositis can result from bacterial, fungal, or viral infections, with a relatively high incidence of viral myositis, around 0.23-2.6 cases per 100,000 people, predominantly affecting children. There is a higher incidence among children and young adults, with a mean age of eight years and a predominance in males [3, 4].

Influenza, parainfluenza, enteroviruses, coxsackie, and adenovirus are among the known etiologies of viral myositis. Influenza and coxsackie can affect both age groups, but certain viruses are more prevalent in specific populations. For instance, HIV is more commonly seen in adults. Manifestation of viral myositis is marked by sudden generalized myalgia and tenderness in the convalescence stage of infection. Pain is commonly reported to be more pronounced on the gastrocnemius and soleus muscles and can result in gait disturbance [5, 6]. This classic presentation is typical in children, presenting acutely and sometimes referred to as benign acute childhood myositis [7]. While in adults, viral myositis is more often characterized by myalgia and weakness in the proximal upper and lower limbs. Symptoms resolution typically takes longer, often extending over several weeks [8].

Diagnosis of viral myositis rarely needs muscle biopsy as there has been an inconsistent demonstration of etiologic virus in the biopsy. An appropriate clinical picture with increased muscle enzymes, namely serum creatine kinase, is usually sufficient to diagnose viral myositis [9]. Here, we report an atypical presentation of post-viral myositis in an adult, with a more pronounced weakness and minimal tenderness in the proximal lower limbs, which resolved after administration of methylprednisolone.

CASE REPORT

A 24-year-old previously healthy male was admitted to the emergency department due to sudden weakness in both lower extremities for one day. The patient reported difficulty in standing

from a squatting position and climbing stairs, with minimal pain in both thighs. No paresthesia was reported. The patient denied any history of trauma or previous similar symptoms and had not taken any medicine for his complaint. Medical history was positive for cough 3 weeks before admission, which resolved without any medications. General physical revealed minimal tenderness in both thighs, with NRS 4/10, but no rashes, swelling, and joint pain. Neurological examination was remarkable for inferior paraparesis, more pronounced in the proximal sides, with preserved physiological reflexes in all extremities. The initial laboratory examination revealed a normal blood count, electrolytes, and ANA profile panel, but it also showed increased monocyte counts and elevated CK. (Table 1) Needle EMG was done and proved the presence of a myogenic lesion in the bilateral tibialis anterior muscle. The patient was given intravenous methylprednisolone of 1000 mg four times daily, then tapered off after 2 days. Two days following methylprednisolone, symptoms were resolved completely, and the patient was discharged after 4 days.

Table 1. Hematology Result

Test	Result	Reference
Hemoglobin	14.8 g/dL	13.20 – 17.30 g/dL
Hematocrit	43%	40 – 52%
Erythrocyte	4.8 x 10^6/uL	4.4 – 5.9 x 10^6/uL
Leukocyte	8.9 x 10^3/uL	3.8 – 10.6 x 10^3/uL
Thrombocyte	386 x 10^3/uL	150 – 440 x 10^3/uL
Basophil	1	0 – 1
Eosinophil	2	2 – 4
Band neutrophil	3	0 – 6
Segment neutrophil	53	50 – 70
Lymphocyte	32	20 – 40
Monocyte	9 (H)	2 – 8
Erythrocyte Sedimentation Rate	8 mm/hour	0 – 10 mm/hour
Sodium	137 mmol/L	136 – 145 mmol/L
Potassium	3.9 mmol/L	3.50 – 5.10 mmol/L
Chloride	104 mmol/L	98 – 107 mmol/L
CK	400 U/L (H)	0 – 190 U/L
CRP	1 mg/L	0 – 5 mg/L

DISCUSSION

Viral myositis is frequently reported in pediatric patients with chief complaints of calf pain and a history of viral infection, most related to influenza A or B [10]. Children and young adults, especially males, are more commonly affected by viral myositis, probably due to viral tropism and immune response differences between males and females [4]. To the best of our knowledge, most reported cases of viral myositis affect children, typically after Influenza infection. Albar et al. [4] reported a case of viral myositis due to Influenza A in a four-year-old female, presenting with lower extremities pain but no proximal weakness. Huzior et al. [11] documented a five-year-old male with a history of self-limiting upper respiratory infection presenting with symmetrical leg pain and walking difficulty. Hyczko et al. [12] reported a similar case, and there was also a report of viral myositis in a three-year-old female three days following an Influenza infection [13]. All cases reported elevated CK levels and 2 cases evaluated patients' CRP levels, which were normal.

There are several hypotheses regarding the high incidence of viral myositis in children compared with adults. The Influenza virus as the most common cause of viral myositis, has a higher affinity for pediatric immature muscle cells, hence a higher reported incidence in this age group [6]. Additionally, children are more susceptible to the etiologic viruses of myositis, namely influenza, parainfluenza, and adenovirus. Children have naïve adaptive immune systems with less Th1 activity, resulting in impaired intracellular viral clearance and increased Th2 and Th17 activity, leading to excessive inflammation. All of these contribute to their predisposition toward influenza infections [14]. Developing adaptive immune systems is also why adenovirus is more commonly seen in children under five [15].

Despite being frequently seen in children, our patient reported here is an adult with a history of suspected viral infection 3 weeks prior to the weakness. The blood examination revealed normal leukocyte count and CRP but elevated monocyte, supporting the presence of viral infection. Elevated CK level signifies muscle injury, potentially caused by immunologic response or direct viral invasion of muscle tissue [16]. The elevated CK levels and the EMG test result confirmed the diagnosis of myositis. Although no virologic testing was done, the acute onset of our patient's symptoms, occurring within the interval of the flu-like symptoms and the onset of myositis, as reported by Singh et al. [6], suggests that although rare, our adult patient had viral myositis. Even if a viral assay had been performed, it would likely have produced a false negative result, as three weeks had passed since the onset of the flu-like symptoms.

All previous cases of viral myositis in adults reported profound pain either in the upper or lower extremities. A case series from 2013, following the Influenza A (H1N1) pandemic in Utah, described adult patients aged 25 to 45 years experiencing extremities pain and tetraparesis, more pronounced in the distal upper extremities. Elevated CK level was reported, but no positive

virologic test was reported [17]. Elagami et al. [16] and Chanson et al. [18] also described similar cases in 32 and 38-year-old males with profound lower limb pain and distal muscle weakness. Literature on viral myositis, either in children or adults, mostly reports profound pain followed by weakness in the gastrocnemius and soleus muscles, while our patient exhibited a more dominant weakness in the proximal lower limbs with minimal pain and tenderness.

CONCLUSION

Altogether, myositis, which encompasses various forms of inflammatory myopathies, remains a relatively rare condition. Adults are more commonly affected by autoimmune-related myositis, such as dermatomyositis, polymyositis, and necrotizing myositis - which has a subacute onset of weakness and pain - than by infectious myositis, in particular viral myositis [1]. Notwithstanding this fact, the present case suggests that viral myositis can happen in adults, even with atypical presentations dominated by weakness in the proximal lower limbs. Physicians should always have high suspicions of viral myositis in adults with a history of flu-like symptoms and acute onset of weakness in the extremities. CK level and EMG can help the diagnosis of viral myositis in adults. The prognosis is relatively good, with all reported cases having spontaneous resolution within a few days.

Patient consent: The patient gave written informed consent for the publication of the clinical details and/or clinical images.

Conflict of interest: None

Authors' contributions: Conceptualization, MCE and YMTS; Formal analysis, investigation, resources, MCE and YMTS; Writing – original draft preparation, MCE; Writing – review and editing, MCE and YMTS; Supervision, YMTS. All authors have read and agreed to the published version of the manuscript.

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