

Assessment of the Incidence and Associated Risk Factors of Urinary Tract Infection among children- A Retrospective study.

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Abstract

A study to assess the Incidence and Associated Risk Factors of Urinary Tract Infection among children at selected tertiary care hospital, Kanchipuram District, Tamil Nadu. The objectives is to determine the incidence of UTI among children, estimate the types of bacteria causes UTI among children with UTI, to estimate the incidence of urinary tract infection among children and find out the Association between the UTI and selected risk factors of children. The convenience sampling was used to 50 paediatric medical records from January 2017 to December 2018. The data collection tool was validated and reliability was established. The data were collected by structured questionnaire. The collected data was tabulated and analysed. Descriptive and Inferential Statistical method were used. The study shows that the higher frequency of 0-6 years (58%) and the lower frequency 13-18 years (18%). In Gender, Male is the highest frequency (56%) and Female is the lowest frequency (44%) and the history of birth defect of structure/deformity or blockage in one of the organ (20%), Vesico Ureteral Reflux (60%), Pelvic uretero junction (10%), Exstrophy of bladder system (10%). The highest frequency Vesicoureteral Reflux (60%) and the lowest frequency is Pelvic uretero junction (10%) and exstrophy of bladder system (10%). It is found that E.coli (86%), Klebsiella (10%), Proteus (2%), Pseudomonas (2%). The highest frequency E. Coli (86%) and the lowest frequency Proteus (2%), Pseudomonas (2%) most causative organism of UTI. The incidence rate for urinary tract infection in our study was 11.7%. There was a significant Association between the selected demographic variables and risk factors of UTI.

Keywords: Urinary tract infection, Incidence, Types of organism, Associated risk factors, Children (0-18 Years).

Introduction

Urinary Tract Infection (UTI) is an infection that affects mostly the part of the urinary tract of human

body. Common symptoms and signs of UTIs in children include pain and urgency with urination, blood in the urine, abdominal/pelvic pain, fever, flank pain and vomiting.

In young children, the only symptom of a Urinary Tract Infection (UTI) may be a fever, due to the lack of more symptoms, while females under the age of two or uncircumcised males child who are less than a year exhibit a fever, a culture of the urine is recommended by many medical associations, Therefore Infants may feed poorly, vomit, more sleep, or be having signs of jaundice. In older children, urinary incontinence may occur resending symptom for the child with uti.

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⁶One study in August 2016, Children with fever were the major proportion in outpatient department of Paediatric. The emphasis on identification of Urinary Tract Infections in febrile children is minimal. Very often, children receive antibiotics empirically, without any adequate evaluation for Urinary Tract Infection.

⁶Recent most studies have shown that the Urinary Tract Infection have revealed that more than 75% of children under 5 years of age with the febrile Urinary Tract Infection have pyelonephritis. Pyelonephritis leads to renal scarring in 27% to 64% of children with Urinary Tract Infections in this age group, even in the absence of underlying urinary tract abnormalities. It is essential to identify Urinary Tract Infections in febrile children and institute prompt treatment to reduce the potential for life long morbidity.

A UTI may be classed as either: An upper UTI – if it is a kidney infection or an infection on the ureters. A lower UTI it's a bladder infection or an infection of the urethra. Most of the UTIs in children are caused by organism *E. coli* followed by *Klebsiella*, *Proteus*, *Pseudomonas*.

In some studies, mostly child wipes their bottom and then the toilet paper comes into contact with their genitals areas which is more of a problem for girls comparing to the boys, whereas babies

Even gets small defects in their urethra when they soil with their nappies particularly when it squirm and being changed. Some of the risk factors for a UTI include:

1. A problem in the urinary tract like as a malformed kidney or a blockage somewhere along the tract).
2. An abnormal backward flow (reflux) of urine from the bladder up the ureters and toward the kidneys. This is known as Vesicoureteral Reflux (VUR).
3. Poor toilet and hygiene habits.
4. Family history of UTIs.

¹⁰Urinary Tract Infections include 10% of all febrile children along with 13.6% of febrile infants and 7% of febrile newborns. Mostly the children younger than five years of age, most Urinary Tract Infections lead to a diminished kidney growth.

⁷One study that was carried out in Government general hospital. In that prospective study 60 cases of Urinary Tract Infection who were admitted in paediatric

medical and paediatric surgical wards of Government general hospital was with signs and symptoms suggestive of Urinary Tract Infection.

⁸In 2008, Knowledge of baseline risk of Urinary Tract Infection can help clinicians make informed diagnostic and therapeutic decisions. We conducted a meta-analysis to determine the pooled Prevalence of Urinary Tract Infection (UTI) on children by age, gender, race and circumcision status.

Urinary Tract Infection (UTI) is a significant health problem that commonly affects children. It is estimated to be the third most common cause of fever in children after gastrointestinal infections and respiratory diseases.² The Possibility of Urinary Tract Infection must to be considered in all febrile children and urine culture specimen must be collected as a part of diagnostic evaluation.

¹One studies shows that the management of children with urinary tract infection doesn't stop with treating that episode with antibiotics, whereas it has higher chance of associated urinary tract abnormalities like vesicoureteric reflux, pelvioureteric junction obstruction, ureterocele that may result in recurrent infections and permanent damage to kidneys in the form of renal scarring.

UTI at this critical and vulnerable age group is associated with considerable morbidity because it can lead to serious complications such as hypertension, renal scarring and end-stage renal failure. Clinically, children with acute pyelonephritis often present with high fever, abdomino-pelvic pain and urinary symptoms. However, these symptoms are not specific and they may occur in lower Urinary Tract Infections such as Cystitis. On clinical basis, the differentiation between both conditions is challenging. Therefore, further investigations were required to determine the accurate diagnosis and prognosis.

Statement of the Problem: A Retrospective study to assess the Incidence and Associated Risk Factors of Urinary Tract Infection among children at selected tertiary care hospital, Kanchipuram District, Tamil Nadu, India.

Objectives:

1. To determine the incidence of UTI among children.
2. To estimate the types of bacteria causes UTI among children with UTI.

3. To estimate of incidence of urinary tract infection among children.
4. To find out the Association between the UTI and the Selected Risk Factors of children.

Operational Definitions:

Incidence: Incidence is the rate of new UTI cases. It is generally reported as the number of new cases occurring within a period of January 2017 to December 2018.

Urinary tract infection: A Urinary Tract Infection (UTI) is the presence of infective agents that exists anywhere between the renal cortex and the urethral meatus. Urinary tract infections (UTIs) are common in childhood.

Associated Risk Factors: In this present study the researcher included the selected available related risk factors in the medical records of children diagnosed with UTI.

Children: In this present study the researcher focused on children in the age of 0-18 years diagnosed with UTI during the period of January 2017 to December 2018.

Materials And Method

Research Approach: Quantitative-non interventional-evaluative approach was adopted in this study.

Research Design: Descriptive-retrospective research design was used to conduct the study.

Research Setting: Present study was conducted at Medical Record Department in Chettinad Hospital and Research Institute, Kelambakkam, Tamil Nadu, India. Permission to pursue the Medical Record Department document for specified data was obtained from the Dean, CHRI.

Population: Data related to Urinary Tract Infection and Association Risk Factors among children was obtained from Medical Records at Medical Record Department on Urinary Tract Infection from January 2018 to December 2018.

Sampling Size: Data on Urinary Tract Infection and Associated risk factors among children was collected for

the period of 1 Year (January 2018- December 2018) with Sample size of 50.

Sampling Technique: Purposive sampling technique was adopted for this study.

Sampling Criteria

A. Inclusion Criteria:

The inclusion criteria were:

- Data on children from 0 to 18 years.
- Data for the period of January 2018 to December 2018.

B. Exclusion Criteria:

The exclusion criteria was:

- Data of children with other urinary disease.

Selection and Development of the Study Instrument:

Tool Description:

Part 1: Determine the age, gender, area of residence, history of birth defect, types of organism causing urinary tract infection.

Data Collection Procedure: Data collection are observable and measurable facts that provide information about the phenomenon under study. The data collection was done for period of 1 week from 01.04.2019 to 07.04.2019 at 8:30 am to 4:00pm in Medical Record Department. In Medical Record Department they provided all the cases file diagnosed by Urinary Tract Infection from month of January 2018 to December 2018 for all age group. We separate and took the case file from 0-18 years which was needed for our study. Data confidentially was maintained.

Findings: The demographic variables shows that the Urinary Tract Infection is mainly occurring in children with the age group of highest 0-6 years (58%) in male children (56%), with the history of birth defect Vesicoureteral reflux (60%). In findings, shows that types of organism the most incidence rate is E.coli (86%) among children. The incidence of urinary tract infection in our study was 11.7%. This shows that there is association between the Demographic Variables and Risk factors of Urinary Tract Infection, according to age, gender, history of birth defect and types of organisms.

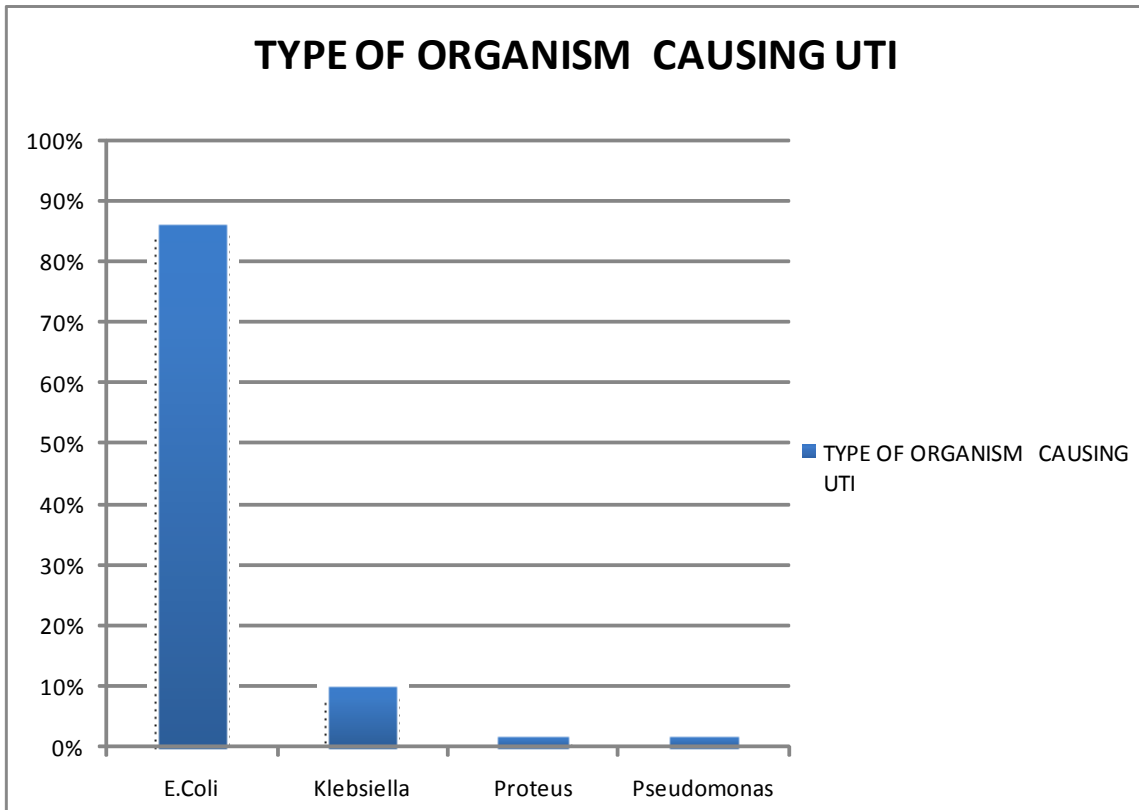


Figure: Showing Types of organism in UTI among paediatric children.

Discussion

Objectives of the study was:

1. Frequency and percentage distribution of demographic characteristics of UTI.
2. Percentage distribution of type of bacteria.
3. Estimation of incidence of urinary tract infection among children.
4. Association of Demographic Variable with Risk Factor of UTI.

Frequency and percentage Distribution of demographic variables of UTI:

Discussion between this study and others study includes:

⁴Palak Gupta, Jharna Mandal, Sriram Krishnamurthy, Deepak Barathi and Nandini Pandit (2015): Studys has founded that of the 524 children, 186 (35.4%) had culture proven UTI with 105 (56.4%) being infants, 50 (27.4%) between 1-5 yr, 30 (16.12%) between 5-13 yr and 129 (69.35%) males.

⁹Raya Mohammad Hussein Sawalha(2009): Studys has shown that the Prevalence of UTI was calculated to be 4%, 7.5% among girls and 0% among boys .

³Rima H. Hanna-Wakim, Soha T. Ghanem, Mona W. El Helou, Sarah A. Khafaja, Rouba A. Shaker, Sara A. Hassan, Randa K(2015): Studys has shown that. Vesico-ureteral Reflux and previous antibiotics use were founded to be independent risk factors for ESBL-producing **E. coli** and **Klebsiella**.

This Study findings revealed that the Frequency and Percentage Distribution of Demographic Characteristics like In paediatric age in year,

- 0-6 years of age group is the highest frequency (58%).
- 13-18 years of age group is the lowest frequency (18%).

UTI among gender,

- The highest frequency (56%) male.
- The lowest frequency (44%) female.

History of birth defect:

- The highest frequency (60%) Vesicoureteral Reflux.
- The lowest frequency (10%) Pelvic Uretero Junction, Exstrophy of bladder system.

Percentage distribution of type of bacteria:

⁵Dr. kavitha (2013):studys has shown that the urinary tract infection occurred more in male children than in female children. Most common causative organism were found E. coli (45.8%) followed by Klebsiella, Proteus and Pseudomonas constituting 23.8%, 9.8% and 6.1% respectively.

This Study findings revealed that the types of organism causing UTI:

- The highest frequency (86%) E.coli.
- The lowest frequency (10%) Proteus, pseudomonas.

Estimation of incidence of urinary tract infection among children: This Study findings revealed that the incidence rate of urinary tract infection in our study was 11.7%

Association of demographic variable with risk factors of UTI:

This Study findings revealed that

The Association between demographic variables in relation with urinary tract infection among children. It shows that age in history of defect had some significant association with risk factors of urinary tract infection with x^2 value $< p$ value ($x^2 = 4.5, p = 12.59$) at $df=6$, also shows that the age in type of organism had some significant association with risk factors of urinary tract infection with x^2 value $< p$ value ($x^2 = 4.5, p = 12.59$) at $df=6$, With this regard the hypothesis H2 stated accepted.

Conclusion

We have conducted a research topic on A study to assess the incidence and associated factors of urinary tract infection among children at selected tertiary care hospital, Kelambakkam, Kancheepuram District, Tamil Nadu, India. The quantitative descriptive retrospective design was used to conduct the study on data obtained on urinary tract infection from July 2018 to December 2018. 50 samples were collected.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Chettinad Academy of Research and Education, Institutional Human Ethics Committee on 04.02.2019.

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