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Integrative Review of Literature

Nursing care in hematology and neonatal polycythenamy

Cuidados de enfermagem em hematologia e na policitemia neonatal

Cuidados de enfermería en hematología y policitenamia neonatal

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RESUMO

Objetivos: os objetivos do estudo consistem em abordar os cuidados prestados pela equipe de enfermagem em hematologia e na policitemia neonatal. **Método:** estudos de revisão integrativa da literatura. O conteúdo foi abordado para as condições clínicas decorrentes da policitemia neonatal. **Resultados:** as manifestações clínicas decorrentes da doença são extremamente polimórficas e incluem praticamente todos os órgãos e sistemas. A frequência dos sinais e sintomas nos indivíduos policitêmicos, no entanto, varia amplamente na literatura. **Conclusão:** alguns estudos mostram que a maior parte dos recém-nascidos é assintomática, enquanto outros encontram mais de 50% das crianças com algum tipo de sintoma sugestivo do processo mórbido.

DESCRITORES: Policitemia neonatal; Enfermagem; Saúde.

ABSTRACT

Objectives: the objectives of the study are to address the care provided by the nursing team in hematology and neonatal polycythenaemia. **Method:** integrative review studies of the literature. The content was addressed for the clinical conditions resulting from neonatal polycythesis. **Results:** the clinical manifestations resulting from the disease are extremely polymorphic and include virtually all organs and systems. The frequency of signs and symptoms in polycytomic individuals, however, varies widely in the literature. **Conclusion:** some studies show that most newborns are asymptomatic, while others find more than 50% of children with some type of symptom suggestive of the morbid process.

DESCRIPTORS: Neonatal polycythesis; Nursing; Health.

RESUMEM

Objetivos: los objetivos del estudio son abordar la atención prestada por el equipo de enfermería en hematología y policitenemia neonatal. **Método:** estudios de revisión integradora de la literatura. El contenido fue abordado para las condiciones clínicas resultantes de la policittesis neonatal.

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Resultados: las manifestaciones clínicas resultantes de la enfermedad son extremadamente polimórficas e incluyen prácticamente todos los órganos y sistemas. La frecuencia de signos y síntomas en individuos policitómicos, sin embargo, varía ampliamente en la literatura. **Conclusión:** algunos estudios muestran que la mayoría de los recién nacidos son asintomáticos, mientras que otros encuentran que más del 50% de los niños con algún tipo de sintoma sugieren el proceso mórbido.
DESCRIPTORES: Policittesis neonatal; Enfermería; Salud.

INTRODUCTION

Polycythemy and blood hyperviscosity are diagnoses based essentially on laboratory data. The definition of abnormality levels is quite controversial, especially in relation to hematocrit values. Although some authors correlate hematocrit values with lifetime, considering hematocrit of 70% in the first 12 hours and 65% after this period, most studies still consider the traditional definition greater than or equal to 65% in peripheral vein.[1]

Polycythenaemia and hyperviscosity are pathologies directly associated with several events that occur alone or together during the periods of pregnancy, intrapartum and immediate postnatal. Basically, these events can be divided into two large groups (active and passive) depending on their genesis. The active form corresponds mainly to cases of hyperproduction of red blood cells during fetal life, mainly due to hypoxia, while the passive form comprises the various forms of transfusions for the fetus.[1,2]

The systematization of the two groups ultimately traces the profile of the individuals most subject to the disease. Risk groups active form with excessive erythropoiesis: newborn (NB) small for gestational age; diabetic mother's son; son of a hypertensive mother; Down syndrome; trisomy 13 and 18; Thyrotoxicosis; congenital hypothyroidism; congenital suprarenal hyperplasia; Post-mature NB; Beckwith syndrome. Passive group excessive transfusion: late ligation of intentional cord or unattended delivery; cord milking;

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maternal-fetal transfusion; NB large for gestational age; perinatal asphyxia; maintenance of the child for a prolonged period below the placental level.[1-3]

Although the disease is defined by hematocrit greater 65% than or equal in the first week of life, the sensitivity of the diagnosis can be increased with blood collection being made between 2 and 4 hours after birth, due to the physiological hemoconcentration of this period. The sample should contain venous blood, preferably from the vein of the antecubital fossa, because the collection site represents one of the main modifying factors of hematocrit result, with a significant difference in the values between samples collected in venous puncture and peripheral heel.[1-3] The objectives of the study are to address the care provided by the nursing team in hematology and neonatal polycythenaemia.

METHOD

The content was addressed for the clinical conditions resulting from neonatal polycythesis. The manuals of the Ministry of Health were consulted, books, current legislations, and the Virtual Health Library (BVS). This is a review study of the book Manual of Neonatology, Center for Integral Attention to Women's Health (CAISM) of the State University of Campinas (UNICAMP). The information was added to studies of scientific articles.

This research was completed for the professional master's degree in Health and Technology in the Hospital Space by the Federal University of the State of Rio de Janeiro/RJ; the care performed in the collection of venous blood samples, which represents one of the main modifying factors of hematocrit result; nursing care in breastfeeding in special situations, and verify procedures performed in the treatment with blood products in situations of hemorrhages or irregularities in hematology in the newborn.

RESULTS AND DISCUSSIONS

The clinical manifestations resulting from the disease are extremely polymorphic and include virtually all organs and systems. The frequency of signs and symptoms in

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polycytomic individuals, however, varies widely in the literature. Some studies show that most newborns are asymptomatic, while others find more than 50% of children with some type of symptom suggestive of the morbid process.[1,2]

Clinical manifestations occurred due to hyperdynamic state, in cases of excess blood transfusion, or by decreased blood flow in the various organs or systems caused by hyperviscosity, studies show a significant difference in cerebral blood flow in polycytheic children when compared with normal children.[1-3]

The most common alterations are represented by eating problems, such as regurgitations, vomiting, gastric residues and abdominal distension, pletitus, poor peripheral perfusion, jaundice, lethargy/hypotonia or irritability/tremors, cyosis, respiratory difficulty and heart murmur. Severe manifestations such as thromboembolism, signs of congestive heart failure, persistence of fetal circulation, apnea crises, extreme irritability or seizures, renal failure, priapism, or classic signs of necrotizing enterocolitis are not uncommon.[1-3]

In addition, some biochemical changes such as hypoglycemia, hypocalcaemia, thrombocytopenia and hyperbilirubinemia can be seen, cardiomegaly, pleural infusion, and pulmonary congestion. Initially the treatment instituted in as targets the relief of acute symptoms and prevention of late sequelae, especially of the central nervous system.[1-4]

The effects of elevation of hematocrit at the capillary level is consequently the insufficiency of microcirculation, mainly cerebral, have small studies. Recent meta-analysis has failed to demonstrate evidence that treatment brings benefits in terms of prophylaxis of changes in neurological development in any individual, other than an increase in the incidence of necrotizing enterocolitis in treated.[1-4]

The most complex problem is the decision of which child should be treated, especially in the group of asymptomatic

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newborns. For asymptomatic newborns: maintenance of adequate hydration, with early feeding; blood glucose monitoring by reagent tape; rigorous observation of the appearance of signs and symptoms; clinical monitoring of jaundice evolution. The general guidelines for symptomatic newborns are monitoring and hydration; partial exsaguineotransfusion of exchange through catheterization of umbilical vein, preferably using plasma substitute, gelatin solution or saline; 5% albumin solution to decrease venous hematocrit up to 55%; treatment of associated metabolic disorders.[1-5]

For the maintenance of adequate hydration and early feeding, breastfeeding contains immunological components, favors faster uterine involution, reduces the risk of breast and ovarian cancer, being considered a natural method of family planning. Promotes the protection and support of breastfeeding: exclusive breastfeeding during the first six months and the maintenance of breast-feeding associated with complementary foods until the second year of life or more.[1-5]

Breastfeeding in special situations should be paid to avoid breast engorgement. Breastfeeding: milked breast milk, enriched breast milk, breast milk, enriched human breast milk, mixed, formula, exclusive breast-feeding, supplemented breast milk. Type of delivery, Gestational age. Pregnancy: single double, triple or more. Some questions need to be asked: was the mother oriented about breastfeeding? Did you receive information about the child's condition? Do you know the kangaroo position? Have you received guidance on The Joint Accommodation? Does the Hospital have a Human Milk Bank?[1]

In relation to milking, it should be done every three hours, for 10 minutes in each breast, at least seven times a day, with a maximum interval between each milking of five hours. Fresh milk, without any processing, can be stored in a refrigerator (4ºC) and used within 12 hours. Pasteurized and frozen breast milk at negative 20ºC can be stored for up to six months.[1]

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In a recent systematic review, the symptomatic newborn is considered to be the one with relevant signs and symptoms, such as: signs of congestive heart failure or difficulty breathing; important malinfusion and hypothermia that do not respond to warming; excessive lethargy or apneas/hypotonia or excessive irritability/convulsion; hypoglycemia accompanying another or recurrent manifestation; renal failure or priapism; severe gastrointestinal manifestations such as recurrent vomiting, abdominal disarrest, or signs that necrotizing enterocolitis have arisen.[1-5]

Both for the group of children in which only the appearance of manifestations, as for those treated, it is important to be at the service of complications and/or sequelae that include hyperbilirubinemia requiring phototherapy, congestive heart failure, cerebral thromboembolism with severe neurological manifestations (hemiparesis and/or early seizures), necrotizing enterocolitis, acute renal failure and peripheral gangrene.[1-4,6]

Factors involved in the pathophysiology of hemorrhages include: increased vascular fragility; decreased platelet function and platelet abnormalities, such as alloimmune thrombocytopenia and consumption thrombocytopenia; dependent decrease in vitamin K and contact factors due to hepatic immaturity; reduction of protective mechanisms against thrombosis; accentuation of transient deficiencies of coagulation factors in the neonatal period such as hemorrhagic syndrome of the newborn; deficiencies in coagulation factors due to associated pathologies, neonatal sepsis, or severe asphyxia; and deficiency of specific coagulation factors, such as hemophilias.[1-4,6]

Children who are in good general condition are probably subject to primary coagulation or trauma changes. in cases where there is only changes in platelet number or function; however, deep bleeding, ecchymosis in large areas, subcutaneous hemorrhages, and lack of petechiae may represent hereditary defects of coagulation factors. The presence of

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hemangiomas great may lead to high consumption of platelets and coagulation factors, with consequent presence of bleeding.[1-4,6]

Hemorrhagic disease caused by vitamin K deficiency is the main cause of bleeding in the healthy newborn, occurring classically in the 1st week of life, the early form with hemorrhages preferably by the gastrointestinal tract, while the late form occurs around 4 to 6 weeks in children with exclusive breastfeeding and who did not receive exclusive maternal prophylaxis and who receive prophylaxis at birth. It is important to point out that in digestive bleeding, especially in newborns in good general condition, it is interesting to characterize the origin of this bleeding through the Apt Test, because it can often be observed the existence of maternal deglutive blood.[1-4,6]

On the other hand, when we observe severely ill children, the most frequent association is with disseminated intravascular coagulation secondary to severe infections or asphyxias. Isolated severe liver disease is rare in the newborn, determining failure of the synthesis of coagulation factors, being related to viral conditions, hypoxia, shock or hydrops.[1-4,6]

Laboratory tests are essential for the correct diagnosis; in this aspect, the evaluation of prothrombin and thrombin time, and partial thromboplastin time, fibrinogen dosage, coagulation factor dosage and platelet adhesiveness can be considered. Blood count is essential, especially in the suspicion of disseminated intravascular coagulation.[1-4,6]

Treatment with blood products has undergone changes in recent years due to the development of blood preservation and storage techniques, the virtually exclusive use of component therapy and the enhancement of the risks of transmission of human immunodeficiency virus, CML and hepatitis C in transfusions. Most blood banks fractionate and then use the reconstitution process for infusion.[1-4,6]

When fresh blood collection is used for up to six hours, it contains cellular elements and coagulation factors. The labe

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factors (V and VIII) in this period remain stable, active, and viable. And when stored in a refrigerator for up to 35 days, whole blood stored, there is progressive decrease in ph, elevation of potassium, ammonia and free acids, decrease of 2,3-DPG and ATP and, after 24 hours, factors V and VIII become unfeasible.[1-4,6]

In units it corresponds to 500 ml and the anticoagulant used is CPDA-1 sodium citrate, citric acid, dextrose, phosphate, and adenine. The total blood, usually reconstituted, in the neonatal period is used, in most cases, quite accurate, giving preference to those with less than seven days of storage, mainly due to the amount of blood used in relation to the volemia of the recipient and its consequences in relation to the risks of severe metabolic disorders, hyperpotassemia. Indications are exsaguineotransfusion and oxygenation of extracorporeal membrane.[1-4,6]

CONCLUSION

Therefore, studies show that most newborns are asymptomatic, while others find more than 50% of children with some type of symptom suggestive of the morbid process. Some biochemical changes, such as hypoglycemia, hypocalcaemia, thrombocytopenia, and hyperbilirubinemia, such as cardiomegaly, pleural infusion, and pulmonary congestion; being associated with sequelae that include hyperbilirubinemia requiring phototherapy, congestive heart failure, cerebral thromboembolism with severe neurological manifestations (hemiparesis and/or early seizures), necrotizing enterocolitis, acute renal failure, and peripheral gangrene.

Regarding the active risk group with excessive erythropoiesis: newborn (NB) small for gestational age; diabetic mother's son; son of a hypertensive mother; Down syndrome; trisomy 13 and 18; Thyrotoxicosis; congenital hypothyroidism; congenital suprarenal hyperplasia; Post-mature NB; Beckwith syndrome. For asymptomatic newborns: maintenance of adequate hydration, with early feeding; blood glucose monitoring by reagent tape; rigorous observation of the appearance of signs and symptoms; clinical monitoring of

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jaundice evolution. Breastfeeding in special situations should be encouraged.

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