ORIGINAL ARTICLE

Frequency and Causative Organisms of UTI in Neonatal Sepsis:

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ABSTRACT

Objectives: To determine the frequency of UTI in neonates presenting with sepsis and to identify the causative organisms.

Place and duration: Department of Neonatology Fatima Memorial Hospital Lahore. Out of first 3000 neonates delivered in FMH from July - December 2009, newborn suspected of sepsis were included in the study.

Patient and method: The study was conducted in year 2009. This was a prospective study. Data was collected from neonatal unit of Fatima Memorial Hospital.3000 newborns delivered from July-December2009 were included in study .Informed consent was taken and confidentiality of data was ensured. Urine cultures were done in all the cases with suspected sepsis.

Results: Out of 3000 newborns 339 were investigated for sepsis and UTI was found in11% cases of suspected of sepsis. Most common organism was E.Coli (40%), Klebsiella (32%) and other organisms included Acinetobacter, Enterobacter and Pseudomonas.

Conclusion: UTI is found in 1.23% of newborns delivered in FMH. In cases of suspected sepsis it accounted for 11% cases and most common organism being E.COLI.

Key Words: Urinary tract infection, Sepsis, E.Coli, Klebsiella, Acinetobacter, Pseudomonas.

INTRODUCTION

Incidence of urinary tract infection is variable according to age of child. Incidence of UTI in neonates ranges from 0.5 to 1% in full term and 3% for preterm infants (1).Neonatal UTI is thought to occur secondary to bacteremia. Blood cultures are often positive and symptoms of systemic sepsis often precede the appearance of urinary abnormalities although sometimes urinary tract is primary site of infection and bacteremia occurs secondarily. A significant number of cases are associated with underlying congenital anomalies of urinary tract.Another factor having protective effect on UTI in neonates is circumcision. In majority of cases of UTI, patients own bowel flora enter the urinary tract through urethra .In neonates gram negative septicemia is relatively common perhaps because of immaturity of gut wall at the time of bacterial colonization with E.Coli or because of inadequate defence mechanisms(2,3). As the major causative organism involved in UTI, E.Coli has been subject of numerous studies. Its predominance among urinary pathogen may in part be accounted for its presence in gut and in part by its special virulence because E. Coli represent only the minority of bowel flora. Fecal streptococci are equally common in bowel but account for only1-5% of organisms found in UTI.

This prospective study was carried out to document UTI in neonates. Data was collected from neonatal unit of Fatima Memorial Hospital.3000 newborns delivered from July-December2009 were included in study .Urine cultures were sent in all the cases with suspected sepsis.

PATIENT AND METHOD

This study was conducted in year 2009 in neonatal unit of Fatima Memorial hospital.3000 newborns delivered from July-December2009 were included in study .Urine cultures were done in all the cases with suspected sepsis. It was a prospective study. Informed consent was taken and confidentiality of data was ensured. Inclusion criteria was neonate delivered at FMH having maternal risk factor, i.e., prolonged rupture of membranes or signs of chorioamnionitis or clinical features suggestive of sepsis e.g; fever, vomiting, poor feeding, excessive crying, lethargy, sudden onset or increase in jaundice. Urine samples were collected by catheterization and immediately sent to hospital laboratory for culture using cystine lactose electrolyte deficient agar (CLED) which is single non-inhibitory medium on which both gram positive and negative organisms can be grown.

The data was analysed by using SPSS15.

RESULTS

This study included 3000 newborns delivered at FMH from July- December 2009 .Out of these 339 newborns were suspected of having sepsis and urine culture was found to be positive in 37 cases with a frequency of 1.23% (table no 1).Eleven percent of suspected septic new borns had UTI .In 3.52%cases both blood and urine cultures were positive. In 80% of cases less than 5 pus cells were found on urine analysis. Only 8% had significant pyuria, i.e., more than 10 pus cells/high power field (table no 2). This observation shows that absence of pyuria does not exclude the possibility of UTI. The most common causative organism in our study was E.Coli, i.e., 15 out of 37 (40%). Klebsiella was found in 32% cases of UTI, 20% by acinetobacter, 2.7% by enterobacter, 2.7% by pseudomonas and 2.7% by staphylococcus epidermidis (table no 3).

Table 1: Frequency of UTI in neonates

Total no of births	No of cases with suspected sepsis	No of cases with +ve urine cultures	No of cases with –ve urine cultures	No of cases with +ve blood and urine cultures	Percentage of UTI
3000	339	37	25	12	1.23%

Table 2: Relationship of pyuria and UTI

No of pus cells in urine analysis	No of cases with +ve urine cultures	Percentage
<5 high power field	29	80%
5-10 per high power field	5	12%
10-15 perhigh power field	3	8%

Table 3: Causative organisms of UTI in neonates

Causative organisms	No of cases	Percentage
E.Coli	15	40%
Klebsiella	12	32%
Acinetobacter	8	20%
Enterobacter	1	2.7%
Pseudomonas	1	2.7%
Staph .Epidermidis	1	2.7%

DISCUSSION

Incidence of UTI in neonates ranges from 0.5%-1% for term and 3% for preterm babies. In our study at Fatima Memorial Hospital, out of 3000 babies 37 were found to have positive urine cultures of catheterized urine samples as catheterized urine sample is more reliable than bag sample (4).Overall frequency of UTI in neonates was 1.23%. In this study urine culture was sent in babies having symptoms of sepsis like vomiting, poor feeding, lethargy excessive cry, prolonged jaundice (5, 6) and asymptomatic babies with significant history of prolonged rupture of membranes or signs of choriamnionitis. UTI was found in 11% of cases of suspected sepsis. Positive blood cultures were found in 41.4% cases. UTI might be due to bacteremia. Although the finding of pyuria is good supportive evidence of UTI, up to 25% of patients with significant bacteriuria will not demonstrate a significant number of white cells in centrifuged specimen. In this study in 80% cases of UTI less than 5pus cells/HPF were found on urine analysis. In 12% cases 5-10 pus cells found and in only 8% cases more than 10 pus cells were found. The most common pathogen in our study was E.Coli i.e; 15 out of 37 cases and klebsiella i.e; 12 out of 37which is similar observation in previous studies (7). Its predominance may in part be due to its presence in gut and partly because of its virulence

factors e.g; K-antigen which interfere with complement mediated phagocytosis. Other organisms identified were acinetobacter (20%), enterobacter (2.7%) pseudomonas (2.7%), and staphylococcus (2.7%). A significant number of cases had acinetobacter infection which may signify nosocomial infection.

CONCLUSION

UTI was found in 1.23% of neonates born in FMH. 11% of neonates suspected of sepsis had UTI. E.Coli being the most common pathogen. Another important observation was that the absence of significant pyuria does not exclude the possibility of UTI. So urine culture must be obtained to identify focus of infection.

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