CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.1283787

Available online at: http://www.iajps.com Research Article

MANAGEMENT OF LATE HAEMORRHAGIC DISEASE (HDN) OF INFANTS THROUGH VITAMIN K THROUGH ORAL AND INTRAVENOUS (IV) IN THE PERSPECTIVE OF BREASTFEEDING

[1]Dr. Bilal Muzaffar, [2]Dr. Samna Naseer, [3]Dr. Ramshah Javaid

[1]Fatima Memorial Hospital

[2]WMO BHU, Thathi Minderwal

[3]WMO BHU, Pathanwali

Abstract:

Objectives: *Research objective was the clinical presentation observation of the late hemorrhagic newborn disease and clinical progression after vitamin K1 administration.*

Methodology: *Design of the research was descriptive prospective which was carried out on the age of seven days children observed with bleeding and hospitalized in the pediatric ward of Nishtar Hospital, Multan in the period of March, 2016 to February, 2017. Detailed form was used for the collection of data and outcomes analysis was made on SPSS.*

Results: *Research sample was of thirty-five children under the age of seven days with a repeated bleeding site as subcutaneous and orally injected site. Minimum age was twenty-eight days and mean age was 109 days in the cases of late hemorrhagic disease. We also observed common clinical assessments such as irritability, poor reflexes, convulsions and poor feeding. After the intervention of Vitamin K recovery was observed in the time span of twenty-four hours.*

Conclusion: *Outcomes of the late HDN cases were in the shape of worse hemorrhage specifically in found in the central nervous system. When Vitamin K management was extended (1mg, IM) at the time of birth can develop numerous associated worse complications.*

Key Words: *Late hemorrhagic disease of newborn (LHDN), Vitamin K deficiency bleeding (VKDB), Intraventricular hemorrhage, Prothrombin Time (PT), Vitamin K, Activated partial thromboplastin time.*

Corresponding author:

Dr. Bilal Muzaffar,

Fatima Memorial Hospital

QR code

Please cite this article in press Bilal Muzaffar et al., ***Management Of Late Haemorrhagic Disease (HDN) Of Infants through Vitamin K through Oral and Intravenous (IV) In the Perspective of Breastfeeding,*** *Indo Am. J. P. Sci, 2018; 05(05).*

INTRODUCTION:

Vitamin K is graded as a vitamin which is fat-soluble it is absorbable from tract of the gastro intestinal in the availability of bile slats. The need of the Vitamin K is for the coagulation factors production in liver such (factors II, VII, IX & X). These factors are small in amount and also had a short life span which are accumulated in the body. The deficiency of vitamin K can result in the shape of short duration. PIVKA, inactive precursor of the protein is induced in the absence of vitamin K, can be measured and it can also indicate the deficiency of Vitamin K. The appropriate technical name of the disease in the neonates can be vitamin K deficiency bleeding (VKDB) [1]. In the historical perspective the disorders of the bleeding as observed in the neonates were arranged in the main umbrella of hemorrhagic disease diagnosed in the children. With the available strategies of an accurate deficiency factor diagnosis actually reports the immune thrombocytopenia, in various disorders the identification of the VKDB can be made through appropriate analysis and exclusion of all other involved coagulation factors [2].

HDN is a common reason of the acquired hemostatic disorder which is observed at the earlier stage of infancy [3]. In the eastern countries the Late-HDN incidence is reported as 25 – 80 per 100,000 births which is observed more than the western countries as (4 – 25 per 100,000 births) [4]. There are three-time frames of the occurrence of the VKDB in children [1]. An early onset refers to a time under twenty-four hours after the time of birth which is very rare and also linked with the maternal drugs interfering with the vitamin K, which includes anticonvulsants, antibiotics and anticoagulants. Vitamin K when administered in the post-natal period is in effective for the disease prevention. Disease can be prevented through supplements of maternal vitamin K administered parentally [2]. VKDB's classic onset in observed in the breast-fed children in the time of two to seven days [3]. VKDB's late onset occurrence is found within one to two weeks after the birth. Risk factors other than the breastfeeding are diarrhea, cystic fibrosis (CF), hepatitis, alpha1-antitrypin deficiency, celiac disease and prophylaxis absence in the healthy children. VKDB's late onset is severe in comparison to the classic disease or an early-onset which has intracranial hemorrhage (ICH) higher frequency. The occurrence of the late HDN is observed in the time span of two to eight weeks, its occurrence can also be witnessed at any part of the 1st year.

To determine HDN's accurate incidence an elaborative research is required that also aims at the determination of the rate of mortality and morbidity whose clinical features are alarming and lead to hospitalization in majority of the cases. Research objective was the clinical presentation observation of the late hemorrhagic newborn disease and clinical progression after vitamin K1 administration.

PATIENTS AND METHODS:

Design of the research was descriptive prospective which was carried out on the age of seven days children observed with bleeding and hospitalized in the pediatric ward of Nishtar Hospital, Multan in the period of March, 2016 to March, 2017 (One year). Detailed form was used for the collection of data and outcomes analysis was made on SPSS.

We included above 7 days age, bleeding, platelet counts above 1.5 lac/cumm, index PTI (INR above 1.8 and vitamin K administered cases who were recovered after the vitamin K administration. A two mg dose of Vitamin K was administered to the patients after twenty-four hours necessary investigations were also made. No discrimination was made in terms of birth place, administration of vitamin K, prolonged diarrhea history, feeding history, antibiotics use and clinical manifestations. We did not include all the infants having icterus, liver enzymes derangement and significant hepatomegaly, all who failed to recover with single vitamin K dose, before presentation administration of vitamin K with an addition of non-compliance of coagulation tests at any stage of therapy.

RESULTS:

In total sample proportion of girl to boy was respectively 11 to 24. Hospital birth cases were 10 (28.5%); out of which 6 were administered vitamin K (19%). Remaining infants were administered vitamin K at maternity home or at their house with the administration of vitamin K prophylaxis. No mother was treated with any pregnancy related medications that can affect the status of the infant's coagulation, every case was breastfed.

Detailed outcomes analysis has been made in Table I, II & III and related figures.

Table – I: Bleeding sites in late hemorrhagic disease of newborn

Bleeding sites	Number (35)	Percentage
Skin Bruises	25	71
Intracranial	4	11.4
Rectal bleeding	12	34
Blood in stool	17	48
Nasal bleeding	14	40
Injection site	7	20
Blood in urine	1	2

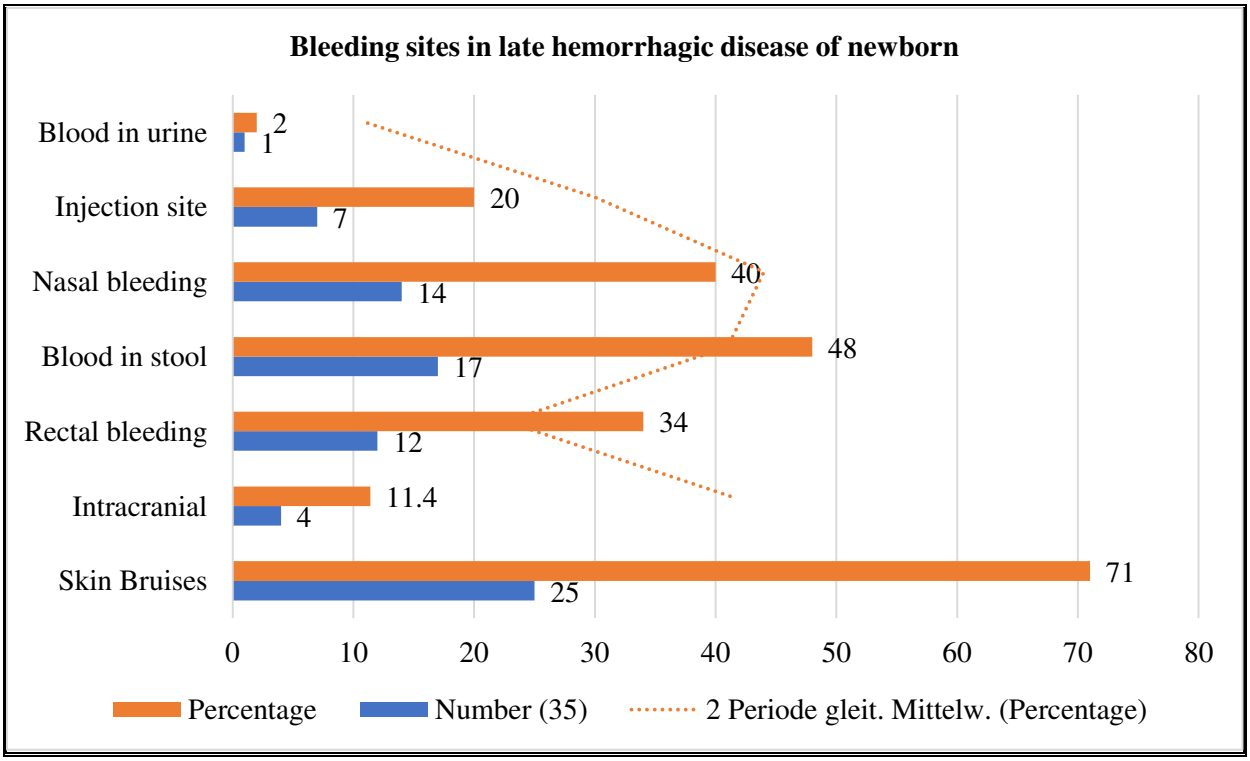

Table – II: Clinical Presentation

Clinical symptoms	Number (35)	Percentage
Pallor	35	100
Poor feeding	7	20
Irritable	8	22.8
Convulsion	4	11.4
Bulging fontanel	3	8.5
Discoloration of skin	25	71.4
Vomiting	8	22.8
Poor reflexes	9	24

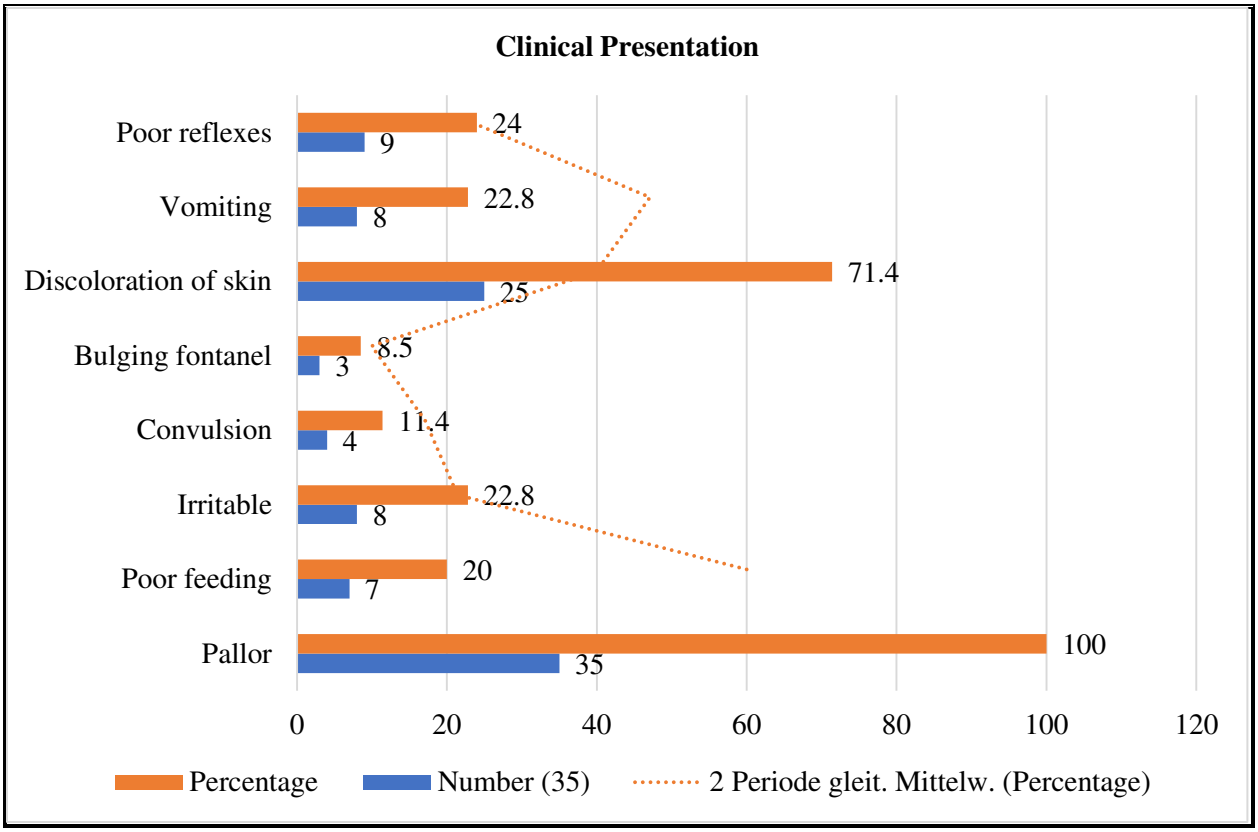

Table – III: Vitamin K response on PT and aPTT.

P.T / aPTT	Before administration	After administration
P. T	70 ± 40.5 s	15 ± 1.6 s
aPTT	110 ± 60 s	32 ± 1.0 s

DISCUSSION:

Our outcomes confirm that newborns LHD is a cause of increased mortality and morbidity in under developed countries; whereas, in the developed countries it is less threatening because of the wide utilization of the vitamin K prophylaxis at the time of birth [3]. Home deliveries are reported more for an incidence of late HDN [5]. We observed majority of the cases were completed at clinics and homes with no children received vitamin K. Hospitalization in the early neo-natal pediatrics department makes the incidence of late-HDN a significant problem. Vitamin K low concentration in the breast milk of human and its predisposition to the DBVK is an emergent concern specifically in the under developed countries where for the optimal health breast feeding is promoted. In our research almost 2/3rd babies belong to an age group of 4 – 8 weeks. There is a non-availability of Vitamin K (menaquinones) in the liver of a newborn but with the passage of time it accumulates. Peak HDN frequency at this part of age can be explained through this fact and including the vitamin K low concentration in breast milk of human (1.5 µg / dL) than the (6 µg / dL) in the milk of cow [3, 6]. Every child was managed with breast feeding in the research studies of late HDN except few who were given vitamin K prophylaxis after birth [7]. Same has been observed in our research that number of infants were feed through breastfeeding without the administering of vitamin K.

Among the repeated late HDN manifestations in the previous research studies were find the evidence of deep ecchymosis, intracranial hemorrhage, GI tract bleeding, mucus membrane bleeding, surgical incisions or skin punctures [7]. Same has been observed in our research. We found that ten percent cases presented the feature of ICH. In the remaining infants we found rectal bleeding and skin hemorrhage. ICH was commonly presented in the

subdural hemorrhage after the hemorrhage of subarachnoid [5]. Another author reported the same ICH in seventy percent of the children [8]. In this particular research multiple sites were observed with the incidence of hemorrhages (75%). The incidence of ICH was noticed in the affected children in the range of 50 – 80 percent, in other research studies it caused the rate of handicap or death as 50 – 70 percent with an overall mortality rate of 14 – 50 percent [4, 9]. Low rate of the mortality can be attributed to small number of population. The outcomes of the late HDN are also found in the shape of head injury (non-accidental) and child abuse (mistaken diagnosis) [10]. On few occasions the babies may present a respiration distress that is caused by the hemothorax or thymic hemorrhage [11, 12]

Secondary hydrocephalus may also be observed in the infants [13]. We administered Vitamin K to all the babies except six cases. Researchers have also found the incidence of late HDN after the management of vitamin K [14]. In a German research failure rate was reported in the shape of late HDN in (0.25 / 100,000) infants after the administration of IM than the (1.4 / 10,000) in the administering of oral dose of vitamin K [15]. Preterm babies were also managed with Vitamin K intravenous injections in the incidence of late HDN as reported by few authors, which may be attributed to the longer IM route [16]. In the long-term prophylaxis, the intravenous route is considered less effective to prevent late HDN [16]. Oral route is better and economical than the IV route, it is indeed effective, more acceptable and practical for the parents as well. Some studies do not agree with this hypothesis of the oral intake of Vitamin K.

CONCLUSION:

Outcomes of the late HDN cases were in the shape of worse hemorrhage specifically in found in the central nervous system. When Vitamin K management was extended (1mg, IM) at the time of birth can develop numerous associated worse complications.

REFERENCES:

1. Urrvoas E, Pariente D, Rousset A. Ultrasound diagnosis of thymic hemorrhage in an infant with late-onset hemorrhagic disease. Pediatric Radio 1994; 2:96-7.
2. Kaur P, Tann KK. Hemothorax due to hemorrhagic disease of the newborn. Acta Pediatric Japan 1994; 36:95-6.
3. Heron P, Cull A. Avoidable hazard to New Zealand children: Case reports of hemorrhagic disease of the newborn. New Zealand Med 1998; 101:507-8.
4. Solves P, Altes A, Ginovart G. Late hemorrhagic disease of the newborn as a cause of intracerebral bleeding. Ann Hemato 1997; 75:65-6.
5. Von Kries R. Vitamin K prophylaxis-A useful public health measure? Pediatr Perinat Epidemiol 1992; 6:7-13.
6. Loughan PM, McDougall PN. Does intramuscular vitamin K act as an unintended depot preparation? Pediatr Child Health 1996; 32:251-4.
7. Chuansumrit A, Isarangkura P, Hathirat P. Vitamin K Study Group. Vitamin K deficiency bleeding in Thailand:A 32-year history. Southeast Asian J Trop Med Pub Hlth1998; 29:649-54
8. Pooni PA, Daljit Singh, Harsesh Singh, Jain BK. Intraventricular hemorrhage in late hemorrhagic disease of Newborn, Indian Pediatrics 2003;40:243-8.
9. Sutor AH, Dagres N, Neiderhoff H. Late form of vitamin K deficiency bleeding in Germany. Klin Pediatr1995; 207:89-97.
10. Rutty GN, Smith CM, Malia RG. Late-form hemorrhagic of the newborn: a fatal case report with illustration of investigations that may assist in avoiding the mistaken diagnosis of child abuse. Am Forensic Med Pathol 1999; 20:48-51.
11. Loughan PM, McDougall PN, Balvin H, Doyle LW, Smith AL. Late onset hemorrhagic disease in premature infants who received intravenous vitamin K. Pediatr Child Health 1996;32:268-9.
12. Christensen RD. Developmental aspects of blood hemostasis and disorders of coagulation and fibrinolysis in the neonatal period. In: Hematologic Problems in the Neonate. Philadelphia, Pa: WB Saunders Co 2000;239-71.
13. Taeusch HW, Ballard RA, eds: Hemostatic disorders in newborns. In: Avery's Diseases of the Newborn. 7th ed. Philadelphia, Pa: WB Saunders Co 1998;1045-79.
14. Vitamin K Ad Hoc Task Force. Controversies concerning vitamin K and the newborn. Pediatrics 1993; 91:1001-3
15. Isarangkura PB, Pintadit P, Tejavej A, Siripoonya P, Chulajata C, Green GM. Vitamin K prophylaxis in the neonate by oral route & its significance in reducing infant mortality and morbidity. J Med Assoc Thai 1986; 69:56-61.
16. Chook E. Tan KK, Chuah SP, Ariffin WA, Gururaj A. Hemorrhagic disease in newborn and older infants: a study in hospitalized children in Kelantan, Malaysia. Ann Trop Pediatr 1994; 14:231-7.