ORIGINAL RESEARCH

Assessment of benign acute childhood myositis in a tertiary care centre

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ABSTRACT

Background: Benign acute childhood myositis (BACM) is a rare, transient, and self-limited inflammatory condition of the skeletal muscle that usually occurs after a viral infection. The present study was conducted to assess benign acute childhood myositis in a tertiary care centre. **Materials & Methods:** 40 children with benign acute myositis of both genderswas included. Parameters such as clinical features, laboratory investigations, number of hospitalization and median length of stay was recorded. **Results:** Out of 40 patients, males were 22 and females were 18.BACM was single in 35 and recurrent in 5. Clinical featureswas fever in 34, gait abnormality in 25 and muscle pain in 37. White cell count showed neutrophils was 2045/µL and lymphocytes was 1906/µL. Viral studies showed influenza A in 11, influenza B in 6, adenovirus in 2, coxsackievirus in 4, echovirus in 3 and mycoplasma in 2 patients. Hospitalization was seen in 34 and median length of stay was 4.5days. Creatine kinase was 1480IU/L. The difference was significant (P< 0.05). **Conclusion:** Most of the patientshad single type of benign acute childhood myositis. Common clinical featureswas fever, gait abnormality and muscle pain.

Key words: Benign acute childhood myositis, Creatine kinase, White cell count

INTRODUCTION

Benign acute childhood myositis (BACM) is a rare, transient, and self-limited inflammatory condition of the skeletal muscle that usually occurs after a viral infection. It is also known by other names including “influenza-associated myositis,” “viral myositis”, and “acute myositis”.[1]

It is characterized by prodromal viral illness followed by calf tenderness or pain and sudden walking abnormalities which occur on average 3 days as the initial viral illness resolves. Muscle pain usually affects the gastrocnemius and soleus group with symmetric distribution and is associated with rise in serum level of muscle enzyme, including serum creatine kinase (CK). The hallmark of BACM is spontaneous clinical resolution within 1 week. Nevertheless, evolution in rhabdomyolysis, and kidney damage has been rarely reported.[2]

Since this condition is characterized by benign prognosis and short duration of symptoms, few efforts have beenapplied in order to define the pathogenesis of BACM.[3]Electromyograms recorded during BACM episodes resulted normal or with patchy myopathic changes. Fewmuscle biopsies collected from patients affected fromBACM showed normal morphology or demonstrated segmental rhabdomyolysis or myositis featuressuch as moderate muscle necrosis with interstitial inflammation.[4]

BACM can occur sporadically or in epidemics.[5] Several authors have confirmed the association with Influenza B and other viruses, including Influenza A, Parainfluenza, Adenovirus, Coxsackievirus, and Mycoplasma pneumoniae. Recurrence of BACM in the same individual has been occasionally described.[6]The present study was conducted to assess benign acute childhood myositis in a tertiary care centre.

MATERIALS & METHODS

The present study consisted of 40 children with benign acute myositis of both genders. A written consent was obtained from their parents.

Data such as name, age, gender etc. was recorded. Parameters such as clinical features, laboratory

investigations, number of hospitalization and median length of stay was recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I: Distribution of patients

Total-40		
Gender	**Males**	**Females**
Number	22	18

Table I shows that out of 40 patients, males were 22 and females were 18.

Graph I: Distribution of patients

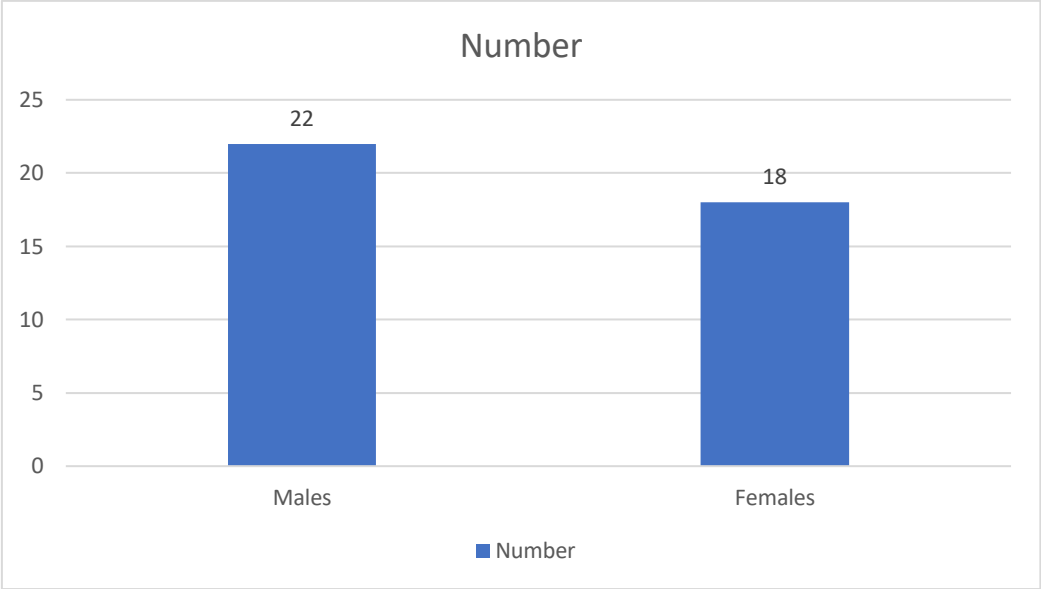

Table II: Assessment of parameters

Parameters	Variables	Number	P value
BACM	Single	35	0.01
	Recurrent	5	
Clinical features	Fever	34	0.92
	Gait abnormality	25	
	Muscle pain	37	
White cell count	Neutrophils (/µL)	2045	-
	Lymphocytes (/µL)	1906	-
Viral studies positive	Influenza A	11	0.01
	Influenza B	6	
	Adenovirus	2	
	Coxsackievirus	4	
	Echovirus	3	
	Mycoplasma	2	
Hospitalization (number)		34	-
Median length of stay (days)		4.5	-
Creatine kinase (IU/L)		1480	-

BACM was single in 35 and recurrent in 5. Clinical featureswas fever in 34, gait abnormality in 25 and muscle pain in 37. White cell count showed neutrophils was 2045/µL and lymphocytes was 1906/µL. Viral studies showed influenza A in 11, influenza B in 6, adenovirus in 2, coxsackievirus in 4, echovirus in 3 and mycoplasma in 2 patients. Hospitalization was seen in 34 and median length of stay was 4.5days. Creatine kinase was 1480IU/L. The difference was significant (P< 0.05).

DISCUSSION

Benign acute childhood myositis (BACM) is a rare, transient, self-limiting syndrome, affecting mid school children (usually males). he etiology of BACM is typically viral and the most frequent viruses involved are influenza A and B.[7] The exact mechanism of the muscular inflammatory process remains undetermined, but some theories have been suggested, such as: direct invasion of the muscle by the virus,

myotoxic cytokines released in response to viral infection, and immunologic processes induced by the viral infection.[8] It is known that the infection causes necrosis and degenerative changes of the muscle fiber, which results in high levels of creatine phosphokinase (CPK).[9]BACM affects mainly pre-school and school-aged children at a median age of 6–9 years, with a male predominance, and case outbreaks are observed during periods of respiratory virus epidemics. The clinical picture and laboratory features are consistent in most studies. Viral myositis is characterized by calf pain and tenderness with sudden onset of difficulty in walking after a viral illness, being typically worse after a period of rest. Common prodromal symptoms are rhinorrhea, fever, sore throat, and cough.[10] There are no neurological alterations. An elevated CPK level is one of the most common laboratory findings; other findings include blood count alterations and elevated hepatic enzyme levels. In a minority of cases, if any, patients require hospitalization. Myoglobinuria is rare and when it occasionally occurs patients should be admitted to hospital for renal function monitoring because of the possible, but rare, development of rhabdomyolysis.[11,12]The present study was conducted to assess benign acute childhood myositis in a tertiary care centre.

We found that out of 40 patients, males were 22 and females were 18. Azevedo et al[13] in their study a retrospective review was carried out of patients' clinical records with an elevated level of creatine phosphokinase (CPK) who presented to the pediatric emergency department. Out of 174 cases of elevated CPK values, 100 corresponded to BACM-compatible clinical presentations (n = 96). There was a male predominance (77%) with a median age of 6 years. There were more cases registered in 2019 compared with the previous years. The most frequently reported prodromal symptoms were fever, cough, and rhinorrhea. Bilateral calf pain was the most frequently reported BACM symptom, followed by gait complaints and refusal to walk. Hospitalization was an independent predictor of CPK levels. In two cases there was myoglobinuria. The most common hematological findings were leukopenia and thrombocytopenia.

BACM was single in 35 and recurrent in 5. Clinical featureswas fever in 34, gait abnormality in 25 and muscle pain in 37. White cell count showed neutrophils was 2045/µL and lymphocytes was 1906/µL. Viral studies showed influenza A in 11, influenza B in 6, adenovirus in 2, coxsackievirus in 4, echovirus in 3 and mycoplasma in 2 patients. Hospitalization was seen in 34 and median length of stay was 4.5days. Creatine kinase was 1480IU/L. D'amico et al[14] in their study for the case series, 50 children diagnosed with BACM were enrolled: the mean age of affected children was 5.35 years, 86% of were males, and in 56% the affections occurred during the winter. In the affected children, the clinical picture was characterized by previous fever and/or symptoms of inflammation of the upper airways, and followed by pain in the lower extremities up to uncoordinated gait. In 17 cases the etiological agent was isolated, including the influenza virus type B as the most frequent and influenza virus type A, Mycoplasma pneumoniae, beta-hemolytic streptococcus, and herpes simplex virus. Children were treated with supportive therapy. In all the children the muscular symptomatology had a good evolution with progressive marked reduction of pain and of the high level of CKemia. Neither clinical recurrences nor sequelae were reported.

Brisca et al[15] in their study one hundred and thirteen patients with BACM were identified. Ninety-two children (65 males) had a single episode, while ten (nine males) had recurrence. The mean age at presentation was 6.0 years (range 2– 13,2). All patients had normal neurological examination and no one developed myoglobinuria, or renal failure. At first evaluation median CK level was 1413 UI/l (normal values < 150 U/L). Median CK of "recurrent" patients was higher than "non-recurrent" (2330 vs 1150 U/L, p = 0.009). Viral studies were positive in 51/74 cases, with high prevalence of Influenza viruses. Ninety-six patients (85%) were hospitalized with a median of 4 days. No patients had any residual muscular impairment.

The limitation the study is small sample size.

CONCLUSION

Authors found that most of the patients had single type of benign acute childhood myositis. Common clinical featureswas fever, gait abnormality and muscle pain.

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