Neonatal urinary tract infection:the problem of specimen contamination

Sir - The presentation of urinary infection (UTI) in the neonatal is frequently vague and non specific. Diagnosis can be delayed by specimen contamination leading to a need for repeated urine cultures; unnecessary investigation and follow up may result if enfant are erroneously labelled as having a UTI We report a study performed to assess the problem of contamination of urine specimens in clinical practice in newbom infants.

All urine cultures performed on infants less than aged six weeks at the Rotunda Hospital between 1st September 1987 and 31st August 1988 were reviewed. Cultures were performed on infants with symptoms suggestive of possible UTI Diagnostic criteria were:(l) Three consecutive MSU (midstream urine) specimens with a single organism culture >- 10° colonies per ml. (2) A single MSU specimen with a single organism culture >- 10^5 colonies per ml. in a symptomatic baby. (3) A suprapublic **or** catheter specimen with a colony count of >- 10^3 per ml.

The three ward areas studied were (1) outpatient department. Specimens were collected by parents under nursing guidance and time was taken to ensure "clean catch" specimens. The periurethral area is cleaned with an antiseptic (1:200 methylated spirits) and rinsed with water and a clean catch sample obtained. The mother or other relative sits with the infant and obtains the sample themself in the OPD (2) Neonatal ICR and paediatric unit - busy wards with specimen collection by paediatric nursing staff, usually "bag" specimens but occasionally clean catch samples obtained as in the OPD by the student nurse. (3) Regular postnatal wards with "bag" specimens obtained by regular midwifery nursing staff. In the latter two ward areas the bag specimens were taken "as soon as possible" from the baby and transferred to a sterile specimen container.

Seven hundred and twenty-eight specimens from 384 neonates, 217 males (56.5%) and 167 females were cultured and infection diagnosed in 15 babies. During the study period there were 5,866 live births at the hospital giving an incidence of 2,7 per 1,000 live births. The incidence of UTI in the neonatal periods varies between 0.1-1%[3] of all infants born. Four hundred and seven MSUs (55.9%) showed a mixed growth; 293 (38.8%) were sterile and 38 MSUs (5.2) were indicative of infection. The "contamination" rate varied from 36% (OPD) to 63% (infant wards) and 64% (postnatal wards).

All 15 infected infants were male. Urinary tract infection is more common in males.[4] Three infants were premature. The age at presentation ranged from 1 to 40 days (average 17.5 days). Clinical signs and symptoms were " poor feeding (47%), jaundice (40%), irritability (30%), pyrexia (26%), vomiting (20%), malodorous nappies (20%). The organisms cultured were: E Coli in 2, proteus mirabilis in three, Klebsiella aerogenes in two and group B Streptococcus in one case - two neonates had recurrence of UTI with a different organism. Four infants had hydronephrosis renal ultrasound and one had renal cortical loss. Vesico ureteric reflux was demonstrated on micturating cystogram in six infants,(2 grade 1, 3 grade 2, 1 grade 3).

Mixed growth on culture secondary to contamination with perineal organisms is a major problem. In this study the lowest contamination rate occurred in the OPD where most care was taken with sample collection. In the Intensive Care Unit and postnatal wards because of the volume of other work most urine samples are "bag" samples with the unacceptably high contamination rate which we found. Suprapubic taps should be considered in the seriously ill neonate where antibiotics are urgently indicated[1,2] or where repeatedly equivocal results are obtained. A recent study[2] has suggested that a subrapublic or catheter obtained urine culture is a necessary part of the evaluation of all febrile infants younger than the age of eight weeks regardless of the urinalysis results or the diagnosis of another focus of bacterial infection. However in view of the risks, although low, of subrapublic urine sampling we believe that clean catch specimens should continue to be performed in the less acutely ill infant where antibiotics are not urgently indicated; this would still represent the majority of urine specimens collected in young infants.

The value of meticulous attention to detail in performing urine cultures is indicated by the significantly lower contamination rate in one ward. A lot of time and expense may be wasted following patients with contaminated urines to determine whether or not they indeed have a urinary infection.[5]

White M
Yasbeck J
Fox GPP
Matthew TG
Clarke TA

Paediatric Department
Rotunda Hospital
Dublin 1

Reference

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