

## MINIREVIEW

# EMERGENCY ROOM: THE GERIATRIC PATIENTS WITH SEVERE ANAEMIA – CAUSES AND MANAGEMENT

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### ABSTRACT

Anaemia is a pathology encountered very often among geriatric patients and mostly it is secondary to a chronic disease or an acute/ chronic loss of blood. Therefore, it should not be considered as a possible physiological consequence of aging. Anaemia is recognized as a risk factor for a series of effects with a negative impact on the subsequent evolution of geriatric patients, such as a prolonged duration of hospitalization, higher morbidity, and mortality. In most cases, geriatric patients have a series of cardiovascular comorbidities which, in association with anaemia, can further increase the risks. Most geriatric patients with severe anaemia present to the emergency room for upper digestive hemorrhage. This article will focus especially on this pathology, with a complete description of the causes and treatment methods in these patients.

**Keywords:** geriatric patients, chronic disease, anaemia, emergency department.

### RÉSUMÉ

**Département d'urgence : les patients gériatriques ayant une anémie sévère – causes et prise en charge**

L'anémie est une pathologie rencontrée très souvent chez les patients gériatriques et le plus souvent elle est secondaire à une maladie chronique ou à une perte aigue ou chronique de sang, elle doit donc être traitée comme une possible conséquence physiologique du vieillissement. L'anémie est reconnue comme un facteur de risque pour une série d'effets ayant un impact négatif sur l'évolution ultérieure du patient gériatrique, tels que l'augmentation de la durée d'hospitalisation, l'augmentation de la morbidité et de la mortalité. Dans la plupart des cas, les patients gériatriques présentent une série de comorbidités de nature cardiovasculaire qui, associées à l'anémie, peuvent encore augmenter les risques. La cause la plus fréquente pour laquelle les patients gériatriques souffrant d'anémie sévère se rendent aux urgences est l'hémorragie digestive haute, c'est pourquoi cet article se concentrera particulièrement sur cette pathologie, avec une description complète des causes et des méthodes de traitement dans cette catégorie d'âge.

**Mots-clés:** patients gériatriques, maladie chronique, anémie, département d'urgence.

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## INTRODUCTION

The geriatric patient requires special attention and care from the emergency room staff, as well as a complex clinical and paraclinical evaluation, due to the multiple comorbidities that most of elderly people suffer from<sup>1,3</sup>. These patients should be approached by multidisciplinary teams. This article will focus mainly on geriatric patients with severe anaemia who present to the emergency room, especially those with severe anaemia caused by upper digestive hemorrhage and will point out the main causes and treatment methods.

Anaemia is a common condition among older adults. The prevalence of anaemia increases with advanced age and exceeds by 20% in patients over 85 years old<sup>4</sup>. The World Health Organization defines anaemia according to haemoglobin value, without any difference between young/adult patients or geriatric patients<sup>4,6</sup>.

According to the World Health Organization, the age groups are as follows: infant (1-2 years), toddler (2-4 years), child (5-12 years), teenager (13-19 years), adult (20-39 years), middle-aged adult (40-59 years) and senior adult (>60 years). The senior adult's category is divided into three subcategories: elderly age (60-75 years), senile age (75-90 years) and long lives (>90 years)<sup>7</sup>. As a definition, geriatric patients are those over 80 years old<sup>8</sup>. Geriatric patients with multiple comorbidities and severe anaemia represent a challenge for physicians in the emergency room, as they require complex and multidisciplinary care<sup>9,10</sup>. Unlike the adult patient, without associated pathology, the geriatric patient in most cases follows drug treatment, especially chronic anticoagulant or antiplatelet treatment that additionally increases the risk of bleeding.

The pathophysiological mechanisms that can lead to anaemia among geriatric patients are multiple, the most common being represented by anaemia from chronic diseases or chronic blood loss. Other causes of anaemia in geriatric patients are vitamin B12 deficiency, folate deficiency, myelodysplastic syndrome, or another haematological pathologies<sup>10,12</sup>.

In senior adults, anaemia is associated with a poor physical status, dementia, depression, reduced mobility, increased risk of falling and low quality of life<sup>13,14</sup>. In geriatric patients with various cardiovascular comorbidities or chronic diseases, anaemia worsens the patients' prognosis<sup>14</sup>. The symptomatology is variable, depending on the aetiology of anaemia and its acute or chronic occurrence. In the case of significant digestive haemorrhage, patients usually present to the emergency department for the emission of melenic/haematochezic stool or haematemesis<sup>15</sup>.

Patients with chronic blood loss usually present with non-specific symptoms, such as fatigue, muscle weakness, syncope, lipothymia, skin pallor, dizziness, previous chest pain, dyspnoea or palpitations<sup>16</sup>. Severe anaemia in the patient with multiple comorbidities and non-specific symptoms can also be discovered accidentally during a routine blood count<sup>16,17</sup>. Even in these cases, the patient has an indication for upper digestive endoscopy to exclude a possible lesion with haemorrhagic potential. If the endoscopic examination does not identify a source of bleeding, the patient will benefit from hydro-electrolytic rebalancing and blood transfusions. Later, it will be possible to continue the diagnostic investigations, to identify the aetiology of anaemia.

This article will focus on the emergency that brings the geriatric patient with anaemia to the emergency department, detailing the aetiology and specific therapeutic management.

## AETIOLOGY OF ANAEMIA IN GERIATRIC PATIENTS

Anaemia in geriatric patients can have different aetiologies, such as chronic or inflammatory pathologies, chronic kidney disease, liver disease, various malignancies, haematological diseases – myelodysplastic syndrome, which is the most common haematological pathology in this age group, or chronic iron loss<sup>17,18</sup>. Geriatric patients can often present multiple causes that determine anaemia, which increases the complexity of the case.

When the patient is admitted to the emergency room, it is important to determine the severity potential. In the case of the geriatric patient, the association of some comorbidities with anaemia leads to an important negative impact on his prognosis<sup>20,21</sup>.

One of the main causes of presentation of geriatric patients with severe anaemia to the emergency room is upper digestive bleeding<sup>19</sup>. The most frequent aetiologies of upper digestive bleeding in these patients are gastro-duodenal ulcer, various gastrointestinal malignancies, vascular malformations, oesophagitis, hiatal hernia, and chronic use of anticoagulants and/or nonsteroidal anti-inflammatory drugs (NSAIDs)<sup>21</sup>.

*Gastro-duodenal ulcer* is the main cause of presentation to the emergency room of senior adults, and its incidence increases with age. From a clinical point of view, the patient most frequently presents with haematemesis and/or melena. In rare cases with abundant digestive bleeding, they may present haematochezia<sup>22,23</sup>. A careful history can identify several risk factors for the peptic pathology, such as history of gastro-duodenal ulcer, chronic use of warfarin or

other oral anticoagulants, NSAIDs, aspirin, corticosteroid, or history of digestive surgery<sup>23,24</sup>

*Vascular malformations* are another cause of severe anaemia in the geriatric patient and may be represented by:

- Antral vascular ectasia.
- Gastric/duodenal angiectasia.
- Dieulafoy's lesion.

Antral vascular ectasia does not have a known cause until now, but it has been observed that it is associated with a series of comorbidities frequently encountered in geriatric patients, such as chronic kidney disease, cardiovascular diseases, collagen diseases and systemic sclerosis. Endoscopically, the characteristic appearance is of dilated blood vessels or red spots that converge towards the pylorus<sup>25,26</sup>. Gastric angiectasias and Dieulafoy's lesions occur most frequently at the level of the proximal stomach, but they can also be present at the level of other digestive segments, such as the small or large intestine<sup>26,27</sup>.

*Gastrointestinal tumours* are also a frequent cause of severe anaemia that brings the patient to the emergency department. In most cases, the bleeding is self-limited<sup>28-30</sup>. The most common types of digestive tumours found in the elderly are:

- gastric tumours;
- esophageal tumours;
- ulcerated gastrointestinal stromal tumours (GIST).

*Oesophagitis, gastritis and erosive duodenitis* represent other possible aetiologies of anaemia. Among the geriatric patients who perform endoscopic examination, some show inflammatory changes in the digestive mucosa that can evolve with minimal bleeding and secondary anaemia.

*The giant hiatal hernia* can finally lead to the appearance of linear erosions or even ulcers at the level of the diaphragmatic hiatus. These erosions or ulcerations, described in the literature as Cameron lesions, can finally lead to chronic blood loss and the presentation of the geriatric patient to the emergency room with severe anaemia<sup>31</sup>.

*The Mallory-Weiss lesion* represents a mucosal tear at the level of the gastro-oesophageal junction. It appears because of the vomiting effort and can be a cause of severe anaemia. However, in most cases the bleeding is self-limiting and drug treatment is sufficient<sup>26</sup>.

The chronic use of NSAIDs and anticoagulants is an additional risk factor that increases the risk of bleeding, both through direct and indirect mechanisms<sup>32,33</sup>.

Relying only on the history and clinical examination it is difficult to make a differential diagnosis, because the symptoms are similar. Upper digestive endoscopy is the most sensitive and specific paraclinical

investigation in establishing the aetiology of upper digestive haemorrhage, also having a therapeutic role. In geriatric patients with anaemia and a positive occult bleeding test, upper digestive endoscopy can establish the diagnosis of chronic gastritis, peptic ulcer, oesophagitis or esophageal carcinoma in over 50% of cases<sup>33</sup>. Thus, a positive occult bleeding test in a geriatric patient will most often raise the suspicion of an organic pathology that will require additional investigations. In 10% of cases, the anaemia does not have a clinically or imaging-detectable cause<sup>33</sup>.

## MANAGEMENT OF ANAEMIA IN GERIATRIC PATIENTS

The therapeutic management of geriatric patients with severe anaemia and upper digestive haemorrhage is the same as in the case of other adult patients, with the particularity that the association of comorbidities in the elderly worsens the prognosis of these patients<sup>34</sup>. Thus, among the risk factors associated with increased morbidity and mortality are advanced age, shock on admission, association of two comorbidities, severe bleeding, giant ulcer, recurrent bleeding or the need for emergency surgery<sup>34,35</sup>. The size and location of the ulcer are important criteria in assessing the risk of rebleeding. It is well known that a large ulcer, over 2 cm, is associated with a reduction in the success rate of endoscopic hemostasis and a high rate of rebleeding<sup>34,35</sup>.

Initially, in the emergency room, the geriatric patient with severe anaemia and upper digestive haemorrhage requires hydro-electrolytic treatment and blood transfusion, with the maintenance of clinical and biological constants, to allow the endoscopic procedure to be performed within safety conditions. As a particularity, in patients with multiple comorbidities, a larger transfusion intake is needed most of the time than in a patient without cardiovascular comorbidities, but the lower limit of haemoglobin will be different. Medical therapy is standard, regardless of the type of injury. The treatment with proton pump inhibitors is started from the emergency room with the administration of two bolus vials followed by the continuous administration on the syringe pump during the first 72 hours<sup>34,35</sup>.

In the case of gastro-duodenal ulcer, endoscopic haemostasis is taken into consideration depending on the type of lesion, according to the Forrest classification. Forrest Ia, Ib, IIa and sometimes IIb lesions require the use of two associated methods of endoscopic haemostasis<sup>34,35</sup>. The methods of haemostasis are divided into several categories:

- *Chemical endoscopic haemostasis* uses the injection of various substances, especially adrenaline in dilution, but other sclerosing substances can also be used.

- *Thermal endoscopic haemostasis* comes to the aid of the first method by electrocoagulation of the lesions, especially in the case of visible vessels. Either electrocoagulation, thermocoagulation or coagulation with argon plasma can be practiced.
- *Mechanical endoscopic haemostasis* consists in the application of various categories of haemoclips.

The haemospray can be useful especially in the case of hard-to-reach injuries, with very good results in obtaining haemostasis and in controlling rebleeding. The only disadvantage is the fact that the bleeding must be active, for the haemospray to work properly<sup>36</sup>.

In case of rebleeding, endoscopic intervention will be performed again, with satisfactory results in more than 50% of cases. The other half of patients with rebleeding will require haemostatic angiographic or surgical therapy<sup>36,37</sup>.

Angiographic therapy is used as a complementary method after repeated failed attempts at mixed endoscopic haemostasis. This method presents associated risks and complications, especially in this category of patients. Complications of arteriographic therapy can be ischaemia, infarction, arrhythmias and perforations<sup>37,38</sup>.

Surgical haemostasis must remain the last option of treatment. In geriatric patients with severe anaemia and multiple associated comorbidities, the risks of a surgical intervention are very high. Therefore, this method should be considered as the last option, after all the other methods described previously have been tried, but without obtaining the desired results.

As in the case of gastro-duodenal ulcers and vascular malformations, the therapy of choice is endoscopic haemostasis. The association of at least two endoscopic haemostatic methods usually leads to bleeding cessation, rarely requiring surgical or angiographic treatment<sup>37,38</sup>.

In the case of haemorrhagic gastrointestinal tumours, it has been observed that chemical and thermal haemostasis are most effective, mechanical haemostasis being less effective in the case of extensive, proliferative-vegetative, and partially ulcerated tumour lesions<sup>28,30</sup>.

Oesophagitis, gastritis or duodenitis usually do not require endoscopic haemostasis, the bleeding being minimal and self-limiting. Thus, drug treatment with proton pump inhibitors is most often effective for these patients<sup>25,26</sup>.

Mallory-Weiss syndrome usually leads to minimal, self-limited bleeding that most often requires only drug therapy with proton pump inhibitors. In case of more significant bleeding, as in the other cases discussed above, chemical, thermal or mechanical endoscopic haemostasis can be performed<sup>25,26</sup>.

## CONCLUSIONS

The geriatric patient with severe anaemia who presents to the emergency room for upper digestive bleeding is a patient who requires an approach by a multidisciplinary team. Among these patients, the main cause of upper digestive haemorrhage remains gastro-duodenal ulcer, closely followed by gastrointestinal tumours and vascular lesions. Other causes, such as the chronic use of antiplatelets or anticoagulant drugs, are often found among these patients, considering the associated cardiovascular comorbidities.

The diagnostic and therapeutic management of anaemia in geriatric patients is the same as in other categories of adults, but the transfusion requirement in elderly will be higher. Another particularity of these patients is the importance of endoscopic haemostasis, because in the case of rebleeding other surgical and angiographic haemostasis methods are much more limited by the higher risks compared to patients without multiple comorbidities. These methods will only be used as rescue therapeutic methods, in case of failure of endoscopic haemostasis.

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## Compliance with Ethics Requirements:

„The authors declare no conflict of interest regarding this article”

„The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law.”

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