

ORIGINAL ARTICLE

Frequency of Urinary Tract Infection in Children with Cerebral Palsy

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ABSTRACT

Background: The incidence of cerebral palsy ranges from 2 to 25 per 1000 live birth. Both low birth weight and premature birth are significant contributors to the development of cerebral palsy. According to various studies, children with cerebral palsy are susceptible to urinary tract infections

Objective: To find out the frequency of urinary tract infection in children with cerebral palsy

Methodology: This cross sectional study was carried out at the Pediatrics department Sandeman Provincial Hospital Quetta from January 2022 to July 2022. The research included all CP children who met the inclusion requirements and reported a fever. Two clean midstream urine samples were collected from each child and forwarded to the hospital laboratory for the purpose of identifying UTIs. All the information was entered into a predesigned proforma. For the analysis of data, IBM SPSS version 23 was used.

Results: In this study, totally 60 children were included. The male children in our study were 42 (70%) while female children were 18 (30%). The mean age (\pm SD) was 8 (\pm 2.15) years. The overall prevalence of urinary tract infection in children with cerebral palsy was 20 (33.33%).

Conclusion: Our study concluded that the prevalence of urinary tract infection in children with cerebral palsy was high. This high prevalence might be due to immobility.

Keywords: Frequency; Urinary tract infection; cerebral palsy

INTRODUCTION

The incidence of cerebral palsy ranges from 2 to 25 per 1000 live birth¹. This rate has not altered during the last four decades. Both low birth weight and premature birth are significant contributors to the development of cerebral palsy. Infants with very low birth weights have a 20–80 fold increased risk of cerebral palsy compared to infants having birth weight of 2.5 kg². As the majority of cases have unknown causes, risk factors should not be confounded with cause of the disease. Following repeated insults, CP individuals have motor damage³. In the United States, 1/278 infants are born with cerebral palsy each year⁴. A study was conducted on 160 individuals with abnormalities of tone, posture, and mobility to determine the prevalence of CP in Pakistan, and 120 of those patients were reported with CP⁵. Earlier, it was thought that CP was caused by hypoxic ischemic encephalopathy. Multiple variables have been implicated in recent researches as causes of CP. CP is the result of both prenatal and postnatal damage to the developing brain caused by any of the determinants, such as genetic factors, multiple gestation, prematurity and low birth rate⁶. Respiratory issues, poorer intelligence, seizure disorders, problems of the vision occur in children with cerebral palsy. Brain injury occurs in children with cerebral palsy and this damage is non-progressive, and they have trouble controlling their neuromuscular movements. These problems include urinary tract dysfunctions, associated cerebral palsy morbidities such as urgency, frequent hesitation, and urinary incontinence⁷. Vesicoureteral reflux and inadequate bladder emptying owing to detrusor hyperreflexia and detrusor sphincter dyssynergia may increase the risk of UTI in people with CP. According to a research by Angilájé EA et al., 38.5% of children with cerebral palsy are susceptible to urinary tract infections because they have impaired cognition and they are immobile, and cannot signal when their bladders are full and they require to micturate⁸. The goal of the current research is to ascertain how often UTI occur in children who have cerebral palsy. Children who have cerebral palsy have an increased risk of developing urinary tract infections (UTIs), as was previously stated. In addition, neurogenic bladder, which may lead to reflux, can also cause UTIs in children who have CP.

MATERIALS AND METHODS

This cross sectional study was carried out at the Pediatrics department Sandeman Provincial Hospital Quetta. The study duration was six months after approval of synopsis from January 2022 to July 2022. The sample size of our study was 60 based on WHO sample size calculator. The inclusion criteria of our study were all the children of either gender, having age from 3-15 years with Cerebral Palsy. The exclusion criteria of our study were all the children having history of complicated urinary tract infection and children on antibiotic treatment or children who use steroid in the last month. The study was approved by the hospital's ethical research committee. The research included all CP children who met the inclusion requirements and reported a fever. The parents gave their written agreement after being briefed on the study's goals and anticipated outcomes. All of the study subjects had a clinical examination and history. Two clean midstream urine samples were collected from each child and forwarded to the hospital laboratory for the purpose of identifying UTIs. These samples were taken two hours apart. All the information was entered into a predesigned proforma. For the analysis of data, IBM SPSS version 23 was used. Frequencies (Percentages) were computed for gender and frequency of urinary tract infection whereas the means (standard deviations) were computed for age.

RESULTS

In this study, totally 60 children were included. The male children in our study were 42 (70%) while female children were 18 (30%). (Figure 1) The mean age (\pm SD) was 8 (\pm 2.15) years. In our study, 18 (30%) patients were up to 5 years of age while 42 (70%) patients were >5-15 years of age. (Figure 2) The overall prevalence of urinary tract infection in children with cerebral palsy was 20 (33.33%).(Figure 3)

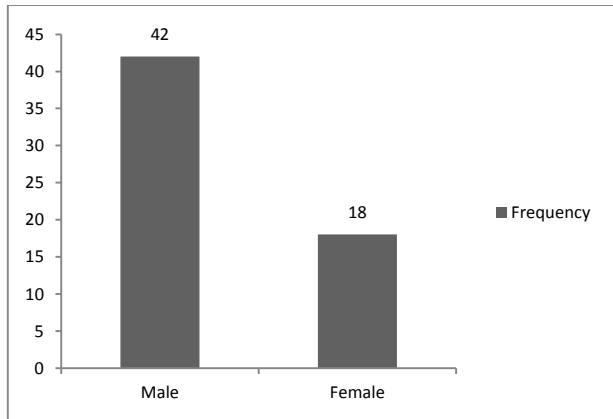


Figure 1: Gender wise distribution of enrolled children

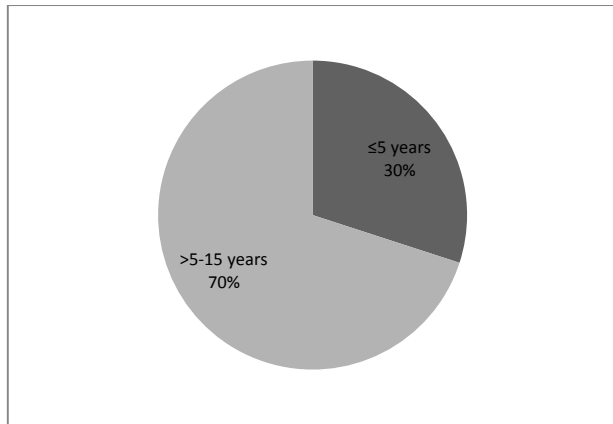


Figure 2: Age wise distribution of enrolled children

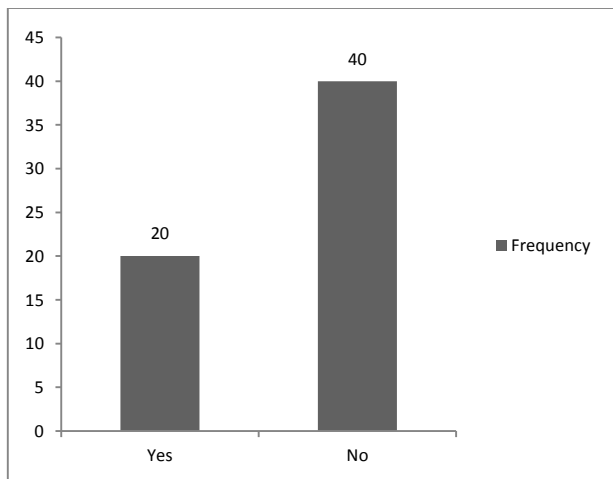


Figure 3: Overall prevalence of urinary tract infection in children with cerebral palsy

DISCUSSION

Urinary tract infection in children is a prevalent issue. At least one episode of urinary tract infection affects 8.4% of female children and 1.7% of males before they reach the age of seven⁹. Mortality is uncommon, although morbidity is frequent. Forty percent of patients, especially infants, need hospitalisation. 40% of individuals get temporary kidney impairment, and 5% develop chronic damage¹⁰. Fever, anorexia, lethargy and vomiting are systemic symptoms in younger children. Escherichia coli-related UTI is present in more than 80% of instances, and antibiotics are

used to manage it¹¹. Even individuals who have just had one UTI are susceptible to getting more, since 30% of children suffer recurrent urinary tract infection. Recurrent UTI risk factors include unstable bladder, vesicoureteric reflux (VUR), and prior infection^{11, 12}. Compared to males, females are more susceptible to recurrent UTI. While both sexes have a higher prevalence of febrile UTI in the first year of life, nonfebrile UTI is more prevalent in females beyond the age of three¹³. For the diagnosis, treatment, and follow-up of febrile urinary tract infections, several research and trials have been conducted. In this study, totally 60 children were included. The male children in our study were 42 (70%) while female children were 18 (30%). The mean age (±SD) was 8 (±2.15) years. In our study, 18 (30%) patients were up to 5 years of age while 42 (70%) patients were >5-15 years of age. The overall prevalence of urinary tract infection in children with cerebral palsy was 20 (33.33%). A previous study was carried out by Rahida Karim et al. on children with cerebral palsy to determine the prevalence of UTI. They reported that 32.7% of the children with cerebral palsy have urinary tract infection which is in accordance with the findings of our study¹⁴. Another study done by E Afzal et al. reported 73.1% frequency of UTI in the children with cerebral palsy which is not in accordance with other study¹⁵.

Other studies reported varied frequency of UTI in cerebral palsy children ranging from 0.25% in overall population to 13.5% based in hospital^{16, 17}. In Turkey, a study piloted by Ozturk et al. and they observed UTI in 32.5% of the children with cerebral palsy which is in accordance with our study findings¹⁸. Other studies carried out by Reid et al. in London and Alamdara et al. in Iran reported 7.4% and 2.2% UTI in children with cerebral palsy which might be due to the reason of including children on antibiotic treatment because we excluded the children on antibiotic treatment¹⁹. Due to the fact that our research included CP patients who had been admitted to one hospital, this was one of its primary limitations. Research could be organized to collect information from additional medical facilities so as to include a larger population. Another limitation was that we did not identify the causative agent of UTI and culture/sensitivity was not determined.

CONCLUSIONS

Our study concluded that the prevalence of urinary tract infection in children with cerebral palsy was high. This high prevalence might be due to immobility. Thus, there needs to be an increased focus on developing effective physiotherapy for children with cerebral palsy, such that these children may achieve the highest possible levels of mobility and independence.

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