

Epidemiological, Clinical, Biological and Etiological Aspects of Hypochromic Microcytic Anemia in Aged Persons



Mzabi A, Marrackchi W*, Alaya Z, Ben Fredj F, Anoun J, Rezgui A and Kechrid Laouani C

Service de médecine interne CHU Sahloul Sousse, Tunisie

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*Corresponding author: Wafa Marrakchi, Medical doctor, Sousse, Tunisia, Sahloul hospital Tunisia, Africa, Tel: 0021624549017; Email: marrackchiwafa02@gmail.com

Abstract

Purpose: Hypochromic microcytic anemia is a common hematological abnormality in the older people. The aim of this study is to determine the epidemiological, clinical and biological characteristics and causes of the hypochromic microcytic anemia in elderly patients.

Patients and Methods: We performed a retrospective study of 124 patients aged 65 years and older who were hospitalized for hypochromic microcytic anemia in the internal Medicine Department.

Result: Sixty nine women and fifty five men were included in the study. The mean age was 75 years and 4 months. Iron deficiency anemia was diagnosed in 72 cases (58.1%). A gastrointestinal bleeding was the most common etiology (59.7 %). Anemia was poorly tolerated in 30.5 % of cases. Serum iron and ferritin were low in the majority of cases. An inflammatory origin of anemia diagnosed in 52 cases (41.9%). Cancers and thromboembolic causes were the most frequent etiology in these cases. The multifactorial anemia was in 15 of the patients (12%).

Conclusion: A comprehensive history, physical examination, and laboratory evaluation are required for an elderly person found to have anemia.

Keywords: Hypochromic Microcytic Anemia; Elderly; Etiology; Clinical Characteristics

Mini Review

Aging is the set of organic, physiological and psychological changes that occur with advancing age. The World Health Organization (WHO) defines the elderly subject (ES) as a person whose age is greater than or equal to 65 years old [1]. Aging is related to several health problems affecting different organs and making the geriatric pathology varied and difficult to manage. These problems include anemia, which remains the most common hematologic problem in geriatrics [2]. Literature data shows the increase in the prevalence of anemia with age and especially after 65 years old. In fact, 11% of men and 10.2% of women over 65 are anemic [3,4]. Hypochromic Microcytic Anemia (HMA) is the most common type in ES. The objective of this work is to determine, the epidemiological, clinical and biological profile according to the etiology of the HMA of elderly patients hospitalized in the department of internal medicine of the University Hospital Center (UHC) Sahloul during the period from January 1999 to January 2015.

Patients and Methods

A cross-sectional study including patients whose age was greater than or equal to 65 years old, hospitalized for HMA in the internal medicine department of UHC Sahloul de Sousse during the study period from January 1999 to January 2015 regardless of their medical and surgical history. The data was collected from patients' medical records using a form for this

study, which included epidemiological, clinical, biological and etiological data. In our study, anemia is defined according to the WHO by a rate of hemoglobin (Hb) less than 13g/dl in men and 12 g/dl in women [1]. Anemia is called microcytic hypochromia if the Mean Hemoglobin Corpuscular content (MHCC) and the Mean Corpuscular Volume (MCV) are respectively less than 27 pg and 80 fl / l.

Results

Between January 1999 and January 2015, the total number of elderly, anemic subjects hospitalized in the internal medicine department of CHU Sahloul; was 625. Among them, 124 patients (19.8%) had an HMA. It was 7.5% of all ES hospitalization grounds in our department. The average age of patients was 75.4 years old (65-97 years old). The most common age range was between 76 and 80 years (60%). Our study included 55 men (44.4%) and 69 women (55.6%), the sex ratio was 0.8.

Iron Deficiency Anemia

Iron Deficiency Anemia (IDA) was observed in 72 patients (58% of cases). Among them, there were 42 women (58%) and 30 men (42%); the sex ratio was 0.76. Anemic syndrome was observed in 96% of cases. The most common clinical signs were cutaneo-mucous pallor (84.7% of cases) and asthenia (66.7% of cases). The most common signs of intolerance for anemia were poorly tolerated tachycardia (37.5% of cases) followed by rest

dyspnea (19.4% of cases) and cardiac arrhythmias (19.4%). Anemia was poorly tolerated in 30.5% of patients. Of the latter, 18 had a history of cardiorespiratory pathology (Table 1).

summarizes the biological characteristics of patients with IDA. Blood spoliation was the most common cause of IDA (69.4% of AF cases). The different etiologies are grouped in Table 2.

Table 1: biological aspects of anemia in ES.

	Iron Deficiency Anemia		Inflammatory Anemia	
	Average	Min-Max	Average	Min-Max
Hemoglobin (g/dl)	7.80 (2.21)	3.6-12.2	9.97	3.6-12.9
Red cells (GRx106 elements / mm ³)	3.71 (0.75)	1.75-5.32	4.31	1.97- 5.76
MCV (fl)	68.6 (7.68)	52.2-79.9	-	-
MHCC (g/dl)	29.4 (3.03)	21.9-35.2	-	-
MHCT (pg/cellule)	20.4 (3.36)	13.8-26.3	22.2	16.7-27
reticulocytes (elements / mm ³)	55184-34847	4040-119100	24233	16000-51700
platelets (elements mm ³)	317204-144231	41300-669000	311000	85000-907000
White cells (elements / mm ³)	8273 (5261)	3080- 37920	11967	3290 - 27800
Serum iron µmol/l	4.9 (4.1)	22-Jan	13.71	Jan-42
Ferritinemia µg/l	10.5 (6.07)	Feb-30	248,72	197 - 449

Table 2: Etiological aspects of anemia in ES.

Etiologies	NB	(%)
Iron deficiency anemia	72	58.1
bleeding	50	69,4
digestif	43	
gynecologiacl	3	
Hematuria	3	
Epistaxis	1	
Malnutrition	22	30.5
Malabsorption of iron	17	23.6
Gastroctomy	9	
Geophagy	4	
Inflammatory bowel disaeses	4	
Inflammatory anemia	52	41,9
Cancers	15	28,8
prostatic	10	
lung	3	
lymphoma	2	
Thromboembolic causes	11	21,1
Chronic infections	9	17.3
Hepatitis B	4	
Tuberculosis	4	
Hepatitis C	3	
Osteomyelitis	1	
Inflammatory diseases :	8	15,4
Horton disease	5	
Lupus	1	
Pseudo polyarthrits	1	
Systemic scleroderma	1	
Indetermined etiology	9	17,3

Inflammatory Anemia (IA)

Anemia was of inflammatory origin in 52 cases (41.9% of microcytic hypochromic anemias). The average age of patients with inflammatory anemia was 76 years with extremes of 65 and 97 years. Anemic syndrome was present in 7 patients (13.7% of cases). The most common signs were cutaneo-mucous pallor (6 cases) and asthenia (5 cases). Table 1 summarizes the biological characteristics of IA patients. An etiology of IA was noted in 43 cases (82.7% of cases).

Multifactorial Anemia

It was caused by different comorbidities and / or acute intercurrent pathologies (infection, malnutrition, bleeding). It was present in 15 patients (12% of cases) including 7 men and 8 women.

Discussion

Our study has established the clinical, biological and epidemiological profile of anemia in elderly patients hospitalized for a period of 15 years. This period represents a strong point of the study, making it possible to list the main types of anemia as well as their clinical, biological and etiological characteristics. However, there are some limitations to be noted such as iron self-medication before hospitalization, which can influence the results in some cases. Anemia remains the most common hematologic problem in geriatrics and is responsible for significant morbidity and mortality [1]. The evaluation of the frequency of anemia in the elderly population varies widely according to the studies. This variability can be explained by the heterogeneity of the populations studied in terms of age, social conditions, co-morbidities and ethnicities. Added to this, the variability is also related to the definition of anemia in ES [1,2]. In our series, the number of ES with an HMA was 124 cases, which is 7.5%. Several studies [4]. have shown that the frequency of HMA increases proportionally with age, especially after age. In a study conducted in 2009, including 126 patients over the age of 65 with an HMA; Patiakas found an average age of 78 years and 10 months [5]. In addition, several authors have described the action of testosterone on hematopoietic organs. Indeed, testosterone exerts a stimulating effect on normal erythropoiesis by acting either directly on the stem cells, or indirectly by stimulating the production of erythropoietin [6]. In our series, there was a female predominance (69 women: 55.6%). Iron deficiency anemia is the main cause of deficiency anemia in ES [7]. The incidence of IDA in ES was 3.5 to 5.3% in Anglo-Saxon series [8].

In our study, the frequency of IDA was 11.2% in relation to all the etiologies of SA anemias. Our population was relatively young compared to those described in the literature. Indeed, in a French study conducted in 2011 [9]. the average age of patients with IDA was 79.5 years. In addition, a predominance of women has been noted in our series. Regarding clinical signs, the anemic syndrome may be difficult to diagnose in some cases, especially when anemia gradually appears with better tolerance

even at a very advanced stage. In our study, cutaneous-mucous pallor was the most frequently observed sign (84.7% of cases) followed by asthenia (66.7% of cases). In the Chebbi et al. [10] Series, the most common clinical signs were cutaneo-mucous pallor and asthenia [10]. The coexistence of other pathologies plays an important role in the tolerance of anemia. The latter may be a decompensation factor for another cardiovascular, neurovascular or neuropsychiatric pathology [11]. In our study, anemia was poorly tolerated in 30.5% of IDA cases. Regarding biological characteristics, the average Hb level was 7.8 g / dl in our study. In a series including 104 elderly anemic subjects [12]. the mean value of Hb was slightly higher.

The number of reticulocytes is important for assessing the regenerative or non-regenerative nature of anemia [13]. The determination of serum ferritin is the best μ indicator of iron deficiency. μ Szymanowicz [13]. defines hyperreninemia as serotoninemia less than 30 g/l in men and less than 20g/l in women. In ES, almost all iron deficiency types of anemia are associated with chronic bleeding, most often digestive. Other bleeds may be less frequently involved such as menu-metrorrhagia, gross hematuria, abundant and recurrent epistaxis [14]. In our series, digestive bleeding was the most common cause of blood spoliation (86% of cases). It was essentially related to a peptic ulcer. Gastroduodenal ulcers and gastritis accounted for the most common etiologies of digestive bleeding in the Chebbi et al. [10] and in that of Serraj et al. [7] In the literature, chronic bleeding at the origin of IDA in ES is rarely extra digestive. In our series, extra digestive bleeding was associated with gynecologic bleeding (3 cases), hematuria (one case) and recurrent epistaxis (one case). Iron deficiency anemia due to lack of iron absorption is most often related to gastrectomy's, pelvic resections and more rarely to geophagy. Nutritional deficiency of nutritional origin remains rare in the elderly [7].

Inflammatory Anemia

Inflammation is the leading cause of anemia in ES [15,16]. Its frequency with respect to all anemia varies from 11.1% to 43.3% of anemia [3,4]. In our study, anemia was of inflammatory origin in 41.9% of cases. IA is well tolerated, and the functional signs of anemia are uncommon except in advanced forms or in cases of very severe causal pathology. It is initially normocytic norm chromium. At a more advanced stage, during a prolonged inflammatory syndrome, it becomes hypochromic microcytic [15]. In our study, the MCV ranged from 70.07 to 79.9 fl with an average of 74.7%. Anemia is usually moderate; the Hb level is inversely correlated with the intensity and duration of the inflammatory syndrome [15]. In our series, the average Hb level was 9.97g / dl. In inflammatory anemia, reticulocytes can be normal or decreased [16]. The decline in the serum iron is moderate and early onset during the was IA [17]. Serotoninemia μ mol/lumen is usually ferritin level sated were during inflammatory μ g/l. Incurrentanemiapractice, outstudy, the mean serum iron elevated sedimentation rate (SR), C-reactive protein (CRP) and fibrinogen are sufficient to establish the diagnosis

of the inflammatory syndrome that accompanies IA in ES [18]. In our study, the etiologies of IA were dominated by neoplastic causes (15 cases) followed by thromboembolic causes (11 cases). Concerning neoplastic pathology, similar results were observed in the Khaldun series [3].

Conclusion

The HMA is responsible for significant morbidity and mortality in the ES. IDA remains the most common etiology. It is essentially related to digestive bleeding. The clinical picture is dominated by cutaneo-mucous pallor and asthenia. The IA holds the second place. The clinical picture is dominated by signs of causal pathology. The neoplastic cause remains the most frequent cause of IA. HMA can be as multifactorial. A martial assessment as well as an inflammatory assessment remain fundamental to guide the etiological investigation.

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