An Audit of Urinary Tract Infections in Very Low Birth Weight Infants - What Are We Missing?

Abstract:

Sir,

Urinary Tract Infections (UTIs) are a leading cause of bacterial infection in infants and the National Institute of Clinical Excellence recommends that UTIs are actively sought in paediatric patients. Their incidence ranges from between 0.1- 2.0% in full-term newborns, increasing to a reported 25% in preterm and very low birth weight (VLBW) infants. The urinary tract is an extremely rare source of infection in the first 72 hours of life and thus routine urine culture in this population is deemed unnecessary. Conversely, UTIs frequently present with late-onset sepsis (LOS) in the VLBW population and urine culture is an essential element of a complete sepsis evaluation in this cohort. Despite a high incidence of UTI, urine culture is frequently neglected in Neonatal Intensive Care Units (NICUs) as obtaining a clean-catch sample is time consuming and the use of invasive second-line collection methods is limited by fear of complications and medical staff procedural inexperience. Identifying the source of infection will influence subsequent radiological investigations and ensure appropriate treatment.

In our centre, a Level 3 NICU, we sought to determine the frequency with which urine culture was included in septic work-ups (SWU) performed in VLBW infants after 72 hours of life. 120 consecutive charts of VLBW infants born between January 2012 and April 2013 were retrospectively reviewed. 116 SWUs were performed on 61 (50.8%) VLBW infants. Infants requiring SWU after 72 hours of life had a mean completed gestational age of 26.8 weeks, a mean birth-weight of 932 grams and 31/61 (50.8%) were males. Sources of infection are outlined in Figure 1. Forty-two (36 %) evaluations resulted in treatment with intravenous antibiotics for a minimum of five days. Eleven infants, with a median C-reactive protein (CRP) of 44 mg/l, were treated with intravenous antibiotics for infection without an identified source. Seven of these patients did not have a urine culture performed. The majority of SWUs, 82/116 (70.7%), omitted a urine culture and 7/14 (50%) SWUs included a CSF culture without a urine culture. Urine samples were obtained using a clean-catch technique. Candida species were isolated in three urine samples from patients with staphylococcus aureus sepsis, Klebsiella Oxytoca sepsis and suspected Necrotizing Enterocolitis. It is likely the candida growths signalled UTIs but they were not the source of LOS.

This audit highlights that urine culture is frequently omitted from sepsis evaluations in VLBW infants, in line with previous studies that referenced suboptimal urine collection in such patients. Furthermore, VLBW infants frequently have invasive CSF cultures while non-invasive urine cultures are overlooked. UTI was not identified as a source of infection in any infant, suggesting that there was a failure to diagnose this common cause of LOS. To improve detection rates of UTI, we recommend promoting awareness of UTI as a potential source of LOS in the NICU.

LM Perrem, R O’Neill, M O’Grady, M White
Coombe Women and Infants University Hospital, Cork St, Dublin 8
Email: lucyperrem@yahoo.com

Acknowledgement

AM Meenan, Microbiology Department, Coombe Women and Infants University Hospital

References