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Common complications and outcome of prematurity at Dera Ghazi Khan Medical College and Hospital.

Shakeel Ahmed[1], Ayaz Ali[2], Iram Jabeen[3], Nusrat Hussain[4], Asma Akbar[5], Irfan Kareem[6]

1. MBBS, DCH, FCPS (Pediatric Medicine) Associate Professor Pediatric Medicine DG Khan Medical College & Hospital, DG Khan.
2. MBBS, FCPS (Pediatric Medicine) Assistant Professor Pediatric Medicine DG Khan Medical College & Hospital, DG Khan.
3. MBBS, FCPS (Pediatric Medicine) Senior Registrar Pediatric Medicine DG Khan Medical College & Hospital, DG Khan.
4. MBBS, FCPS (Peads Medicine) Assistant Professor Pediatric Medicine Nishtar Medical University Hospital, Multan.
5. MBBS, FCPS (Pediatric Medicine) Assistant Professor Pediatric Medicine DG Khan Medical College & Hospital, DG Khan.
6. MBBS, FCPS (Pediatric Medicine) Senior Registrar Pediatric Medicine DG Khan Medical College & Hospital, DG Khan.

Correspondence Address:
Dr. Shakeel Ahmed
Associate Professor Pediatric Medicine
DG Khan Medical College & Hospital, DG Khan.
dr_leghari190@hotmail.com

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ABSTRACT… Objective: To evaluate the common complications of prematurity with final outcome. **Study Design:** Prospective Observational Cohort study. **Setting:** Neonatal Unit at Dera Ghazi Khan Medical College (DGKMC) & Hospital. **Period:** 8 Jan 2020 to 29 Feb 2020. **Material & Methods:** Study population comprised of 100 neonates of gestational ages between 28-36 weeks, admitted for different reasons. Common complications of prematurity like Hypoxic ischemic Encephalopathy (HIE), Sepsis, Respiratory Distress Syndrome (RDS) and Necrotizing Enterocolitis (NEC) were noted and patients were followed for final outcome in terms of survived, Expired and LAMA. **Results:** Among the total 100 premature newborns, 59 (59.0%) were males and 41 (41.0%) females. There were 57 (57.0%) premature newborns who were delivered through spontaneous vaginal deliveries (SVDs) while 43 (43.0%) through lower segment cesarean section (LSCS). HIE was the most common complication, observed in 31 (31.0%) babies. Sepsis was the second most common complication observed in 18 (18.0%) cases. In terms of outcome, 72 (72.0%) survived, 23 (23.0%) expired and 5 (5.0%) were left against medical advice (LAMA). **Conclusion:** Hypoxic ischemic encephalopathy was the most common complication observed either presented alone or in association with other observed complications. The most common cause of mortality in the observed population was hypoxic ischemic encephalopathy.

Key words: Complication, Gestational Age, Outcome, Prematurity.

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INTRODUCTION

Prematurity is among the leading neonatal problems causing multiple complications with variable outcome depending upon available facilities and timely anticipated management at various centers.[1] Common complications of prematurity are Hypothermia, Hypoglycemia, RDS (Respiratory Distress Syndrome), NEC (Necrotizing enterocolifis), Sepsis, HIE (Hypoxic ischemic encephalopathy, Anemia of prematurity, Apnea of prematurity, Osteopenia of prematurity and many more.[2] However, time of presentation of these complications usually vary with the exception of HIE and RDS which present early.[3]

Multi-disciplinary approaches with enhanced modalities and timely controlled management have turned out the tables for premature neonates worldwide, resulting in greater survival and limited morbidities.[4,5] In Pakistan, however, condition is still worrisome owing to limited medical facilities, lack of required resources, trained staff and necessary medical equipment. Lack of needed antenatal care, poorly planned deliveries of high risk pregnancies and failure to provide anticipated neonatal care to premature neonates are among the leading factors causing high neonatal morbidity and mortality.[6,7]

DGKMC & Hospital, being only tertiary care hospital at D.G Khan receive multiple referrals from peripheral areas with premature neonates along with complications. In this study, we tried to evaluate the prevalence of common complications and their outcome in admitted premature neonates.

MATERIAL & METHODS

This was a prospective observational cohort study conducted in the indoor settings of neonatal unit DGKMC & Hospital. Premature neonates (n=100) with gestational ages between 28 to 32 weeks, admitted between dated. 8-01-2020 to 29-02-2020 was enrolled for this study purpose. Congenital heart disease and pneumonia were excluded and diagnosis was further confirmed by X-ray chest. Approval from institute's ethical committee was taken for this study. Informed consent was sought from parents/guardians of the study participants.

Gestational age was assessed through Standard Ballard Scoring. Admitted neonates were observed for complications like. HIE, RDS, NEC and/or Sepsis. These neonates were also followed for the final outcome that is survived /Expired/ LAMA. Our diagnosis of each complication was mainly dependent upon history and clinical examination with minimum aid from investigations including baseline CBC and X-rays due to limited resources. HIE was diagnosed in neonates presenting immediately after birth with grunting, cyanosis, respiratory distress or fits from birth till 48 Hours along with history of delayed cry and maternal PV bleeding/PROM/ Obstructed or Prolonged labor. For Sepsis, we labeled neonates admitted from 3rd day of life till 28 days with fever, lethargy, reluctance to feed, fits or difficulty in breathing. We also did CBC and considered leukocytosis and Thrombocytopenia as significant markers of Sepsis. For NEC, we labeled neonates presented with abdominal distension, vomiting, and lethargy after initiation feed, X-ray Abdomen (erect posture) and CBC was done as supportive evidence. Thrombocytopenia on CBC and unchanged gut loop patterns on abdominal X-ray were taken significant. For RDS, premature neonates with progressive respiratory distress developing after 24 hours of birth were enrolled. All neonates enrolled were observed for single or multiple complications and followed for final outcome in the form of survived/Expired or LAMA.

SPSS version 26.0 was used for the statistical analysis. A predesigned proforma was used for data collection. Gestational age and weight of babies were represented as mean and standard deviation. Study variables like gender, mode of delivery of the babies, complications and outcomes were represented as frequency and percentages.

RESULTS

Gestational age varied from 28-36 weeks with maximum population (37%) admitted at 32±2 Weeks. Mean birth weight was noted to be 2124 + 217 grams. Among the total, 57% were SVDs while 43% were delivered through C-Section. Studied population comprised of 59% Males and 41% Females.

Characteristics		Number (%)
Gender	Male	59 (59.0%)
	Female	41 (41.0%)
Gestational Age (weeks)	28 to 32	42 (42.0%)
	>32 to 36	58 (58.0%)
Mode of Delivery	Spontaneous Vaginal Delivery	57 (57.0%)
	Cesarean Section	43 (43.0%)
Birth Weight	Extremely low birth weight (<1kg)	4 (4.0%)
	Very low birth weight (1-1.5kg)	34 (34.0%)
	Low birth weight (1.5-2.5kg)	49 (49.0%)
	Normal birth weight (>2.5kg)	13 (13.0%)

Table-I. Characteristics of premature babies (n=100).

HIE was the most common complication, observed in 31 (31.0%) babies. Out of these 31, 11 (11.0%) were associated with sepsis while 6 (6.0%) also had RDS. Sepsis was the 2nd most common complication observed in 18 (18.0%) cases. Table-II highlights complications noted among study participants.

Complications	Number (%)
Hypoxic Ischemic Encephalopathy	31 (31.0%)
Sepsis	18 (18.0%)
Respiratory Distress Syndrome	8 (8.0%)
Necrotizing Enterocolitis	6 (6.0%)
Others	8 (8.0%)

Table-II. Frequency of Complications among Premature Babies (n=100).

In terms of outcome, out of the total of 100 enrolled cases, 72 (72.0%) survived, 23 (23.0%) expired and 5 (5.0%) were LAMA. Among the expiries, HIE caused maximum number of mortalities i.e. (11 patients). HIE with Sepsis was the cause of death in 5 patients, 2 patients died each from HIE along with RDS, Sepsis along with RDS, and Sepsis with NEC. One patient died due to Sepsis. LAMA patients could not be followed for the final outcome.

Outcome	Number (%)
Discharged	72 (72.0%)
Expired	23 (23.0%)
Left Against Medical Advice (LAMA)	5 (5.0%)

Table-III. Outcome in Premature Babies.

DISCUSSION

Prematurity is an important reason behind neonatal mortality all around the globe. Better understanding of the morbidity patterns among premature newborns can help clinicians improving the survival rates and decreasing the neonatal death rates.[8,9]

In the present study, 59% of the premature babies were male. This male predominance among premature newborns have already been recorded by other local and international researchers as well.[10,11] The exact phenomenon about this male predominance among premature newborns is still unknown but it could be due to multifactorial involvement of different hormonal, genetic and immunological differences.[10] We also noted mode of delivery as lower segment cesarean section (LSCS) in 43% cases. This high proportion of can be elaborated as majority of these pregnancies were having high-risk pregnancies along with comorbidities which need early cesarean section.

We noted 58.0% of the cases to have gestational age above 32 weeks. Khan HS et al from Rawalpindi analyzing 199 preterm babies also noted 54.8% of the premature newborns to have gestational age above 32 weeks.[12] Chowdareddy et al also reported similar findings.[13] We found birth weight of the premature newborns to be extremely low birth weight (<1kg) in 4.0% cases, very low birth weight (1-1.5kg) in 34.0%, low birth weight (1.5-2.5kg) in 49.0% while 13% newborns were having normal birth weight (>2.5kg). Khan HS et al found premature babies with VLBW as 32.7% and 46.7% were of LBW.[12] Similar percentage of birth weight was reported in another study with 26.4% VLBW and 51.8% LBW preterm babies.[14]

In this study, mortality was noted to be 23% among premature newborns. Khan M et al[14] reported mortality among premature newborns to be 14% while Khan HS et al[12] found it to be 16%. Chowdareddy et al recorded it to be 8.62%.[13] All this data shows difference in mortality rates among different healthcare settings which could be attributed to difference in healthcare facilities available.

In the present study, HIE was the most common complication recorded among 31.0% premature newborns, followed by sepsis 18.0% and RDS 8.0%. These findings are different from what was found by Khan HS et al who noted sepsis to be the commonest complication among premature newborns.[12] We found NEC to affect 6% of premature newborns. Shah SH et al[15] in another local study reported 14.3% of the premature newborns with NEC while Khan HS[12] observed NEC to affect 15.5% of the premature newborns. A study from Nigeria noted RDS to affect 68.8% premature newborns while sepsis (39%) was the other commonest complication.[16] All this data shows difference in patterns of complications noted among premature newborns. This could also be indication different etiologies behind these complications which we were unable to address in the present study and this was one of the limitations of this study. Early screening of fetal, maternal and social risk factors leading to pre-term birth must be initiated in order to reduce its incidence of premature births. Reducing preterm birth can result in better health outcomes such as improvement of overall neonatal health and significantly reduced neonatal mortality in future.

CONCLUSION

Hypoxic ischemic encephalopathy was the most common complication observed either presented alone or in association with other observed

complications. The most common cause of mortality in the observed population was hypoxic ischemic encephalopathy.

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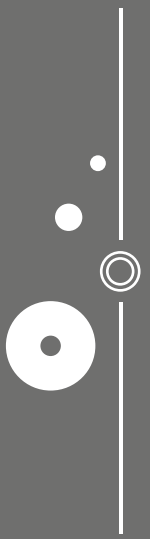

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There is only one way to avoid criticism: do nothing, say nothing, and be nothing.

ARISTOTLE

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Shakeel Ahmed	Study idea, Design, Supervision.	
2	Ayaz Ali	Literature review, Proof reading.	
3	Iram Jabeen	Discussion, Drafting.	
4	Nusrat Hussain	Data analysis, Data interpretation.	
5	Asma Akbar	Discussion, Literature Review.	
6	Irfan Kareem	Data collection, Introduction.	