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ORIGINAL ARTICLE

Birth injuries, types and risk factors: A Study at Children Hospital Complex Multan.

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ABSTRACT… Objective: To identify the types and risk factors associated with birth injuries. **Study Design:** Observational study. **Setting:** Department of Neonatology, The Children's Hospital and the Institute of Child Health, Multan Pakistan. **Period:** November 2019 to July 2020. **Material & Methods:** A total of 52 neonates admitted in neonatology unit with birth injuries were included. Clinical examination was done to note possible birth injuries. Characteristics of neonates like gender, gestational age, body weight, maternal age and mode of delivery were calculated. Risk factors like difficult labour and instrumentation were described. Pattern and types of birth injuries were highlighted. **Results:** In a total of 52 neonates with birth injuries, there were 39 (75.0%) male and 13 (25.0%) female representing a male to female of 3:1. Majority of the babies were term born 43 (82.7%). There were 27 (51.9%) babies weighing > 3000 grams. The highest incidence of birth injuries were recorded in normal vaginal deliveries and least in forceps deliveries. Difficult labour was the most common risk factor observed in 30 (57.7%) cases. Extracranial bleeds were seen in 23 (44.2%) neonates while soft tissue injuries were noted in 15 (28.8%) cases, Erb's paralysis was noted in 5 (9.61%) babies and fractures in 9 (17.3%) babies. **Conclusion:** Extracranial bleeds were the most common type of birth injuries, followed by soft tissue injuries, fractures and nerve injuries. Difficult labour was the most common risk factor associated with birth injuries.

Key words: Birth Injuries, Extracranial Bleed, Primigravida.

INTRODUCTION

Injuries to the newborn baby resulting from mechanical forces like compression or traction during the birth process are described as birth trauma.[1] Birth injury is labeled by The National Vital Statistics Report as "an impairment of infants body function or structure due to adverse influences that occurred at birth".[2] Birth injuries are considered to be avoidable or unavoidable forms of birth trauma that can happen during labour as well as delivery. Severity of birth injuries level from minor to very severe and could be a contributing factor to incompatibility with life of the newborn.[3] Birth injuries among newborn can range from minor soft tissue injuries at the time of birth, long bone fractures and broken collar bone, bleeds and peripheral nerve injuries.[4]

Primiparity, small maternal stature, maternal pelvic anomalies, prolonged or rapid labour, oligohydramnios, abnormal fetal presentation, use of midforceps or vacuum extraction, version and extraction, very low birth or extreme prematurity, fetal macrosomia or large fetal head and fetal anomalies are some of the factors linked with birth injuries.[5] Recent decades have seen lots of improvement in obstetrical care that has contributed to significant reduction in birth injuries especially among developed parts of the world. It has been estimated that only about 25% of deliveries are supervised by skilled attendants in the developing countries.[6] Most cases of birth trauma are self-limiting and have a favorable outcome. Nearly one half are potentially avoidable with recognition and anticipation of obstetric risk factors. Outcome in the neonate is the product of multiple factors.[7,8]

Successful prevention of birth injuries often depends on the evaluation of each pregnancy

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during the antenatal period with a view to detect potential predisposing factors. However, the roles of different factors are not totally well defined.[9] The contribution of fetal marcosomic and breech delivery to the occurrence of birth trauma was highlighted by some workers while others were not so persuaded. It is of utmost importance that causes of birth trauma within any geographical area be regularly viewed so as to clearly define preventive measure.[10] This study was planned to identify types and risk factors associated with mechanical birth trauma amongst the live births admitted to children hospital complex Multan.

MATERIAL & METHODS

This was an observational study, conducted at neonatology department children hospital complex Multan from November 2019 to July 2020. Approval from "Institutional Ethical Committee" was taken (Ref#ICH/ERC-381, Dated: 04-01-2019). Using non-probability convenient sampling technique, a total of 52 neonates admitted in neonatal intensive care unit (NICU) during the study period were screened for birth injuries and those babies with birth injuries were included in the study. History of any instrumentations used like forceps or vacuum was noted, caesarean sections conducted were recorded. Gestational age of baby, birth weight, and congenital malformations in baby was noted. Clinical examination including any swellings, skin lesions, restriction of movements at joints, abnormal positions of limbs, paucity of movements of limbs were noted to find out possible birth injuries. Relevant investigations were done and neonatologists, pediatric surgeons, orthopedicians and physiotherapists were involved in treatment of relevant birth injuries.

A special proforma was designed to record all study information while SPSS version 26.0 was used for data analysis. Characteristics of neonates like gender, gestational age, body weight, maternal age and mode of delivery were calculated. Risk factors like difficult labour and instrumentation were described. Pattern and types of birth injuries were highlighted.

RESULTS

In a total of 52 neonates with birth injuries, there were 39 (75.0) male and 13 (25.0%) female representing a male to female of 3:1. Majority of the babies were term born 43 (82.7%). There were 27 (51.9%) babies weighing > 3000 grams. Most of birth injuries were noted in the babies born to mother between 21 to 25 years of age 31 (59.6%) followed by 26 to 30 years 9 (17.3%) and 17-20 years 7 (13.5%). The highest incidence of birth injuries were recorded in normal vaginal deliveries and least in forceps deliveries. Table-I is showing characteristics of neonates with birth injuries.

Characteristics		Number (%)
Gender	Male	39 (75.0%)
	Female	13 (25.0%)
Gestational Age	Term	43 (82.7%)
	Pre-Term	9 (17.3%)
Body Weight (grams)	<1000	1 (1.9%)
	1000-1999	9 (17.3%)
	2000-3000	16 (30.8%)
	>3000	27 (51.9%)
Maternal Age	17-20	7 (13.5%)
	21-25	31 (59.6%)
	26-30	9 (17.3%)
	31-36	3 (5.8%)
	36-40	2 (3.8%)
Mode of Delivery	Normal Vaginal Delivery	31 (59.6%)
	Forceps	9 (17.3%)
	Cesarean Section	12 (23.1%)

Table-I. Characteristics of neonates with birth injuries (n=52)

Figure-1 is showing risk factors involved in neonates with birth injuries and difficult labour was observed in 30 (57.7%) cases.

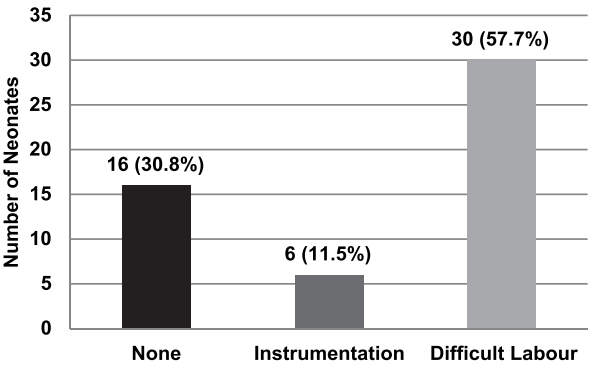

Figure-1. Risk factors involved in neonates with birth injuries (n=52)

Extracranial bleeds were seen in 23 (44.2%) neonates out of which 16 (30.8%) babies had cephalhematoma while soft tissue injuries were noted in 15 (28.8%) cases, out of which bruises were in 6 (11.5%) cases. Erb's paralysis was noted in 5 (9.61%) babies. Fractures were noted in 9 (17.3%) babies. Table-II is showing details of pattern of birth injuries among neonates.

Types of Birth Injuries	Number (%)
Extracranial Bleeds	23 (44.2%)
Cephalhematoma	16 (30.8%)
Subgaleal Hematoma	7 (13.5%)
Soft Tissue Injury	15 (28.8%)
Ecchymosis	3 (5.8%)
Contusion	2 (3.8%)
Lacerated Wound	1 (1.9%)
Abrasions	3 (5.8%)
Bruises	6 (11.5%)
Erb's Paralysis	5 (9.6%)
Fractures	9 (17.3%)
Occipital Bone Fracture	3 (5.8%)
Femur Fracture	6 (11.5%)

Table-II. Pattern of birth injuries among neonates (n=52)

DISCUSSION

Birth injuries are defined by the National Vital Statistics report as "an impairment of the infant's body function or structure due to adverse influences that occurred at birth."[11] It can occur antenatally, intrapartum or during resuscitation.[2,12] In this study, we found that term newborns were most affected (82.7%) with birth injuries which is quite similar to a study conducted in Nigeria where among newborns with birth injuries, 86.9% were term newborns.[13]

The most common birth injury in our study seen was extracranial bleeds in 23 (44.2%) babies of which cephalhematoma was seen in 16 (30.8%) babies and subgaleal hematoma in 7 (13.5%) babies. Soft tissue injuries were noted in 15 (28.8%) babies. Warke C et al from India noted 16 (51.6%) cases of extracranial bleeds out of which 12 were Cephalhematoma and 4 were subgaleal bleeds.[14] Hailu D et al noted that subgaleal hemorrhage was the commonest birth injury (61%).[15] Nerve injuries (Erb's paralysis) were observed in 9.61% cases whereas Warke C et al noted more number (16%) of cases of nerve injuries. Oluwadiya K et al noted even higher number (43.8%) of nerve injury cases.[16] Fractures were similar (17.30%) in present study and study of Warke C et al[14], and Oluwadiya K et al[16] (23%). Soft tissue injuries in our study were more comparable to Warke C et al.[14] Pius S et al from Nigeria observed 60.7% of newborns with birth injuries to have soft tissue injuries.[13]

Most of the birth injuries in our study were noted in mother of age group 20-25 years. This may be attributed to the fact that age group of 20-25 years is the peak age for child bearing in our society. In our study 31 (59.61%) babies were born by difficult vaginal delivery which were comparable to 41% in Chaturvedi A et al.[2] Instrumentation (foreceps) was seen in 17.30% of deliveries which was lesser compared to studies of Chaturvedi A et al. Issues of birth injuries should be high in the minds of obstetricians, neonatologists, mid-wives who conduct deliveries and the general public especially the pregnant women be educated on antenatal care clinic attendance and delivery at health facilities that can handle high risk pregnancies that may result in birth injuries.[17-20]

Our study had few limitations. We were unable to record details about the delivery attendant and place of delivery which could have given us more insight about the association of birth injuries with place and level of birth attendants. We were also did not analyze outcome among neonates with birth injuries. Complications like anemia, sepsis, jaundice and anemia were also not noted.

CONCLUSION

Extracranial bleeds were the most common type of birth injuries, followed by soft tissue injuries, fractures and nerve injuries. Difficult labour was the most common risk factor associated with birth injuries.

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