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Study of incidence and mortality rates among the neonates with sepsis: A study from single Centre of Agra

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Abstract
Background: Neonatal sepsis continues to be a major cause of neonatal mortality in India. Incidence of neonatal sepsis in India was 30/1000 live births and is not changed much over the past decade.
Aims and Objectives: To study the incidence of neonatal sepsis among the neonates born in Taj Hospital Agra.
Materials and Methods: Four hundred and thirty eight neonates were studied prospectively and retrospectively at Taj Hospital and dental clinic, Agra Uttar Pradesh from May 2017 to September 2018. A pre-approved questionnaire was used to correct the data on history, physical examination and factors associated with neonatal sepsis. Incidence of neonatal sepsis was calculated and mortality rates were also obtained.
Results: Mean gestational age of the neonates born was 38.6 weeks and mean birth weight was 3.2 kgs. Of the 45 neonates who developed sepsis, 28 (62.22%) were males. Of the 45 neonates who developed sepsis, 2 died giving a neonatal mortality of 2.2%.
Conclusion: We found a high incidence of neonatal mortality, though the mortality rates were low.

Keywords: incidence, neonatal sepsis, mortality

Introduction
Despite of recent advancement in the health care modalities, neonatal sepsis is still the major cause of morbidity and mortality globally [1]. Previous reports have showed 3.1 million neonatal death out of which 1 million death is due to the infectious cause including sepsis [2]. Indian accounts for over 1.2 million neonatal deaths which seems to be a big problem in Indian health care system [3].
Neonatal sepsis is the clinical syndrome affecting infants of 28 days of life or younger which can be confirmed by the isolation of bacterial pathogen from the bloodstream [4]. In NICUs diagnosis and management of sepsis are a great challenge facing neonatologists. Due to nonspecific signs and symptoms, clinical diagnosis of sepsis is difficult; moreover, laboratory diagnosis is time consuming.
Causative organism include both Gram-positive and Gram negative bacteria and Candida [5]. Organism causing the sepsis differ from region to region and it also changes over time.10Mutiple factors contribute to the susceptibility of the neonate to sepsis, which can influence the incidence of neonatal sepsis [6].
In present study we tried to find out the incidence of neonatal sepsis and find out the microbiological pattern of neonatal sepsis of the Taj Hospital of Agra.

Materials and Methods
Present study was conducted in Taj Hospital and dental clinic, Agra Uttar Pradesh from May 2017 to September 2018. The study place is a private hospital which is a tertiary care centre and a referral centre in the study area.
The present study is both prospective and retrospective the population based cohort study. Retrospectively neonates history was obtained and prospectively neaonates were followed up for risk factors and other parameters.
All the neonates from birth to 28 days were included whereas neonates having congenital malformation and extremely low birth weight were excluded from the present study. A pre-approved questionnaire was used to correct the data on history, physical examination and factors associated with neonatal sepsis.
Clinical sepsis was confirmed using the WHO IMNCI criteria. According to this criteria neonatal sepsis is confirmed; if the neonate had temperature more than 37.5 ^{0}C or felt hot to touch, convulsions (by history), fast breathing (> 60 breaths/minute), severe chest in drawing, nasal flaring, grunting, bulging fontanelle, pus draining from ear, umbilical redness extending to the skin, feels cold (by history), many or severe skin pustules, difficult to wake up, cannot be calmed within 1 h, less than normal movement, not able to feed and not able to attach to breast or suck. A retrospective review of the history was taken to find out if the neonate had the symptoms suggestive of neonatal sepsis since birth.
Neonates diagnosed with clinical neonatal sepsis were referred to the emergency unit. The study outcome was ascertained after 28 days of life.
Frequency distribution was performed using the IBM SPSS ver. 20 software. Frequency distribution was performed to obtain table. Data is expressed as percentage. No comparative data analysis was performed.

Results
Four hundred and fifty eight neonates were enrolled in present study between the study duration. Mean gestational

age of the neonates born was 38.6 weeks and mean birth weight was 3.2 kgs.

Neonates' characteristics

Out of 458 neonates, 438 were followed till the end of the neonatal period. Out of 438 neonates, 45 developed clinical neonatal sepsis which means incidence of neonatal sepsis in present study was 10.27%.

Incidence of neonatal sepsis and the mortality rate

Of the 45 neonates who developed sepsis, 28 (62.22%) were males. Of the 45 neonates who developed sepsis, 2 died giving a neonatal mortality of 2.2%.

Discussion

Previous reports have shown that the incidence of neonatal sepsis varies from 6 to 9 cases per 1,000 live births, but is higher among low-birth-weight neonates [7]. Bacterial sepsis is considered to be an important cause of neonatal mortality [8].

Present study has revealed a high incidence of clinical neonatal sepsis despite of availability of good health care facilities in the area. This is very disturbing to have such a high incidence of neonatal sepsis, this may be due to the fact that most of the deliveries in study centre often comes with the complications. However, it is noteworthy that a previous study from Uganda reported even a high incidence compared to present study [9]. Another study from India also reported similar incidence of 17% for neonatal sepsis [10]. This higher incidence in this study may be due to the fact that rate of health facility delivery was very low at the study place. Reports of Bangi *et al.* showed that during 2003-2004, the incidence of sepsis was 6.04% of total pediatric admissions and the same in 2013-2014 were 6.03% [11]. Vasantha *et al.* included 233 neonates of that 18.88% were culture positive. This much high incidence of sepsis was observed mainly in the low birth babies [12]. The incidence reported in present study is lower it may be because of that we have not estimated the birth weight of neonates having sepsis.

The present study highlight the importance of providing quality of antenatal services and teaching the best care practice for newborn and education on the other ways and techniques for the preventions of neonatal sepsis in the health facilities during delivery.

It has been reported that most of the neonates developed the sepsis within the first 7 days of life. Hence it is very important to give importance to strict follow up. Follow up is important because of little is known about the new born regarding the state from the time of birth till the next immunization schedule [13]. Woldu *et al.* in their study of 306 neonates reported that 81% of were diagnosed as early onset of neonatal sepsis whereas 19% were diagnosed as late onset of neonatal sepsis. Such a high incidence found by Woldu *et al.* is due to the fact that the study c centre is the referral place for the management of neonatal sepsis in Ethiopia [14]. Early onset neonatal sepsis (sepsis that presents during the first 5–7 days of life) usually is caused by organisms acquired from the maternal genital tract. Late-onset sepsis (sepsis presenting after 5–7 days postnatal age) usually is caused by these primary organisms or by nosocomial pathogens, such as coagulase negative staphylococci (CONS), particularly S. epidermidis, S. aureus, Pseudomonas species, anaerobes, and Candida species [7]. In present study we did not estimated the incidence of both the type of neonatal sepsis.

Thought we have observed a higher incidence of neonatal sepsis in present study we reported the low mortality in present study, which may be due to the immediate intervention at the study place once the mother is received at the emergency department.

The cross sectional nature and small sample size are the main limitation of the present study. A large clinical trial is requiring strengthening the present study findings.

Conclusion

In present the incidence of neonatal sepsis was high, despite of urban community and availability and accessibility of good health care practice. The results are disturbing; highlighting the importance of quality of antenatal, perinatal and postnatal care offered in the health facilities with regards to infection prevention is sub-optimal. We have found also mortality rates in present study. However, this is recommended that the mortality can be reduced by promoting low cost intervention such as close community follow up of neonates using urban health teams or domiciliary care. Health education will play an important role in decreasing the incidence of neonatal sepsis.

References

1. Wu JH, Chen CY, Tsao PN, Hsieh WS, Chou HC. Neonatal sepsis: a 6-year analysis in a neonatal care unit in Taiwan," Pediatrics and Neonatology. 2009; 50(3):88-95.
2. Black RE, Cousens S, Johnson HL. Global, regional, and national causes of child mortality in 2008: a systematic analysis. The Lancet. 2010; 375(9730):1969-87.
3. Laxminarayan R, Chaudhury RR. Antibiotic Resistance in India: Drivers and Opportunities for Action. PLoS Med. 2016; 13(3):e1001974.
4. Edwards MS, Baker CJ. Sepsis in the newborn, in Krugman's Infectious Diseases of Children, A. A. Gershon, P. J. Hotez, andS. L. Katz,Eds., p. 545,Mosby, Philadelphia, Pa, USA, 2004.
5. Jumah DS, Hassan MK. Predictor ofmortality outcome in neonatal sepsis, "Medical Journal of Basrah University. 2007; 25:11-8.
6. Klein JO, Remington JS. Current concepts of infection of the fetus and newborn infant," in Infectious Diseases of the Fetus and Newborn, J. Remington and J. Klein, Eds., pp. 1–24, WB Saunders, Philadelphia, Pa, USA, 2000.
7. Stoll BJ, Hansen N, Fanaroff AA, Wright LL, Carlo WA, *et al*. A case study of neonatal sepsis in very low birth weight infants. N Engl J Med. 2002; 347:240-7.
8. Terblanche M, Almog Y, Rosenson RS, Smith TS, Hackam DG. Statins and sepsis: multiple modifications at multiple levels. Lancet Infect Dis. 2007; 7:358-68.
9. Uganda Bureau of Statistics (UBOS) and ICF International Inc. Uganda Demographic and Health Survey 2011. Kampala: UBOS and Calverton: ICF International Inc, 2012.
10. Bang AT, Bang RA, Baitule S, Deshmukh M, Reddy MH. Burden of morbidities and the unmet need for health care in rural neonates--a prospective observational study in Gadchiroli, India. Indian Pediatr. 2001; 38(9):952–65.

11. Bangi VA, Devi SS. Neonatal sepsis: A risk approach. J NTR Univ Health Sci. 2014; 3:254-8.
12. Vasantha AR, Kutty SN, Joseph Theodore RB. Neonatal sepsis: Aetiological agents and risk factors. J Acad Clin Microbiol. 2017; 19:36-41.
13. Kayom VO, Mugalu J, Kakuru A, Kiguli S, Karamagi C. Burden and factors associated with clinical neonatal sepsis in urban Uganda: a community cohort study. BMC Pediatrics. 2018; 18(355):1-8.
14. Woldu MA, Guta MB, Lenjisa JL, Tegegne GT, Tesafye G. Assessment of the Incidence of Neonatal Sepsis, its Risk Factors, Antimicrobials Use and Clinical Outcomes in Bishoftu General Hospital, Neonatal Intensive Care Unit, Debrezeit-Ethiopia. Pediat Therapeut. 2014; 4:214.