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Research Article

DETERMINATION OF CLINICAL COURSE OF INTRAVENTRICULAR HEMORRHAGE IN NEONATES WITH HIGH RISK

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Abstract:

Objective: The aim of this research work is to determine the clinical course of intraventricular hemorrhage (IVH) and the determination of the temporary consequence of the affected infant.

Study Design: This was a transverse prospective research work.

Study Setting: This study was conducted at the Pediatric ward of the Nishtar Hospital Multan from March 2017 to July 2018.

Study Subjects: All the neonates with high danger who got admission in the hospital were the part of this research work. Low weight at the time of birth & asphyxia were the important risk factors. Clinical aspects in accordance with the severity of hemorrhage and short term consequence was the most important outcome.

Results: Total 17.80% (n: 21) children out of one hundred and eighteen high-risk neonate developed the complication of IVH. Among total eighty-one children with low weight at the time of birth, 23.50% (n: 19) children were suffering from the IVH. The symptoms which were very common were suck refusal, weakness/laziness & poor reflex as well as convulsion were the signs. Total 47.60% (n: 10) met their death within initial two weeks of their lives and five children got complete recovery. Remaining 28.60% (n: 6) children developed the anomaly of neurological sequelae.

Conclusion: The monitoring of regular course and prediction of children with IVH can be carry out with clinical aspects along with the help of aid of cranial ultrasonography.

Keywords: Ultrasonography, Cranial, Neurological, Anomaly, Encephalopathy, Twitching & Cyanosis, Symptoms.

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INTRODUCTION:

IVH among the new births is the result of prematurity and or asphyxia with no trauma present [1, 2]. The development in the field of care of neonates has enhanced the existence of high risk new births which shows that very large amount of children is available to develop intra-vascular hemorrhage that the children of twenty years ago [3]. The infant who is premature suffering from IVH progressively depreciates in some days after the start of life. Stages of apnea, cry with high pitch, pallor, twitching & cyanosis lead to coma [4]. The hemorrhage of severe nature is the cause of neuro-depression succeeding to coma. HIE (ischemic encephalopathy) may be the main reason or the outcome of IVH.

Neuropathology totally rely on the duration of pregnancy period & hypoxia's level. Neonates determine focal or multifocal infarcts of cerebral that can produce the seizure of focal & hemiplegia [5]. Majority of neonates with intraventricular hemorrhage do not have the post hemorrhagic dilatation of ventricular. Total 10% to 20% neonates with low weight at the time of birth with severe nature intraventricular hemorrhage have the anomaly of hydrocephalus. Intraventricular hemorrhage with intra-parenchymal hemorrhage has association with very high rate of mortality and very occurrence of the motor & cognitive depression [6].

The identification of intraventricular hemorrhage with the help of scanning of mind is performable with different ways. Recently, the cheapest and sensitive method for the identification of intraventricular hemorrhage in neonates [7, 8]. The research works on the intraventricular hemorrhage from the modern world countries are available in very high amount but there was no research work of such nature in our country Pakistan [9, 10]. The purpose of this research work was to determine the medical course in association of the severity of intraventricular

hemorrhage and to find out the short-term consequence of the affected neonate.

METHODOLOGY:

This study was conducted at the Pediatric ward of the Nishtar Hospital Multan from March 2017 to July 2018. All the new births who got admission in the neonatal ward with low weight at the time of birth & asphyxia underwent sonography. Patients suffering from various grades of the intraventricular hemorrhage included in the research work for follow up. We performed the ultrasonography of all the patients with high danger in their 3rd day of life. The most important high risk factors were low weight at the time of birth and asphyxia. Neonate with lower than 2.50 kg weight were the low birth weight infants [4]. We performed the cranial ultrasound. The classification of the IVH carried out into four grades depending upon the severity of condition from Grade-1 to Grade-4 [11]. We recorded all the features of the patients on a well-organized Performa. We assessed the progress report daily for a complete duration of twenty weight days and condition at the time of their discharge from hospital. The measurement of the outcome carried out by fatality & medical aspects at the discharge time from hospital. This was a complete symptomatic treatment.

We did not try the serial lumbar puncture for any patient but we carried out osmotic diuresis in the patients suffering from the severe hemorrhage [12]. We placed all the collected information on a broadsheet & then we transferred the data to various figures & tables in the utilization of the descriptive examination. We used the percentage for the presentation of the significance.

RESULTS:

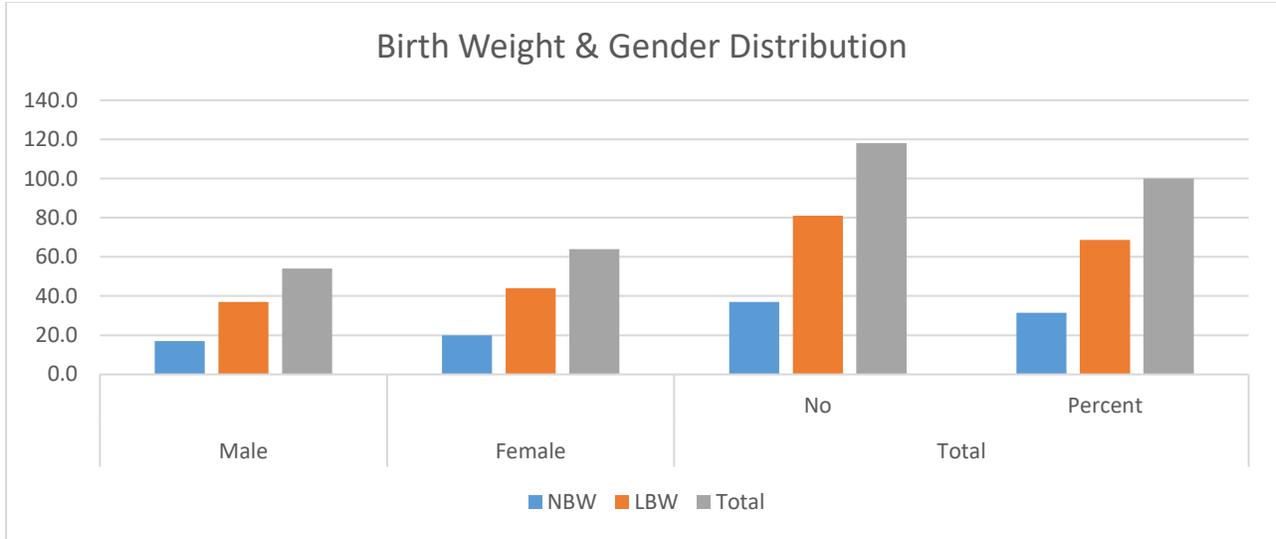
There were one hundred and eighteen neonates under observation whereas 68.60% (n: 81) were available with low weight at the time of birth Table-1.

Table-I: Distribution of Newborn on Birth Weight and Gender

Birth Weight	Male	Female	Total	
			No	Percent
NBW	17.0	20.0	37.0	31.40
LBW	37.0	44.0	81.0	68.60
Total	54.0	64.0	118.0	100.00

NBW: Normal Birth Weight

LBW: Low Birth Weight

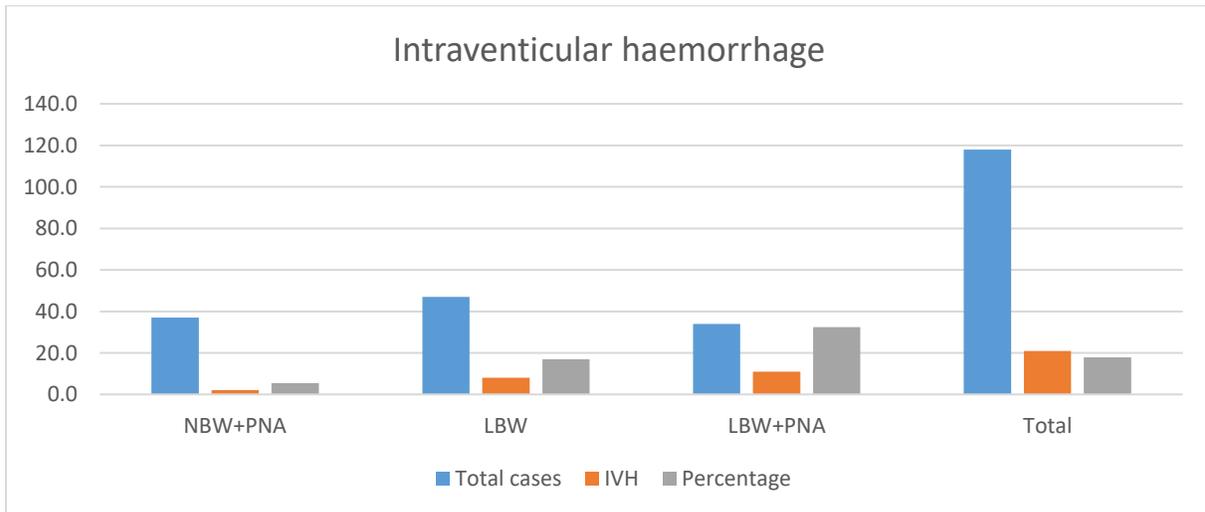


Most of the patients (54.30) were females. Total 17.80% (n: 19) neonates were available with intraventricular hemorrhage (Table-2).

Table-II: Intraventricular Hemorrhage in Study Cases (n=118)

Birth weight ± PNA	Total cases	IVH	Percentage
NBW+PNA	37.0	2.0	5.40
LBW	47.0	8.0	17.00
LBW+PNA	34.0	11.0	32.40
Total	118.0	21.0	17.80

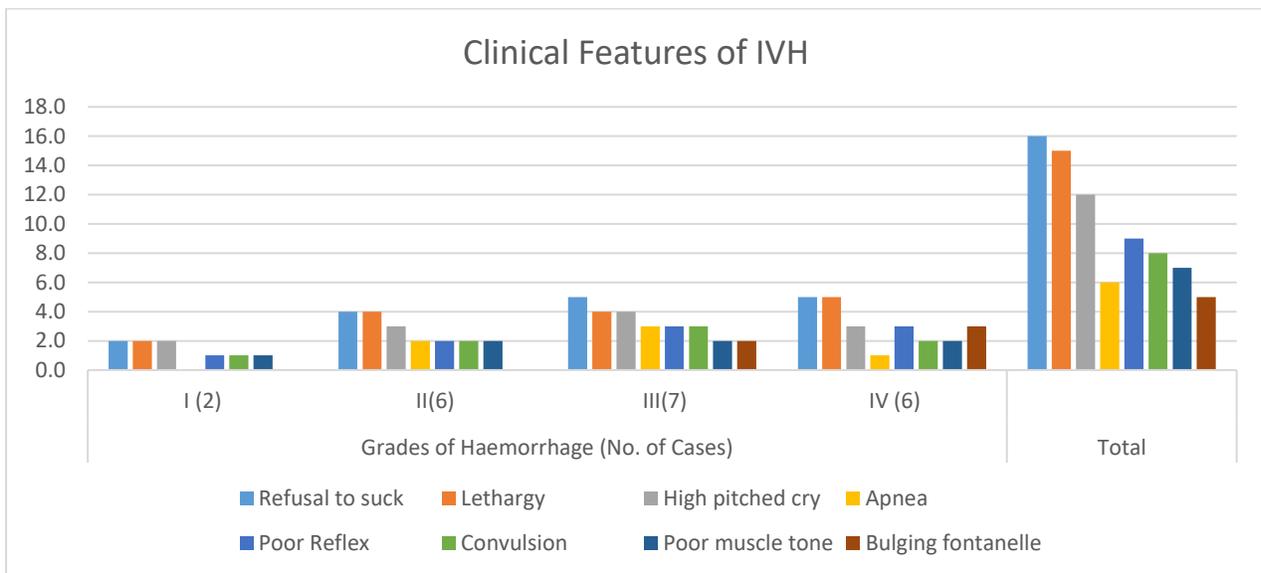
PNA - Perinatal asphyxia



Total 23.50% (n: 19) patients out of eighty-one neonates with low weight at the time of birth were suffering from intraventricular hemorrhage. Clinical aspects with their association to the severity of the hemorrhage is available in Table-3.

Table III: Clinical Features of IVH in Relation to Grade of Hemorrhage (n=21)

Symptoms/Signs	Grades of Hemorrhage (No. of Cases)				Total
	I (2)	II(6)	III(7)	IV (6)	
Refusal to suck	2.0	4.0	5.0	5.0	16.0
Lethargy	2.0	4.0	4.0	5.0	15.0
High pitched cry	2.0	3.0	4.0	3.0	12.0
Apnea	0.0	2.0	3.0	1.0	6.0
Poor Reflex	1.0	2.0	3.0	3.0	9.0
Convulsion	1.0	2.0	3.0	2.0	8.0
Poor muscle tone	1.0	2.0	2.0	2.0	7.0
Bulging fontanelle	0.0	0.0	2.0	3.0	5.0

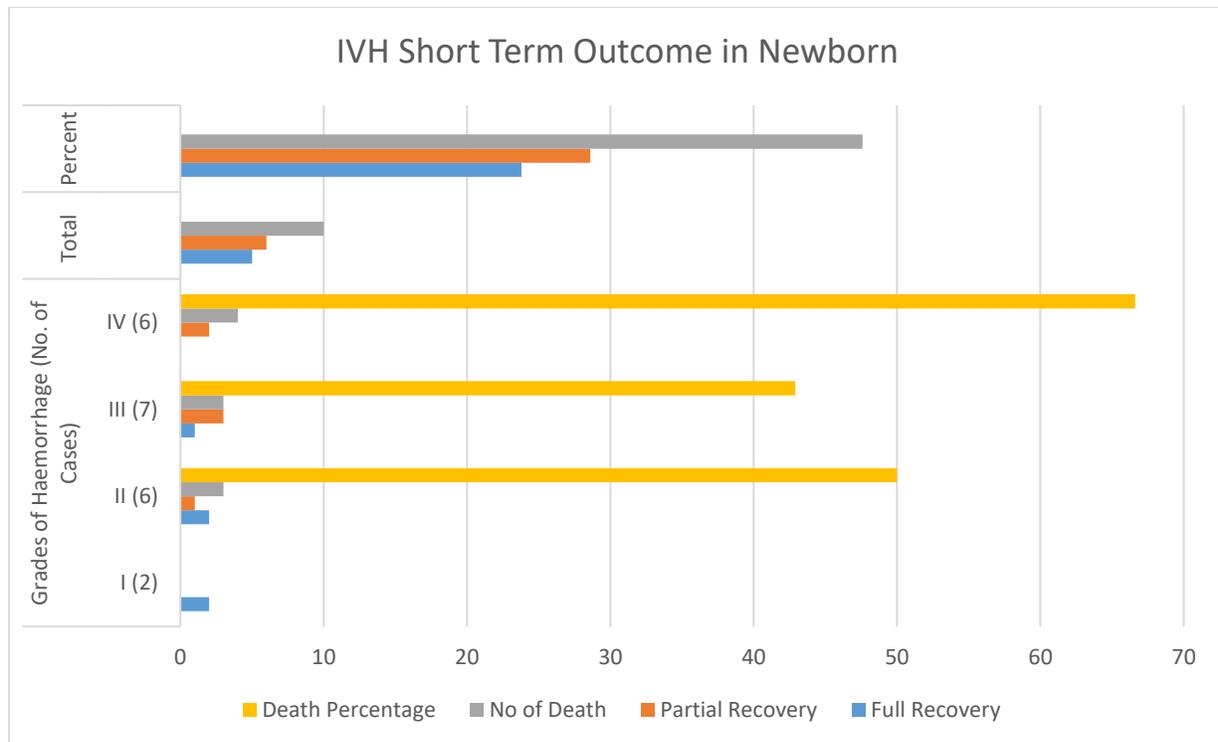


The symptoms which were most common, were suck refusal, laziness & signs were adverse reflex, convulsion. There was direct association of the features with the hemorrhage's magnitude. Table-4 elaborates the short-term consequence among neonates. Total 47.60% (n: 9) patients met their death & five got complete recovery. The adverse prognosis

was also available with direct association with the hemorrhage's degree. But, there was development of the additional abnormalities in two fatal cases like septicemia with grade-3 hemorrhage & distress syndrome of the respiration system with grade-4 hemorrhage.

Table-IV: Short-Term Outcome of IVH in Newborn (n=21)

Discharge Status	Grades of Hemorrhage (No. of Cases)				Total	Percent
	I (2)	II (6)	III (7)	IV (6)		
Full Recovery	2	2	1	-	5	23.8
Partial Recovery	-	1	3	2	6	28.6
No of Death	-	3	3	4	10	47.6
Death Percentage	0	50	42.9	66.6		



DISCUSSION:

IVH is very common state among neonates which are premature but its prevalence in babies with mature asphyxia is very lower [1]. The most elaborated hemorrhagic abrasion is subdural hemorrhage having relation with the asphyxia of birth in the full term neonates, hemorrhage may present in ventricles from the choroid plexus. Other prompting factors for the intraventricular hemorrhage include distress syndrome of the respiration system, pneumothorax & high blood pressure [4]. Immature vessel of the blood in the region with high vascular periventricular may be under different forces that along with adverse support of tissue incline the premature infants to intraventricular hemorrhage. Its diagnosis depends upon the basis of the past history, clinical manifestation, cranial ultrasonography, CT scan & awareness of the weight at the time of birth as the most important risk factors for hemorrhage [9, 13]. In premature neonates with IVH, there is often a quick decline on the second & third life day of the infants. The duration of unwell to suck, abnormal sign from eyes, twitching, cyanosis & cyanosis may be the 1st indication [4]. Coma may be the outcome of the IVH with no clinical manifestation [10]. PVL (periventricular leukomalacia) occur as spot of white color at boundary region of cerebral circulation in the brain with immaturity. It is normally appearing with no symptoms until matter necrosis is obvious in advanced infancy.

In accordance with sonography, PVL may appear like phase of echo dense from 3 to 10 life days followed by the phase of typical echo lucent from 14 to 20 life days [14, 15]. HIE & low birth weight are the most important dangers of birth in the country of Bangladesh [16]. Volpes in his research work concluded convulsion & apnea are the most important signs & symptoms respectively [11]. There is much similarity with our research work. The prediction of the intraventricular hemorrhage is depending upon the pregnancy duration & severe nature of the hemorrhage [9]. There was no determination of duration of gestation with precision so we left this attempt. Total 47.60% (n: 10) baby's death & this occurred in first two weeks of life.

The related anomalies in some patients were septicemia & distress syndrome in the respiration system which is much common in the infants with low weight at the time of birth [16]. In his research work, Murphy discovered that most important predictor of the short term consequence of mortality & disability was IVH [1]. After dilatation of hemorrhagic ventricular has obtained much consideration in recent days as it has relation with the severe grades [3]. We were unable to follow up the patients more than 1 complete month so determination of the long term outcome was not able.

CONCLUSION:

The findings of this research work conclude that the enormous abnormalities in the neonates suffering from intraventricular hemorrhage are high rate of mortality and handicap, the identification of the main issue in these neonate is predicable with the continuous monitoring of the clinical feature with the utilization of the ultrasonography.

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