

MORPHOLOGICAL AND BIOCHEMICAL CORRELATIONS OF ERYTHROCYTE IN ANEMIA

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INTRODUCTION

From the multitude of diseases in the field of hematology, registered among the population, the most common of them is anemia. Given the fact that anemia is found in the most of individuals, regardless of sex, stage of ontogenetic development, race and that this condition includes more forms of manifestation, I undertook a case study on the case, a case study the results. We consider that this topic is one of major importance both in the field of medical biology and therapeutic practice, as we can validate the information obtained from research, to carry out the prophylaxis and reduction of the most common occurrences. with involvement in the hematological sphere, there is a cytological cause.

MATERIALS AND METHODS

The data were collected between January 1, 2020 - December 31, 2020. The necessary materials and collection were provided by authorized personnel from the Bacău County Emergency Hospital, Adult Medical Analysis Laboratory.

The biological material used was peripheral blood and medullary aspiration. For the investigation

of erythrocytes, hemoglobin, hematocrit and erythrocyte indices, venous blood collected on EDTA (anticoagulant) was used - cow with purple / pink cap-K3 EDTA.

The working methods used were the peripheral and medullary blood smear (medullogram), air-dried and stained May-Grunwald-Giemsa (at least 5 smears were investigated) and the complete blood count, for which the XN-3000 automatic analyzer was used on the principle of flow cytometry (flow cytometry), using semiconductor LASER and hydrodynamic focusing (fig. 1). The data provided by the patients' medical reports were also recorded, considering account the following sorting criteria: sex, age, origin, type of anemia.

RESULTS AND DISCUSSIONS

During 2020, 513 patients with modified (low) values of Hb <12g / dL and Ht <30% were detected, of which 458 patients with values of Hb <8g / dL and Hb <25%.

Of the total patients investigated, 89% have severe anemia and only 11% have mild anemia (Figure 2). As home origin, the most numerous anemics come from rural areas (58.9%, figure 3).



Fig. 1. Sysmex XN-300 Analyzer

And in the case of patients with severe anemia the situation is similar, most patients come from rural areas (58%, figure 4).

According to the criterion of sex, in our study women predominate, both in the total number of patients investigated (50.6%, figure 5) and in the category of severely anemic patients (50.8%, figure 6).

As expected, from the category of patients with severe anemia the blood group most affected is A positive (36.4%, figure 7), followed by group O positive (28.6, figure 7), being also the blood groups the most common in the population.

In terms of age, Figure 8 shows that the 41-50 age group has the highest percentage (31%). 31-40 years is the decade in which the frequency of anemias begins to increase. Of course, the other decades are not to be neglected either, knowing that some anemias are considered rare.

Although there are more than 400 types of anemia, some very rare, in our study we found 8 types, namely: microcytic, normochromic, hypochromic, macrocytic, iron deficiency, prematurity, NN (Normocytic, Normochromic) and post-hemorrhagic. The most common was the hypochromic microcytic (35.1%, figure 9), followed by the iron (19.5%, figure 9). In microcytic anemia, heme deficiency is predominant (53.2%, figure 10) and hypochromia predominates (57%, figure 13). In macrocytic anemia, medullary megaloblastosis is present (66.6%, figure 11). Normochromic, normocytic anemias are 80% regenerative (Figure 12). Iron deficiency anemias are characterized by iron deficiency (80%, Figure 14). In the case of post-hemorrhagic anemias, the most common condition in their generation are liver cirrhosis (40%, figure 15).

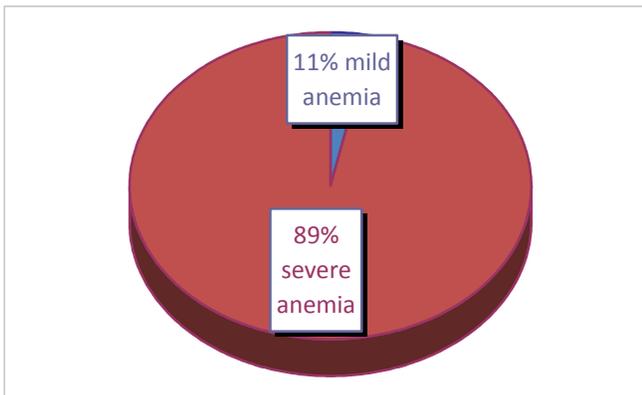


Fig. 2. Graphical representation of the subjects on the criterion: mild anemias, severe anemias.

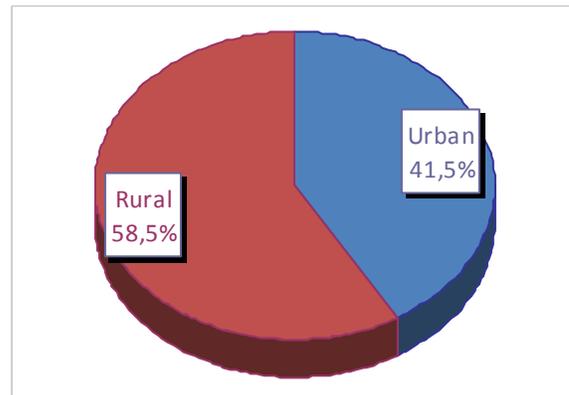


Fig. 3. Graphical representation of the subjects on the criterion: urban/rural

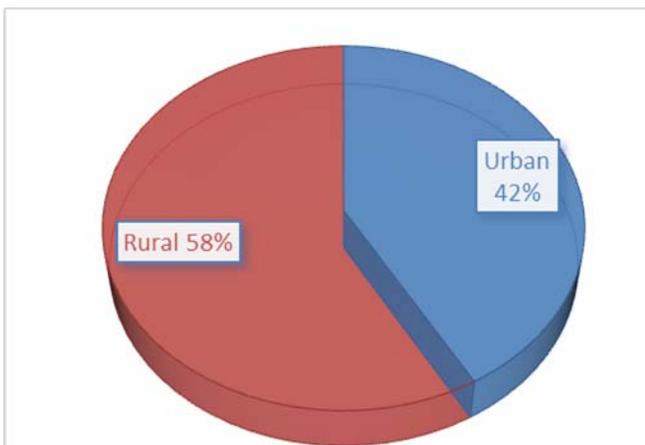


Fig. 4. Graphic representation of subjects with severe anemia on the criterion: urban / rural

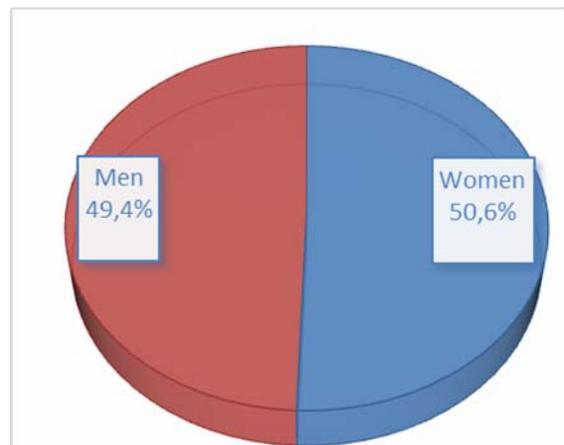


Fig. 5. Graphical representation of patients with anemia on the criterion: sex

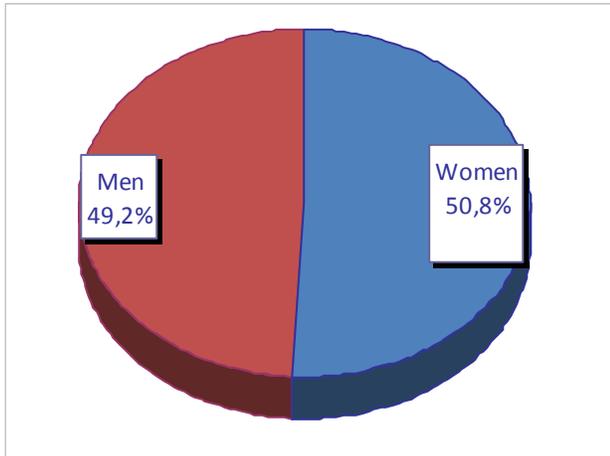


Fig. 6. Graphical representation of patients with severe anemia by criterion: sex

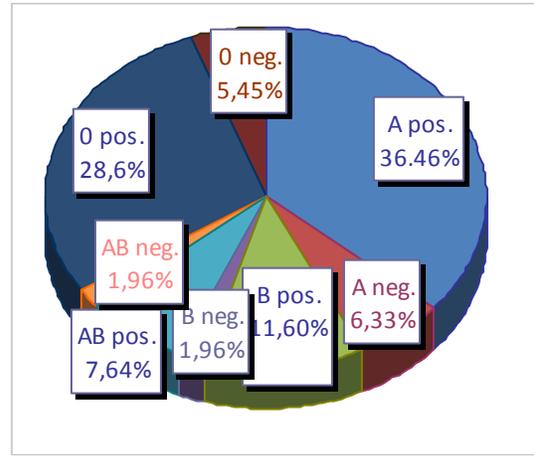


Fig. 7. Graphical representation of patients with severe anemia by criterion: blood groups



Fig. 8. Graphical representation of enemy patients on the criterion: age

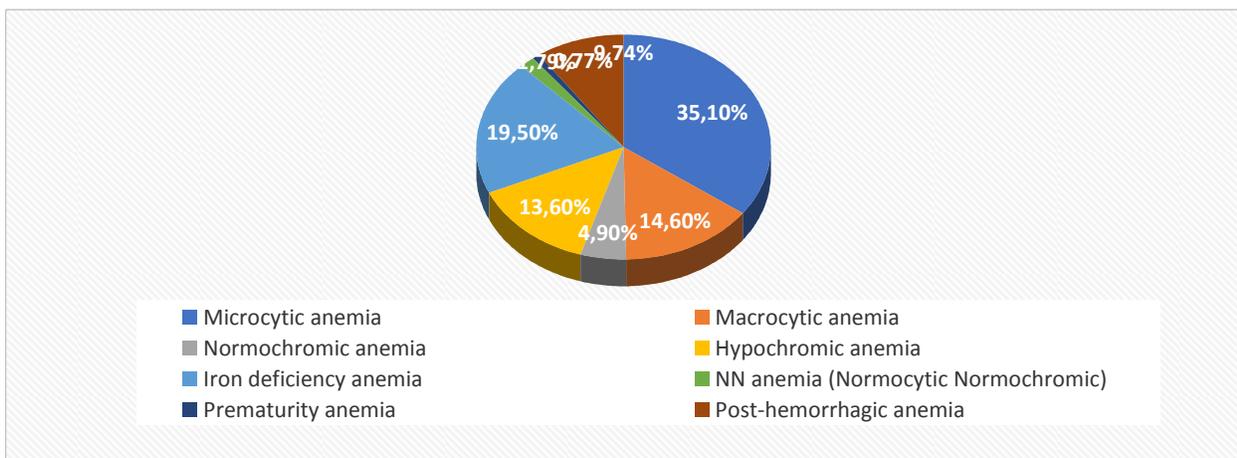


Fig. 9. Graphical representation of patients with different types of anemia

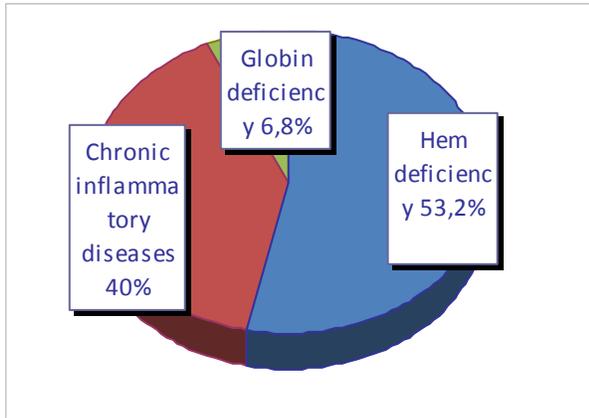


Fig. 10. Graphical representation of patients with microcytic anemias CHEM <33%, VEM <80%

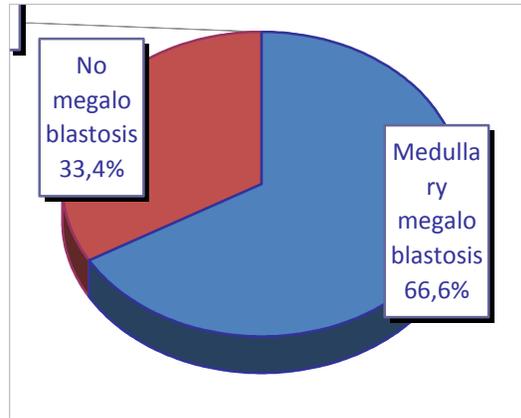


Fig. 11. Graphical representation of patients with macrocytic anemia VEM > 80 fl

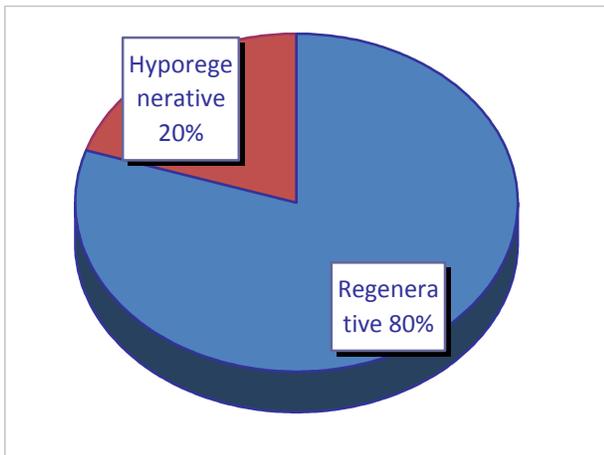


Fig. 12. Graphical representation of patients with normochromic, normocytic anemias VEM= 80 fl, CHEM=33%

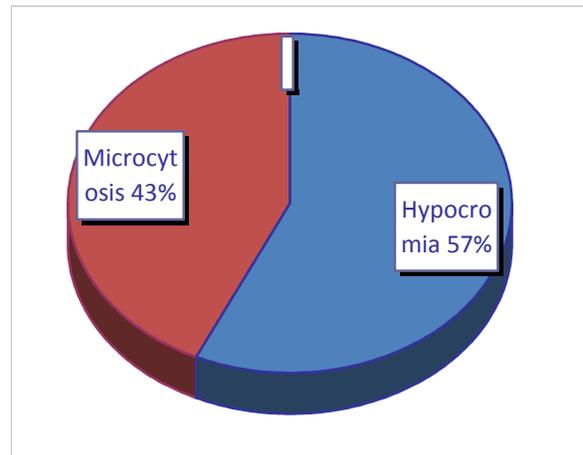


Fig. 13. Graphical representation of patients with anemia with globin synthesis deficiency (hypochromia, microcytosis)

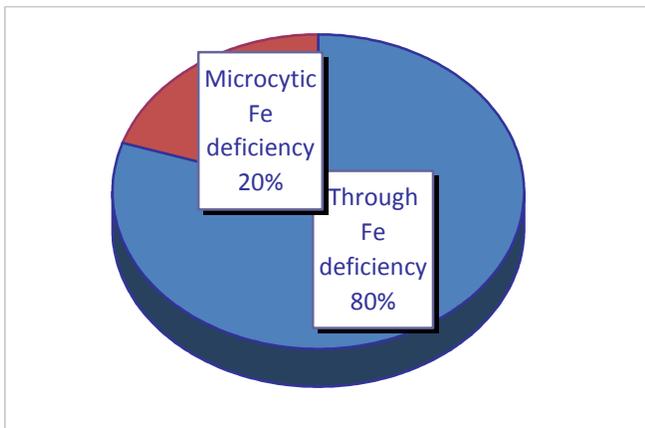


Fig. 14. Graphical representation of patients with iron deficiency anemia (disorders of HEM synthesis)

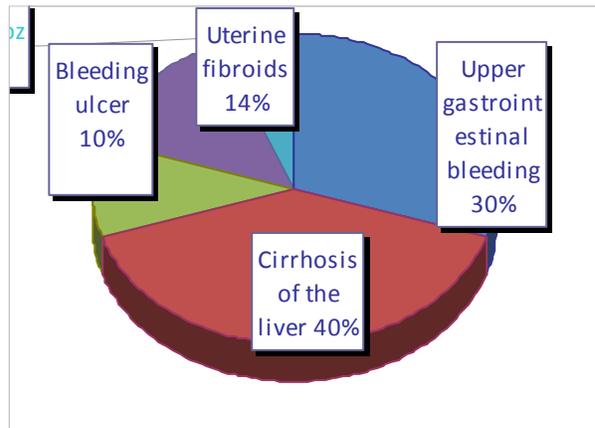


Fig. 15. Graphical representation of patients with chronic post-haemorrhagic anemia

CONCLUSIONS

Through our research, the following aspects are highlighted:

- The researched parameters (erythrocyte size, their shape, age and sex of patients) show significant changes that serve to identify the type of anemia and monitor therapeutic progress.
- Compared to the normal threshold, the most common change in erythrocytes is the size (microcytes, spherocytes), followed by the shape (ovalocytes, phallic).
- The most pronounced changes occur among microcytic anemias, they being more common among the female population.
- Among the microcytic anemias, the most common are the hypochromic ones.
- Among the macrocytic anemias are the megaloblastic ones with Vit B12 and folic acid deficiency.
- Analyzing the patients on the "age" criterion, it is found that anemias appear more frequently after the age of 30 years.
- At the same time, statistical analysis shows that the less severe forms are present in young people and over 50 years of age appear to be more severe anemia.

ABSTRACT

During 2020 (January 1 - December 31) investigations were made of erythrocytes, hemoglobin, hematocrit and erythrocyte indices on peripheral blood and spinal cord aspiration in 513 patients admitted to the departments of the Bacău County Emergency Hospital with various forms of anemia. of the total patients investigated, 89% had severe anemia and only 11% had mild anemia. In our study we found 8 types of anemia, namely: microcytic, normochromic, hypochromic, macrocytic, iron deficiency, prematurity, N.N. (normochromic, normocytic) and post-hemorrhagic. The most common was the hypochromic microcytic, followed by iron.

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