

# Causes of Difficulty in Walking Amongst Admitted Children: An Experience in Tertiary Care Unit

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## ABSTRACT

**Aim:** To determine the common causes of walking difficulty amongst children admitted in tertiary care unit and to determine the relationship of these causes with age.

**Methods:** It was an observational descriptive study held at pediatric medical unit of The Children's Hospital and the Institute of Child Health, Lahore from May 2017 to April 2018. Inclusion criteria was children aged between 2 years to 16 years and those who presented with difficulty in walk and got admitted in pediatric medical ward. Patients who were having history of trauma were excluded from the study. After taking parental consent, a predesigned proforma was filled for each patient. According to the underlying disease, treatment was given. All the data was entered in SPSS-version 16 and results were analyzed in percentages. To find out p-value, chi square test was applied and value less than 0.05 was significant.

**Results:** Seventy five patients were enrolled. Amongst them, 62.7% were male and 37.3% were female. Mean age was 7.2 years. The most common causes were osteomyelitis (29.3%), juvenile idiopathic arthritis (22.6%) and septic arthritis (21.3%) followed by cellulitis (10.6%), rheumatic fever (5. %), psoas abscess (2.6%), scurvy (2.6%) and others (5.5%). These causes were seen mostly in children above 5 years of age (74.7%).

**Conclusion:** Osteomyelitis was the commonest cause amongst admitted children with difficulty in walk. Serious consequences of the underlying diseases can be diagnosed promptly and treated effectively if early diagnosis can be made by a detailed history and examination.

**Keywords:** Osteomyelitis, Septic arthritis, juvenile idiopathic arthritis.

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## INTRODUCTION

Children presenting with walking difficulty have a wide range of underlying problems ranges from the benign to the life-threatening. Amongst children, in normal gait patterns there is a considerable variation and the ages at which the changes occur, and these appear to be family-history related. The following conditions are some of the possible causes of difficulty in walking like bone and joint infections, motor neuron disease, poliomyelitis, stroke, Guillain-Barre syndrome, cerebral palsy. Abnormalities of gait include the following: in juvenile idiopathic arthritis (JIA), antalgic gait (caused by pain) is seen while circumduction gait is typically seen with a leg length discrepancy, or with unilateral spasticity as in hemiplegic cerebral palsy. In upper motor neuron neurological disease (e.g, diplegic or quadriplegic cerebral palsy, stroke), spastic gait is observed. In cerebellar ataxia, in ataxic cerebral palsy affecting the cerebellum, and in Friedreich's ataxia, ataxic gait is observed. In Legg-Calvé-Perthes disease, developmental dysplasia of the hip, slipped upper femoral epiphysis, muscle disease (e.g, inherited myopathies), arthritis involving the hip, and neurological conditions, trendelenberg's gait is seen. In lower motor neuron neurological disease (eg, spina bifida, polio) and peripheral neuropathies (eg, Charcot-Marie-Tooth disease), stepping gait is observed.<sup>1</sup> In pediatric age group, musculoskeletal problems are one of the leading causes of outpatient admissions especially in young children. Acute osteomyelitis is an inflammation of bone caused by bacteria that reach the bone via the hematogenous route<sup>2</sup>. It may be acute, subacute or chronic. Septic arthritis in

children is an orthopedic emergency. The most common pathogen is staphylococcus aureus<sup>3</sup>. Osteomyelitis and septic arthritis have a potential for life-long disability if treated insufficiently. Transient synovitis is a self limiting, benign condition involving effusion formation and synovial inflammation. Several studies have shown that to differentiate between transient synovitis and septic arthritis, the most reliable clinical signs are a history of non-weight bearing and a temperature greater than 38.5°C<sup>4,5</sup>. Amongst non-infectious joint inflammation in children juvenile idiopathic arthritis is the most common cause in which pain, swelling & stiffness are due to inflammation of the synovium<sup>6</sup>. In this disease, non reversible abnormalities may also occur in extra-articular organs such as the kidney (due to systemic amyloidosis) or eye (as a complication of iridocyclitis), or secondary to side effects of drug therapies<sup>7,8,9</sup>. Mismanagement can lead to serious adverse outcomes, therefore, it is important to have knowledge about common causes of difficulty in walking amongst children in our setup to help in designing appropriate management plan and their evaluation to avoid serious consequences of the underlying diseases.

The objective of the was to determine the common causes of walking difficulty amongst children admitted in tertiary care unit and to determine the relationship of these causes with age .

## PATIENTS AND METHODS

It was a observational descriptive study held at pediatric medical unit of The Children's Hospital and the Institute of Child Health, Lahore from May 2017 to April 2018. Inclusion criteria was children aged between 2 years to 16 years and those who presented with difficulty in walk and got admitted in pediatric medical ward. Patients who were

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having history of trauma were excluded from the study. Total 75 patients who fulfill the inclusion criteria were enrolled. After taking parental consent, a predesigned proforma was filled which included a thorough history and a complete clinical examination including vitals and local examination (swelling, redness, tenderness and any movement restriction at joints or any joint deformity). Investigations like CRP,CBC, ESR, blood culture and sensitivity, ultra sonography, x-rays, and MRI (if needed) of affected joints and bone scan (if required) were done. All data was recorded in the proforma. According to the underlying disease, treatment was given. After clinical improvement, patients were discharged from medical ward. All the data was entered in to the SPSS-version 16 and results were analyzed in percentages. To find out P-value, chi square test was applied and less than 0.05 value was significant.

**RESULTS**

Seventy five patients were enrolled. Amongst them, 62.7% (47) were male and 37.3% (28) were female. As far as age distribution is concerned, it is shown in Fig:1. Mean age was 7.2 years. Amongst common causes in admitted children, most common was osteomyelitis (29.3%) followed by juvenile idiopathic arthritis (22.6%), septic arthritis (21.3%), cellulitis (10.6%), rheumatic fever (5.5%), psoas abscess (2.6%), scurvy (2.6%) and others (5.5%) including each case of ataxia talengetctasia, duchene muscular dystrophy, cerebellar ataxia and Legg-Calve´-Perthes disease (Fig:2). These causes were seen mostly in children above 5 years of age (74.7%) with p-value of less than 0.05 which is significant (Table:1). There was history of fever in 52 cases (69.3%) and pain in joints was present in 60 cases (80%) with p-value of 0.006 which is significant. Local examination revealed that about 28 cases (37.3%) had swelling, tenderness of the joints and had restriction of movements at joints. While in 53% of cases of JIA, joint deformity was present. As far as radiological investigations are concerned, MRI of the involved joint was done in 11 cases which reflected infective process and bone scan was

done in 8 cases. All patients were managed according to the underlying cause. Seventy three patients (97.3%) were discharged while 2 patients (2.6%) were left against medical advice.

Fig 1:

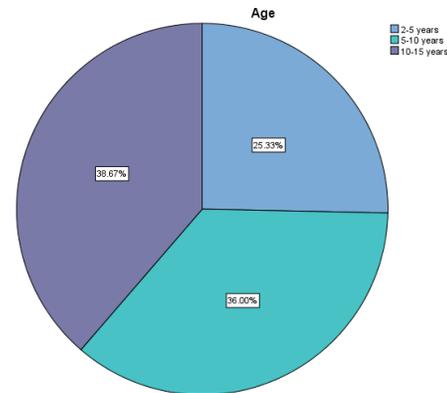


Fig 2:

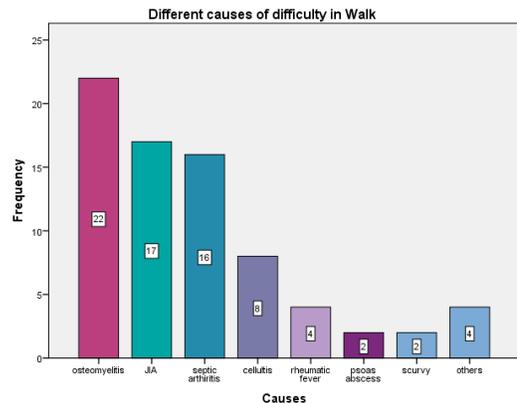


Table 1: Causes in relation to age

Causes	Age			P-value
	2-5 years	5-10 years	10-15 years	
Osteomyelitis	2 (9.1%)	14 (63.6%)	6 (27.3%)	0.036
Juvenile idiopathic arthritis	5 (29.5%)	10 (58.8%)	2 (11.7%)	0.02
Septic arthritis	2 (12.5%)	9 (56.25%)	5 (31.25%)	0.048
Cellulitis	4 (50%)	3 (37.5%)	1 (12.5%)	0.37
Rheumatic fever		3 (75%)	1 (25%)	0.987
Psoas abscess	1 (50%)	1 (50%)		0.41
Scurvy	2 (100%)	0 (0%)		0.34
Others	1 (25%)	2 (50%)	1 (25%)	0.98

P value is less than 0.005... P-value of (osteomyelitis, JIA & septic arthritis and age) is less than 0.05 so its significant so we can say that there is a significant relation between these two variables.

**DISCUSSION**

Locomotion is a complex coordinated process and impairment of any of the contributing normal neuropathways can lead to an abnormal gait. Gait disorders may result from a variety of neurologic and musculoskeletal conditions. For initial evaluation, patients

most often present to their primary care physician or an emergency department. In this study, majority of the patients were male with the ratio of 1.5:1 which is in accordance with other studies. <sup>10</sup> Regarding age distribution, most of the patients were above 5 years of age which is similar with a study done by Ogunlade et al. <sup>11</sup>Amongst causes of difficulty in walking, most common

was osteomyelitis (29.3 %), followed by juvenile idiopathic arthritis (22.6 %) and septic arthritis (21.3%). These causes were seen mostly in children above 5 years of age (74.7%) which is similar with other studies.<sup>11</sup>

Conservative management is possible in case of osteomyelitis, if treated early.<sup>12</sup>

In our study, staphylococcus aureus was the commonest organism like was in other studies<sup>11,13,14</sup> Appropriate antibiotic therapy is required for all forms of osteomyelitis<sup>13,14,15</sup>. In polyarticular JIA, course is more refractory in comparison with fewer affected joints. There is a increased risk of joint damage in active disease due to prolonged course, resulting in decreased quality of life and poorer functional outcomes<sup>16</sup>. Legg-Calve´-Perthes disease is an idiopathic avascular necrosis of the capital femoral epiphysis. Slipped capital femoral epiphysis is the most common hip disorder of adolescents; symptoms may include pain, abnormal gait, and range of motion of the hip joint. One of the cause was scurvy. It is caused by a prolonged deficiency of vitamin C intake leading to several metabolic abnormalities, including impaired tissue repair and defective collagen synthesis<sup>17,18</sup>. Due to sub periosteal pain, the patient tends to remain in a characteristic immobilized posture with flexion of knees and hips in advanced stages of scurvy<sup>19</sup>.

## CONCLUSION

Osteomyelitis was the commonest cause amongst admitted children with difficulty in walk. Serious consequences of the underlying diseases can be diagnosed promptly and treated effectively if early diagnosis can be made by a detailed history and examination.

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