Tip-Toe Walk After Acute Viral Illness: a pediatric case report

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ABSTRACT

A school going, 5 years old vaccinated baby boy presented in Outdoor Patient Department with complaints of tip-toe walk and difficulty in walking associated with pain in both lower legs since morning; after having an acute viral illness 4 days back. Neurological examination was unremarkable without any significant positive findings. Lab investigation was advised in the form of serum creatine kinase level which was significantly elevated leading to diagnosis of Acute Viral Myositis. Oral Ibuprofen was advised. The child was kept under observation to document rhabdomyolysis; a complication of acute viral myositis. Signs and symptoms were resolved within 48 hours without any specific treatment.

KEYWORDS: Acute Viral Myositis; Serum Creatine Kinase; Rhabdomyolysis.

Original Research Article

Introduction:

Myositis comes from the Greek words myo ("muscle") and itis ("inflammation"). The cause of infectious myositis include: viral, bacterial, fungal and parasitic agents. Common viral agents are; Influenza virus (causing benign myositis and acute rhabdomyolysis) and Coxsackie virus B (causing pleurodynia). Bacterial agents are summarized as Staphylococcus aureus, group A Streptococcus, group B Streptococcus and Clostridium difficle. Fungal agents affect the immunocompromised hosts causing self-limiting myositis. Common parasitic agents that cause acute benign myositis are Trichinosis and Cysticercosis.

Benign acute childhood myositis (BACM) is an acute transient onset of lower limbs pain documented during or after recovery from a viral illness. Clinical picture may vary but may involve tiptoe gait or difficulty in walking that settles down itself very quickly in three to four days. Common lab finding is highly elevated serum creatine phosphokinase. A rare documented complication is rhabdomyolysis followed by myoglobinuria. Management includes rest and analgesia [2].

Differential diagnoses to BACM (benign acute childhood myositis) include: Trauma, Guillain-Barré syndrome, Osteomyelitis, Deep vein thrombosis, Juvenile rheumatoid arthritis, Malignancy, Dermatomyositis, Polymyositis, Muscular dystrophy and Intracranial pathology [2].

Any virus can cause an acute myositis, yet influenza virus and enterovirus are the most notorious. Chronic viral myositis is associated with retroviruses and hepatitis viruses.

Creatine kinase (CK) also labeled as Creatine phosphokinase (CPK) or Phosphocreatine kinase; is an enzyme that catalyzes the reversible conversion of creatine to phosphocreatine (PCr) and adenosine diphosphate (ADP) by using adenosine triphosphate (ATP).

PCr (phosphocreatine) acts as an energy source for cells and tissues like brain, smooth muscle, skeletal muscle, retina (photoreceptor cells), spermatozoa and inner ear (hair cells) through RCr shuttle.

Clinically, creatine kinase is labeled as a marker of tissue damage in myocardial infarction and rhabdomyolysis. Isoenzyme of creatine kinase may vary in different tissues. CK-MM (98%) and CK-MB (1%) are expressed by skeletal muscles while CK-MM (70%) and CK-MB (25-30%) are expressed by cardiac muscles. CK-BB is expressed by brain and smooth muscles.

Case Presentation:

Muhammad Ahmad, 5 years old vaccinated boy with appropriate height and weight with respect to his age and normal developmental milestones, resident of Kot Radha Kishan (district Kasur) presented in OPD with complaints of tip-toe walk and difficulty in walking associated with pain in both lower legs since morning. Patient was alright 4 days back when he developed complaint of fever with cough and sore throat. Fever was continuous and high grade 103F documented at home, not associated with rigors and chills and relieved by taking oral antipyretics. Medication was taken at that time from local physician in the form of oral antipyretics, antitussives and antiallergy. Fever had been settled then the child was afebrile for last 2 days. Since morning the child had difficulty in walking associated with tip-toe walk and pain in both lower legs without swelling/ edema, petechia or skin temperature change. On neurological examination: child was fully alert and conscious with respect to time, space and person with normal Power and Tone in all 4 limbs with intact superficial reflexes and deep tendon reflexes. Rest of cardiovascular, respiratory and gastrointestinal examination was unremarkable. Serum creatine kinase (CK) was done which was highly raised

9868U/L (normal value: male 24-195U/l female 0-174U/L) with normal inflammatory markers i.e., CRP which was 0.43mg/dl (normal value: <5mg/dl) and ESR 10mm/1st hour (normal value: 0-10mm/1st hour). Complete blood picture showed Hb 14.1g/dl TLC 6.0*109/l Platelets 306*109/l with predominant lymphocytes 65% and neutrophils 27%. Child was labeled as a case of Acute Viral Myositis on the basis of history, clinical presentation, examination findings and lab values. Syp. ibuprofen was advised only. The signs and symptoms were resolved within 48 hours without any documented evidence of complication of the disease.

Discussion:

Case reports and articles have been reported and published from countries all over the world on benign acute childhood myositis (BACM) including Portugal[1], Canada[2], Switzerland[4], Scotland[6], Brazil[7], India[8], United States[9,12], Iran[10] and Greece[11]. Numerous viruses have been found responsible for such sudden, self-resolving and benign inflammatory condition including most commonly Influenza virus [3,4,5] Dengue [8], Covid-19 [12] and other respiratory viruses [7].

A retrospective study were conducted in Portugal from 2015 to 2019 in pediatric emergency department illustrated that benign acute childhood myositis was found to be a rare, self-limiting and acute complication after an viral illness irrespective of the virus isolation due to limited availability of laboratory facilities and cost-effective treatment. The most prevalent mycotrophic virus documented during outbreak of 2019/2020 and flu season was Influenza B virus[1].

Influenza-associated myositis is a sudden and rare complication of influenza virus infection in school-going children affecting the males two times more than the females[3,4]. Influenza B virus is isolated in 76% of cases while Influenza A virus is isolated in 24% of cases. Unilateral or bilateral involvement of the calf muscles is documted. [4,5] Labs investigations show elevated creatine phosphokinase (CPK) level.4 Patients are improved without specific treatment in three to five days[4,5,6]. A rare complication is Rhabdomyolysis (3%) that is more common in girls (80%). Rhabdomyolysis is more common with influenza A virus (86%) leading to renal failure in (80%) patients [4].

Dermatomyositis should not be confused with influenza-associated acute myositis of childhood [5].

Seasonal influenza virus or other respiratory viruses may present with sudden myotropic inflammatory condition with elevated CPK [7].

Dengue virus also causes acute myositis involving difficulty in walking with lower limb muscle weakness but having normal power, tone and deep tendon reflexes which may be investigated by elevated CPK [8].

Community-acquired MRSA is now-a-days documented as an alarming cause of clinically documented pyomyositis and myositis in children [9]. Lab investigations are not mandatory to diagnose and treat myositis. General practitioners and family physicians can diagnose the case and treat by himself or herself on the basis of history, clinical picture, general physical examination and neurological findings [10, 11].

Rhabdomyolysis and elevated CK have been reported as complications of COVID-19 in pediatrics. Pediatric clinicians should be aware of this complication [12].

Conclusion:

Acute viral myositis is an acute and self-limiting inflammatory process; documented as a complication after a preceding viral illness. It usually affects preschool and school going aged children presenting pain in the muscle groups of the both lower limbs mainly affecting the gait of the patient without any significant positive findings in the neurological examination. Rhabdomyolysis, a rare complication of the disease, is investigated by serum creatine kinase level and myoglobinuria. We are presenting the case of a school-going child diagnosed as a case of acute viral myositis. As it is not a usual presentation after acute viral illness, we consider it significant to report the case and review the topic, as it may be helpful for the pediatricians and general practitioners to manage these cases without hospitalization of the patient by using only oral paracetamol or ibuprofen.

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