Incidence and Risk Factors for Retinopathy of Prematurity in Neonates

We screened 50 neonates fulfilling the inclusion criteria admitted during the study period in a teaching hospital in a north-eastern state of India. Out of 50 neonates screened, 22 (44%) developed retinopathy of prematurity. There was significant association between the birth weight and gestational age of the baby at the time of the delivery with the development of ROP. Multivariate analysis of risk factors for development of ROP using a stepwise method, after controlling for various potential confounders, showed that apnea was a significant risk factor for the development of retinopathy of prematurity.

Keywords: *Gestational age, Low birth weight.*

The improved survival of preterm and small-for-date neonates in developing countries has led to an increase in the incidence of retinopathy of prematurity (ROP) in infants. The principal risk factors for ROP are low gestational age, low birth weight and prolonged exposure to supplementary oxygen therapy [1]; other risk factors include multiple gestation, vaginal delivery, bronchopulmonary dysplasia and necrotizing enterocolitis [2]. The most important determinant of any ROP management program is an effective screening strategy [3].

The present study reports data from preterm and SFD neonates admitted in the neonatal intensive care unit (NICU) of Central Referral Hospitalin Sikkim, India during March 2007 to September 2009. The inclusion criteria, based on. screening guidelines by Jalali, *et al.* [4], were: neonates less than 1700 grams or 35 weeks gestational age at birth and neonates 35 to 37 weeks or >1700 grams but less than 2000 grams with oxygen exposure for more than 30 days, respiratory distress syndrome, sepsis, multiple births, multiple blood transfusions, apnea, intraventricular haemorrhage, or if pediatrician had index of suspicionof ROP A detailed history, including period of gestation, birth weight and details regarding neonatal illnesses, and management were recorded. The ROP screening of all neonates was done without anesthesia in the NICU by a single experienced ophthalmologist. Follow-up examination or treatment referral within 48 hours was recommended following the ETROP guidelines [5]. All the findings of the examination were documented according to the International Classification for retinopathy of prematurity (ICROP) recommendations specifying the location (Zone I–III) and severity of the disease (Stage I-V) with or without plus component and the extent of clock hours [6].

During the study period, 50 eligible neonates were screened for ROP. The birth weight of the neonates ranged from 1000 to 2620 g with a mean (SD) of 1639 (44.8) gTwenty-two (44%) developed retinopathy of prematurity; 8 and 6 had stage 1,2, and 3 ROP, respectively. Zone involved were 1, 2 and 3 in 2,12 and 8 children, respectively. 10 had plus disease. The mean (SD) birth weight and gestational age of the neonates with and without ROP were 1410 (350) gand 31.8 (2.1) weeks; and 1820 (440) gand 32.9 (2.1) weeks, respectively. In univariate analysis, spontaneous vaginal delivery, non-administration of antenatal steroids to mothers and apnea were associated with the development of ROP. Multivariate analysis using a stepwise method, after controlling for various potential confounders, showed that apnea was the only significant risk factor for the development of retinopathy of prematurity.

The proportion of children developing ROP in the present study is very similar to that reported at other centers [7,8]. The beneficial effect of antenatal steroids has also been documented earlier [9].

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Bacteriological Profile of Neonatal Sepsis in a Tertiary-care Hospital of Northern India

With an objective to study the bacteriological profile of neonatal sepsis a retrospective study was conducted in the neonatal unit of a referral teaching hospital in Northern India. Among neonates born over 5-year period (*n*=22363) incidence of culture-positive sepsis was 7.5/1000 live births (7.5%). *Staphylococcus aureus* (47.3%), *Klebsiella pneumonia* (14.9%) and *Acinetobacter* (14.9%) were most common organisms isolated. Sensitivity pattern of isolated organisms is presented.

Key words: *Antibiotics, Neonate, Sepsis.*

Systemic infections cause 1.6 million neonatal deaths every year, majority in middle and low income countries [1]. South-east Asian studies report high resistance to antibiotics used commonly for empirical treatment of neonatal sepsis [2]. Widespread use of third-generation cephalosporins and lack of reliance on blood culture reports could be a major cause for this resistance. This study was planned to evaluate causative organisms of neonatal sepsis and their antibiotic sensitivity pattern in a setting with negligible third-generation cephalosporin use.

After approval from Institute ethics committee, blood culture records of inborn neonates born from January 2008 to December 2012 in a tertiary care hospital were screened. Detailed information was extracted from case records of neonates with positive blood culture. Neonates with perinatal risk factors or clinical features suggestive of sepsis were investigated for bacterial sepsis. Standard procedures were followed for sample collection, studying bacterial growth and antibiotic sensitivity patterns [3,4]. For empirical treatment of early-onset sepsis (EOS) intravenous ciprofloxacin and amikacin, and for nosocomial late-onset sepsis (LOS), intravenous piperacillin-tazobactam and vancomycin, were administered. Antibiotic policy was based on periodic review of the culture sensitivity pattern. Cephalosporins were not used unless identified as solitary antibiotic to which isolated bacteria were sensitive.

Among 22363 live births, 883 were screened for sepsis and 167 (7.5/1000 live birth) had culture proven sepsis. Of these, 142 (85%) had EOS and 25 (15%) had LOS. *Staphylococcus aureus* (47.3%) was commonest isolated organism followed by *Klebsiella pneumoniae* (14.9%) and *Acinetobacter* (14.9%). EOS was caused by *S. aureus* (50.7%) followed by *K. pneumoniae* (14.8%) and *Acinetobacter* (12.7%). LOS was caused by *S. aureus* (28%), *Acinetobacter* (28%), *E. coli* (16%) and *K. pneumoniae* (16%). The antibiotic sensitivity pattern for common organisms is shown in ***Table* I**.

Incidence of blood culture proven sepsis was comparable to the largest dataset reported from tertiary care hospitals of India [5]. EOS constituted majority (85%) of culture-proven cases in our study as we included only intramural babies. The spectrum of pathogens in India and south-east Asian countries is different from Western data where *group B streptococci* and *coagulase negative staphylococci* (CONS) are the predominant pathogens [6]. Gram-negative bacilli are predominant pathogens in developing countries with *K. pneumoniae* being the most common [5,7]. Recently, *S. aureus* has emerged as predominant pathogen in studies from developing countries [8-10]. This changing pattern of organisms from gram negative to gram positive has been attributed to prolonged stay, improved intensive care facilities and invasive procedures [9]. The higher rates of *S. aureus* sepsis in both EOS and LOS and a similar profile of isolated bacteria indicate that majority of EOS in inborn babies may be hospital-acquired rather than maternally acquired [7]. We observed high resistance to oxacillin but good sensitivity to aminoglycosides, vancomycin and linezolid among *S. aureus* isolates. Low cephalosporin resistance was noticed in this study, probably due to uncommon use of this drug in our unit [7].