

# ORIGINAL ARTICLE

## Assessment of prevalence of urinary tract infection in febrile children less than 5 years of age

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### ABSTRACT:

**Background:** Urinary tract infection is common in children. The present study was conducted to assess prevalence of urinary tract infection in febrile children less than 5 years of age. **Materials & Methods:** 86 children less than 5 years of age of both genders were included. The blood investigations and urine analysis along with urine culture and sensitivity were done. USG abdomen was done in patients with culture positive UTI febrile children. **Results:** Age group 1-2 years had 22 boys and 14 girls, 2-3 years had 11 boys and 26 girls and 3-5 years had 13 boys and 10 girls. Culture positive no growth in URI was 5 and 19, febrile seizures in 2 and 10, sepsis in 7 and 7, pyogenic meningitis in 3 and 8, bronchopneumonia in 4 and 10 and dengue fever in 6 and 5 respectively. Pseudomonas was seen in 7, E. Coli in 13, Klebsiella in 3 and Proteus in 4 cases. The difference was significant ( $P < 0.05$ ). **Conclusion:** UTI was quite common in children less than 5 years of age. Common pathogens isolated were Pseudomonas, E. Coli, Klebsiella and Proteus.

**Key words:** E. Coli, Klebsiella, Urinary tract infection

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**This article may be cited as:** Varghese S, Kallely RV. Assessment of prevalence of urinary tract infection in febrile children less than 5 years of age. J Adv Med Dent Sci Res 2015;3(1):288-291.

### INTRODUCTION

Urinary tract infection is common in children. Children with fever comprise a major proportion of our practice in outpatient department of Paediatrics and Emergency Medicine department. Fever is one of the most common reasons for children below 5 years of age to attend the Emergency or outpatient department.<sup>1</sup> Unlike occult bacteraemia very minor attention has been emphasized on the identification of infections of urinary tract in children in the paediatric department, despite current information that suggests a very high prevalence of urinary tract infections along with associated significant morbidity in these children.<sup>2</sup> Very often, child receives antibiotics empirically, without any adequate evaluation for urinary tract infection. Fever many times is often the only symptom in children with urinary tract infections.<sup>3</sup>

Very often, the child receives antibiotics empirically, without an adequate evaluation for urinary tract infection. Fever many times is often the only symptom in children with urinary tract infections. Fever along with significant bacteriuria, pyuria in children with undocumented sources of infections must be presumed to be symptoms of pyelonephritis,

an invasive infection of the renal parenchyma requiring prompt treatment.<sup>4</sup>

Pyelonephritis usually leads to renal scarring in 30% to 65% of children with urinary tract infections in this age group, even in the absence of underlying urinary tract abnormalities.<sup>5</sup> The present study was conducted to assess prevalence of urinary tract infection in febrile children less than 5 years of age.

### MATERIALS & METHODS

The present study comprised of 86 children less than 5 years of age of both genders. The consent was obtained from all enrolled patients.

Data such as name, age, gender etc. was recorded. Parameters such as voiding difficulties, onset, duration of fever and associated symptoms such as nausea, vomiting, diarrhea, urinary disturbances, other system involvement was obtained. The blood investigations and urine analysis along with urine culture and sensitivity were done. USG abdomen was done in patients with culture positive UTI febrile children. Data thus obtained were subjected to statistical analysis. P value  $< 0.05$  was considered significant.

### RESULTS

**Table I Age and gender wise distribution**

Age group (years)	Boy	Girl
1-2 years	22	14
2-3 years	11	26
3-5 years	13	10
Total	46	40

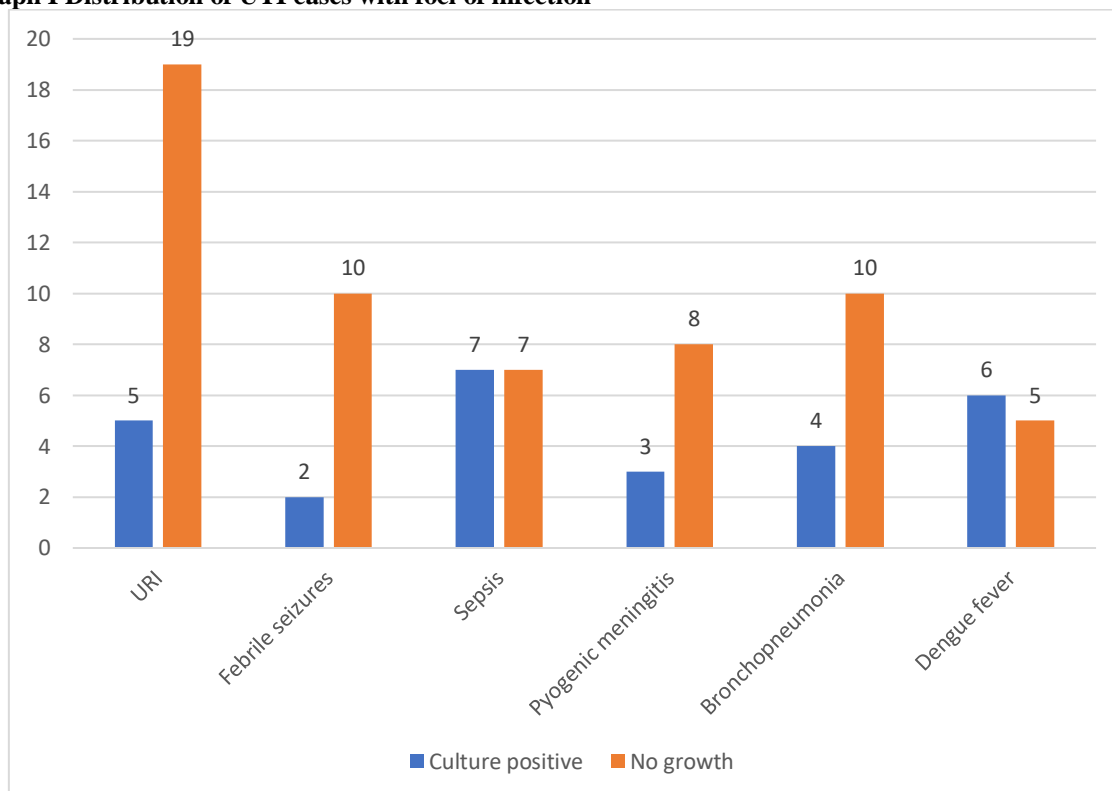
Table I shows that age group 1-2 years had 22 boys and 14 girls, 2-3 years had 11 boys and 26 girls and 3-5 years had 13 boys and 10 girls.

**Table II Distribution of UTI cases with foci of infection**

Foci of infection	Culture positive	No growth	P value
URI	5	19	0.05
Febrile seizures	2	10	
Sepsis	7	7	
Pyogenic meningitis	3	8	
Bronchopneumonia	4	10	
Dengue fever	6	5	

Table II, graph I shows that culture positive no growth in URI was 5 and 19, febrile seizures in 2 and 10, sepsis in 7 and 7, pyogenic meningitis in 3 and 8, broncho pneumonia in 4 and 10 and dengue fever in 6 and 5 respectively. The difference was significant ( $P < 0.05$ ).

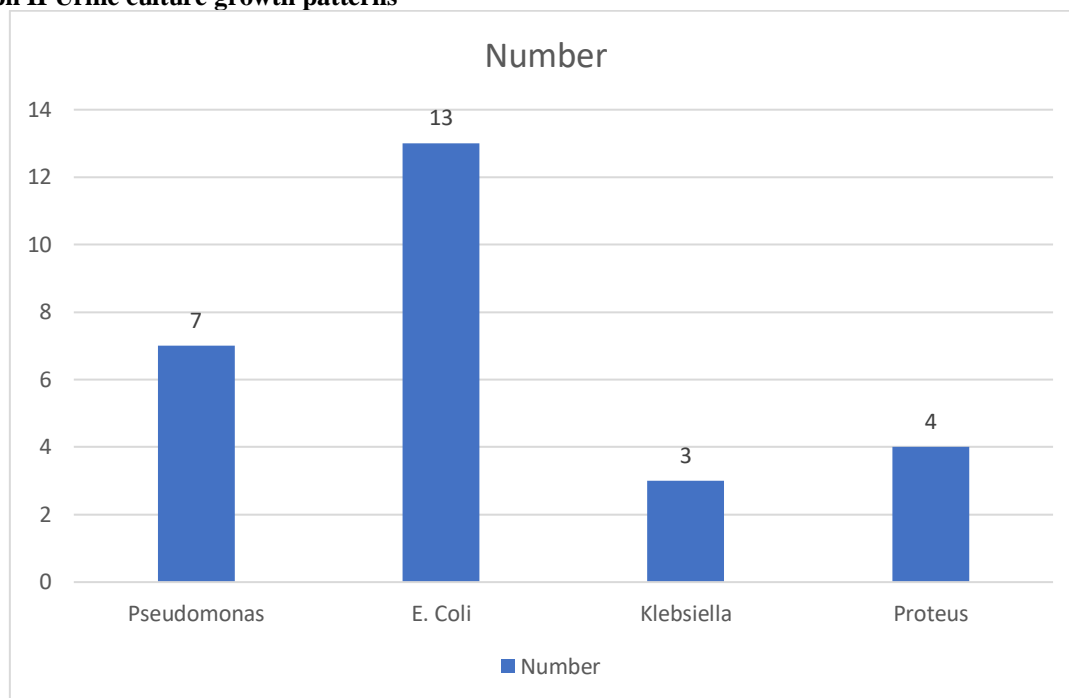
**Graph I Distribution of UTI cases with foci of infection**



**Table III Urine culture growth patterns**

Culture growth	Number	P value
Pseudomonas	7	0.02
E. Coli	13	
Klebsiella	3	
Proteus	4	

Table III, graph II shows that Pseudomonas was seen in 7, E. Coli in 13, Klebsiella in 3 and Proteus in 4 cases. The difference was significant ( $P < 0.05$ ).

**Graph II Urine culture growth patterns**

## DISCUSSION

Most urinary tract infections that lead to scarring or diminished kidney growth occur in children younger than 4 years of age especially among infants in the first year of life those with gross reflux or obstruction and those who have a delay in therapy for urinary tract infection.<sup>6,7</sup> Fever along with significant bacteriuria, pyuria in children with undocumented sources of infections must be presumed to be symptoms of pyelonephritis, an invasive infection of the renal parenchyma requiring prompt treatment.<sup>8</sup> Recent studies using renal parenchyma - avid nuclear scans to determine urinary tract infection has revealed that more than 80% of children less than 5 years of age with febrile urinary tract infection have pyelonephritis. Pyelonephritis usually leads to renal scarring in 30% to 65% of children with urinary tract infections in this age group, even in the absence of underlying urinary tract abnormalities.<sup>9</sup> The present study was conducted to assess prevalence of urinary tract infection in febrile children less than 5 years of age.

We found that age group 1-2 years had 22 boys and 14 girls, 2-3 years had 11 boys and 26 girls and 3-5 years had 13 boys and 10 girls. Madhubalan T et al<sup>10</sup> in their study among the 200 cases, the prevalence of UTI was higher among females (10%) than males (8%). Among the culture-positive cases UTI, an underlying focus of infection was present in 89% of cases and only 11% of cases did not have any foci. In this study, the % of cases with a duration of fever more than 5 days was 57, as compared to 43% in patients with fever less than 5 days. Among the 19 UTI cases, 5 of them presented with voiding difficulties and all the 5 cases had significant growth

on culture. There was a significant association between UTI cases and voiding difficulties.

We observed that culture positive growth in URI was 5 and 19, febrile seizures in 2 and 10, sepsis in 7 and 7, pyogenic meningitis in 3 and 8, broncho pneumonia in 4 and 10 and dengue fever in 6 and 5 respectively. According to Sobel et al<sup>11</sup>, urinary tract infections might occasionally be caused by viruses and fungi, but the overwhelming majority of urinary tract infections are caused by bacteria. There are various factors that determine the level and severity of infection, some among which are the size of the inoculum of the microorganism, host resistance and virulence of the infecting strains. Most of the infections are caused by facultative anaerobes that originate from the flora of the bowel. There are other pathogens that originate in the flora of the perineal skin or vagina.

We found that Pseudomonas was seen in 7, E. Coli in 13, Klebsiella in 3 and Proteus in 4 cases. According to Bagga et al<sup>12</sup> about 90% of first symptomatic urinary tract infection and 70% of recurrent infections were due to Escherichia coli. Less commonly, other enteric gram- negative bacteria such as proteus or Klebsiella and Staphylococcus saprophyticus are responsible for community - acquired infections. Zafiri D, Gron Y. et al<sup>13</sup> revealed that adherent bacteria not only persist within the urinary tract but also have growth advantages and enhanced toxicity as a result of proximity to products restricted in their diffusion that are secreted by eukaryotic cells. This could have resulted in more effective delivery of toxins to the cells.

## CONCLUSION

Authors found that UTI was quite common in children less than 5 years of age. Common pathogens isolated were Pseudomonas, E. Coli, Klebsiella and Proteus.

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