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RESEARCH ARTICLE

NEONATAL ANEMIA (ABOUT 162 CASES)

FZ. Khayi¹, F. Bennaoui², NS El Idrissi³ and FMR Maoulainine⁴

1. Neonatal Intensive Care Unit.
2. Associate Professor, Neonatal Intensive Care Unit, Mother and Child Hospital, Mohammed VI University Hospital, Marrakesh, Morocco, Childhood Health and Development Research Team, Marrakech Medical School, Cadi Ayyad University, Marrakesh, Morocco.
3. Senior Professor, Neonatal Intensive Care Unit, Mother and Child Hospital, Mohammed VI University Hospital, Marrakesh, Morocco, Childhood Health and Development Research Team, Marrakech Medical School, Cadi Ayyad University, Marrakesh, Morocco.
4. Head of Department of Neonatal Intensive Care Unit, Mother and Child Hospital, Mohammed VI University Hospital, Marrakesh, Morocco, Childhood Health and Development Research Team, Marrakech Medical School, Cadi Ayyad University, Marrakesh, Morocco.

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Abstract

This study aims to determine the frequency of neonatal anemia, to study the etiologies and to discuss the different therapeutic modalities. During the 18-month period from January 2021 to June 2022, 162 cases of neonatal anemia were recorded among 1280 hospitalizations, representing a frequency of 12.6% with a female predominance (63.5%), the sex ratio girl / boy is 1.7. Prematurity is frequent 41.9% with a predominance in the age group 32-34SA (39.7%). The average weight is $2,830 \pm 0,523$ kg [900g, 4400g]; The mean hemoglobin level is 11.303 ± 2.218 g/dl (2-14.3). Severe neonatal anemia is estimated at 9.2%. The analysis of the etiologies in our series showed a predominance of the infectious etiology (86 cases or 53%); anemia due to hemorrhage was noted in 35 newborns, is 21.6%, hemolytic origin in 21 cases, either 12.9%, and anemia considered unexplained in 20 newborns, or 12.3%. As for the treatment, the transfusion constitutes the basis of the treatment of this anemia, however it presents well-defined indications. Exchange transfusion has become a rare act, due to the advent of phototherapy. Depending on the etiology retained, an etiological treatment was instituted. Other therapeutic measures should be discussed in order to prevent and minimize the risks of anemia, particularly in premature babies: delayed clamping of the cord, erythropoietin. transfusion is the basis of the treatment of this anemia; however, it has well-defined indications. Exchange transfusion has become a rare act, due to the advent of phototherapy. Depending on the etiology retained, an etiological treatment was instituted. Other therapeutic measures should be discussed in order to prevent and minimize the risks of anemia, particularly in premature babies: delayed clamping of the cord, erythropoietin.

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Corresponding Author:- FZ. Khayi
Address:- Neonatal Intensive Care Unit.

Introduction:-

Neonatal anemia is defined as a hemoglobin or hematocrit concentration greater than 2 standard deviations below the mean for postnatal age. It is a frequent problem in the neonatal period, particularly in premature newborns and in neonatal intensive care units, its clinical symptoms vary according to its severity and tolerance [1].

Its definition in neonatology is complex, variable according to the authors and according to the age of the newborn. The most common definition is a hemoglobin level below 13.5 g/dl at the umbilical cord. Below 10 g/dl, the anemia is qualified as significant and below 8 g/dl, we speak of severe anemia with a risk of life-threatening and functional (neurological) risk [2]. Other authors define anemia by a hemoglobin level lower than 16 gr/dl the first 2 days of life, lower than 14 gr/dl between the 3rd and the 7th day and lower than 10 gr/dl between the 8th day and the 28th day [3].

This study aims to determine the frequency of neonatal anemia, to study the etiologies and to discuss the different therapeutic modalities.

Material and Methods:-

This is a retrospective study, covering 162 cases of neonatal anemia, collected in the neonatology department of the University Hospital Mohammed VI in Marrakesh during a period of 18 months, from January 2021 to JUNE 2022.

This work consisted of the study of files concerning newborns hospitalized in the department with an Hb level strictly lower than 14.5g/dl for premature babies and strictly lower than 13.5g/dl for newborns. term. Severe anemia is defined by an Hb level <7g/dl in full-term newborns and less than 10g/dl in premature babies. Statistical analyzes were obtained using Excel computer software.

Results:-

Over the 18-month period from January 2021 to June 2022, 162 cases of neonatal anemia were recorded among 1280 hospitalizations, a frequency of 12.6% with a female predominance (63.5%), the sex ratio girl / boy is 1.7. premature babies constitute a fairly large entity 41.9% with a predominance in the 32-34SA age group (39.7%). The average weight is 2,830+/-0,523kg [900g, 4400g]; The mean hemoglobin level is 11.303 +/- 2.218 g/dl [2-14.3g/dl]. Severe neonatal anemia is estimated at 9.2%. The analysis of the etiologies in our series had shown a predominance of the infectious etiology (86 cases or 53%); hemorrhage anemia was noted in 35 newborns, either 21.6%, hemolytic origin in 21 cases, or 12, 9% and anemia considered unexplained in 20 newborns or 12.3%. As for the treatment, the transfusion constitutes the basis of the treatment of this anemia, however it presents well-defined indications. Exchange transfusion has become a rare act, due to the advent of phototherapy, which remains the effective therapeutic intervention for the treatment of hyperbilirubinemia. Depending on the etiology retained, an etiological treatment was instituted.

Discussion:-

Neonatal anemia is a relatively common problem in the neonatal period [2]. It is a major concern in the neonatology department of the University Hospital Mohammed VI in Marrakesh. Its frequency is quite high in the population studied; in fact, it represents 12.6% of hospitalizations. In foreign series, its prevalence varies according to the recruitment methods and the epidemiological context. This is the case for Fez, it is 2.7% [4]; in Dakar it is 8.71% [5] and in sub-Saharan Africa very high prevalences are found 56.8% [6], 70% [7]. In sub-Saharan Africa (Mali), anemia is a frequent and serious pathology, especially in premature babies, its prevalence is 21.5% [8]. It predominates in the 32-34 WA age group (42.1%) [8], which is in agreement with our results (39.7%).

The etiologies of early neonatal anemias can be classified into three major groups anemia by blood loss (hemorrhage); anemia by destruction of red blood cells (hemolysis); anemia due to a lack of production of red blood cells (central anemia) [9].

Among immune hemolytic anemias, maternal-fetal blood incompatibility is a major cause in newborns and should be considered first in the face of neonatal anemia with jaundice [10]; hemolytic origin in our series is found at 21 new borne. 12.9%. Moreover, the most common constitutional hemolytic anemias are hereditary spherocytosis or

Minkowski-Chauffard disease and glucose-6-phosphate dehydrogenase (G6PD) deficiency. The diagnosis in the neonatal period can be distorted, osmotic resistance can be increased at birth and G6PD activity falsely normal or elevated in case of hyperreticulocytosis [2]. Apart from hemolytic anemias, we find hemorrhage anemias, which are involved in 5 to 10% of severe neonatal anemias and 25% of anemias present in newborns hospitalized in neonatology units [2]. In our series, hemorrhage was the cause of anemia in 35 cases, unlike the series from Baden (Marseille) [11] where only 3 cases were noted. Then we find anemia due to a lack of production of red blood cells, which is rare in newborns [2]. The etiology to be mentioned first is the infectious origin, whether viral or bacterial. The causes of neonatal anemia were dominated by neonatal infection (59.6%) [12], our study confirms this data (53% of etiologies are of infectious origin). In severe infectious syndromes, the mechanisms of anemia are multiple, associating not only erythroblastopenia but also hyperhemolysis due to microbial toxins [2].

Anemia of prematurity is anemia with a low reticulocyte count and an inappropriate response of erythropoietin secretion leading to the need for multiple transfusions in these children. Indeed, premature babies often show significant blood loss, as well as insufficient erythropoietin production associated with iron and vitamin deficiencies [13]. Indeed, according to STRAUSS, in the USA 70 to 80% of low-birth-weight newborns are transfused with an average of 10 transfusions per child; The particularities of transfusion specific to this period of life must be known to ensure optimal efficiency and minimize the risks inherent in this practice, which follows very specific rules [14]. However, the treatment of hyperbilirubinemia aims to avoid concentrations of bilirubin that can cause the onset of kernicterus. Phototherapy, which was introduced in the early 1970s, remains the effective therapeutic intervention for reducing elevated bilirubin levels associated with permanent sequelae [15]. As for exchange transfusion, it has now become a rare act, due to the reduction in the incidence of fetomaternal Rh incompatibilities, the shift in transfusion treatment of severe cases towards the antenatal period, and the development of intensive phototherapy with upward revision of the biological criteria indicating exchange transfusion for hyperbilirubinemia [15].

In addition, other associated measures can participate in the treatment, such as the use of recombinant human erythropoietin (administration of 250 IU/kg 3 times per week subcutaneously during the 6 weeks with per os iron treatment), blood-sparing measures (micromethods, percutaneous monitoring of gas exchange) and in the future the use of delayed clamping of the umbilical cord and use of placental autologous blood [16].

Conclusion:-

Anemia is common in the neonatal period, particularly in premature newborns, its etiologies are multiple: hemolysis, hemorrhage and production defect.

Its treatment is essentially based on the transfusion of red blood cells. This transfusion is not devoid of risk, hence the importance of establishing well-codified management protocols, emphasizing preventive strategies, in particular delayed cord clamping, iron supplementation and the administration of erythropoietin in premature newborns.

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