

Endoscopic findings in the older patients with iron-deficiency anemia

Demir eksikliği anemisi olan yaşlı hastalarda endoskopik bulguların değerlendirilmesi

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ABSTRACT

Aim: The presence of iron-deficiency anemia, which is an important indication for endoscopic procedures, in the geriatric population necessitates the exclusion of a possible malignancy in the gastrointestinal system. This study aims to examine endoscopic findings in geriatric patients that underwent esophagogastroduodenoscopy and colonoscopy because of iron-deficiency anemia.

Materials and Methods: Sixty patients aged 65 and over who underwent esophagogastroduodenoscopy and colonoscopy because of iron-deficiency anemia between August 2019 and August 2020 were retrospectively evaluated. Age, sex, geriatric age groups of patients, presence of *Helicobacter pylori* in gastric biopsy, esophagogastroduodenoscopy findings, colonoscopy findings, presence of internal and / or external hemorrhoids, and duodenal biopsy results were examined.

Results: Thirty (50%) of 60 patients included in the study were male and the mean age was 72.47 ± 6.07 years. Of these patients, 41 (68.4%) were young-old, 17 (28.3%) were middle-old and 2 (3.3%) were old-old. The most common causes that might explain iron-deficiency anemia in esophagogastroduodenoscopy were atrophic gastritis (21.2%), *Helicobacter pylori*-positive gastritis (20%), gastric polyp (11.7%), and gastric cancer (3.3%), whereas colonoscopy results were found colon polyps in 23.3% of patients, diverticulum in 15% and angiodysplasia in 15%, and colon cancer in 8.3%. Internal hemorrhoids were also observed in 44 (73.3%) patients.

Conclusion: In the older population, blood loss from the gastrointestinal system is the most important cause of iron-deficiency anemia and just hemorrhoids cannot explain IDA. While examining the etiology of patients diagnosed with iron-deficiency anemia, performing both esophagogastroduodenoscopy and colonoscopy is an accurate approach to reach the underlying cause and not to miss a possible malignancy.

Keywords: Iron-deficiency anemia, older patient, endoscopy, colonoscopy.

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ÖZ

Amaç: Endoskopik işlemler için önemli bir endikasyon olan demir eksikliği anemisinin geriatric popülasyonda varlığı, gastrointestinal sistemde olası bir maligniteyi dışlamayı gerektirmektedir. Bu çalışmada amaç demir eksikliği anemisi nedeni ile özofagogastroduodenoskopi ve kolonoskopi yapılan geriatric popülasyonda endoskopik bulguların incelenmesidir.

Gereç ve Yöntem: Ağustos 2019-Ağustos 2020 tarihleri arasında demir eksikliği anemisi nedeni ile özofagogastroduodenoskopi ve kolonoskopi yapılan 65 yaş ve üzeri 60 olgu retrospektif olarak değerlendirilmiştir.

Hastaların yaş, cinsiyet, geriatric yaş grupları, alınan mide biyopsisinde *Helicobacter pylori* varlığı, özofagoduodenoskopi bulguları, kolonoskopi bulguları, internal ve/veya eksternal hemoroid varlığı, duodenum biyopsisi sonuçları incelenmiştir.

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Bulgular: Çalışmaya dahil edilen 60 hastanın 30'u (%50) erkekti ve yaş ortalaması 72,47 ± 6,07 yıldı. Hastaların 41'i (%68,4) genç yaşlı, 17'si (%28,3) orta yaşlı ve 2'si (%3,3) ileri yaşlıydı. Özofagogastroduodenoskopide demir eksikliği anemisini açıklayabilecek en sık bulgular sırasıyla; atrofik gastrit %21,2, *Helicobacter pylori* pozitif gastrit %20, mide polipi %11,7, mide kanseri %3,3 iken, kolonoskopik bulgular ise sırasıyla kolon polipi %23,3 hastada, divertikül %15, anjiodisplazi %15, kolon kanseri %8,3 saptandı. Hastaların 44 (%73,3)'ünde internal hemoroid izlendi.

Sonuç: Yaşlı popülasyonda gastrointestinal sistemden kan kaybı demir eksikliği anemisinin en önemli nedeni olup, anal bakıda hemoroidlerin görülmesi tek başına demir eksikliği anemisini açıklayamamaktadır. Demir eksikliği anemisi tanısı alan hastaların etiyojisi araştırılırken hem özofagogastroduodenoskopi hem de kolonoskopi yapılması altta yatan nedene ulaşmak ve olası bir malignitenin atlanmaması açısından doğru bir yaklaşımdır.

Anahtar Sözcükler: Demir eksikliği anemisi, yaşlı hasta, endoskopi, kolonoskopi.

Bu çalışma 29-30 Eylül 2020 tarihlerinde gerçekleştirilen "International Symposium of World Shaking Pandemic SARS-CoV-2 and Elderly Health" çevrimiçi toplantısında elektronik poster olarak sunulmuştur.

INTRODUCTION

Iron-deficiency anemia (IDA) is the leading cause of anemia in the geriatric population worldwide (1-5). The frequency of etiological causes varies as per age groups in IDA. While the most important cause of IDA is menstrual bleeding in premenopausal women, it is chronic blood losses from the gastrointestinal system (GIS) in postmenopausal women and adult men. The prevalence of IDA in developed countries is 2%–5% in adult men and postmenopausal women, and this constitutes 13% of patients referred to gastroenterology (6, 7). The presence of IDA, an important indication for endoscopic procedures, in the geriatric population necessitates the exclusion of a possible malignancy in GIS (8).

There are not enough studies in Turkey on IDA in the geriatric population. This study aims to examine endoscopic results in a geriatric sample that underwent esophagogastroduodenoscopy and colonoscopy because of IDA.

MATERIAL AND METHODS

Sixty patients aged 65 and over who underwent esophagogastroduodenoscopy and colonoscopy for IDA between August 2019 and August 2020 were retrospectively evaluated. The data of patients were accessed from the endoscopy database and the hospital electronic patient files, and analyzed. Age, sex, age groups of the older adult patients, presence of *Helicobacter pylori* (Hp) in gastric biopsy, esophagogastroduodenoscopy and colonoscopy findings, presence of internal and/or external hemorrhoids, and duodenal biopsy results were recorded in the case report form. Endoscopic examinations were performed with GIF-HQ190 esophagogastroduodenoscopy (Olympus, Tokyo, Japan) and CFH-170L-CFQ-150L colonoscopy

(Olympus, Tokyo, Japan) devices by a gastroenterologist or a gastroenterology minor assistant under his supervision, accompanied by an endoscopy nurse.

Those with a known history of lower and/or upper GIS surgery, those with previous GIS malignancy, hematological malignancies, inflammatory bowel disease, and liver cirrhosis were excluded from the study. As defined by the World Health Organization, the older population is divided into three age groups: patients aged 65–74 years are defined as "young-old," 75–84 years as "middle-old," and 85 years and over as "old-old" (9).

Local ethics committee approval was obtained for the study (ethics committee decision date/number: 25.11.2020 / 20-11.1T/36). The research was conducted as per the principles of the Declaration of Helsinki.

Statistical Analyses

The compliance of the age variable to normal distribution was examined by visual (histogram) and analytical methods (Kolmogorov–Smirnov test). Age was presented as mean, median, standard deviation, and min-max, whereas categorical data were expressed by descriptive methods such as ratio and percentage. Chi-square test was then used for comparing categorical variables between groups. Values with a p value below 0.05 were considered statistically significant. SPSS Statistics Version 22.0 program was used for all statistical analyses and calculations.

RESULTS

Thirty (50%) of the 60 patients included in the study were male and the mean age was 72.47 ± 6.07 years. Of these patients, 41 (68.4%) were young-old, 17 (28.3%) were middle-old and 2

(3.3%) were old-old; Hp result was positive in 21 (35%) patients. The most common results in esophagogastroduodenoscopy in patients who underwent esophagogastroduodenoscopy and colonoscopy for IDA were as follows: normal upper GIS findings in 21 (35%) patients, atrophic gastritis in 13 (21.2%) patients, Hp-positive gastritis in 12 (20%) patients, gastric polyps in 7 (11.7%) patients, and gastric cancer in 2 (3.3%) patients. Colonoscopy results were as follows: normal lower GIS results in 16 (26.7%) patients, colon polyp in 14 (23.3%) patients, diverticulum in 9 (15%) patients, angiodysplasia in 6 (15%) patients, diverticulum and polyp in 6 (10%) patients and colon cancer in 5 (8.3%) patients. Internal hemorrhoids were observed in 44 (73.3%) patients. Duodenal biopsy was obtained from 32 (53.3%) of patients for the etiology of IDA; however, all biopsies were reported as normal mucosa (Table-1).

Fifty percent of the patients were using antiaggregant or anticoagulant drugs and the drug types used were acetylsalicylic acid (ASA) (26.7%), ASA + clopidogrel (11.7%), apixaban (5%) in order of frequency. One or more comorbidities were present in 98.4% of the patients. Three most common comorbidities were, respectively, hypertension, diabetes mellitus and coronary artery disease (Table-2). Iron-deficiency anemia causes in 11 patients (18.3%) from upper GIS, in 16 patients (26.7%) from lower GIS, in 28 (46.7%) patients from upper + lower GIS lesions. In 5 patients (8.3%) could not explain the cause of IDA with both procedures (Figure-1). There was no significant difference between esophagogastroduodenoscopy and colonoscopy findings as per the age group ($p = 0.195$ and 0.130) (Table-3).

Table-1. Demographic, clinical and endoscopic findings of patients.

	n (%)
Age (years) (Mean ± SD)	72.47 ± 6.07
Gender	
Female	30 (50)
Male	30 (50)
Age group	
65–74 years old (young old)	41 (68.3)
75–84 years old (middle old)	17 (28.3)
85 years and older (old old)	2 (3.3)
HP presence	
Negative	39 (65)
Positive	21 (35)
Esophagogastroduodenoscopy findings	
Normal	21 (35)
Atrophic gastritis	13 (21.7)
HP-positive gastritis	12 (20)
Polyp	7 (11.7)
Gastric cancer	2 (3.3)
Other*	5 (8.5)
Colonoscopy findings	
Normal	16 (26.7)
Polyp	14 (23.3)
Diverticulum	9 (15)
Angiodysplasia	6 (10)
Polyp + diverticulum	6 (10)
Other**	9 (15)
Internal and/or external hemorrhoids	
Yes	44 (73.3)
No	16 (26.7)
Duodenal biopsy	
Yes	32 (53.3)
No	28 (46.7)

HP, Helicobacter pylori

*Esophageal cancer (1), bulbus ulcer (1), angiodysplasia (1), gastric ulcer (1), HP-positive gastritis + hiatus hernia (1), **Colon cancer (5), polyp + angiodysplasia (2), terminal ileum ulcer (1), diverticulum + angiodysplasia (1).

Table-2. Comorbidities and antiaggregant and/or anticoagulant drugs used of the patients.

Antiaggregant and / or Anticoagulant Drugs	n (%)
Antiaggregants	
ASA	16 (26.7)
ASA + Clopidogrel	7 (11.7)
Clopidogrel	2 (3.4)
Anticoagulants	
Apixaban	3 (5)
Rivaroxaban	1 (1.6)
Warfarin	1 (1.6)
No anticoagulant or antiaggregant use	30 (50)
Number of Comorbidities	
No comorbidity	1 (1.6)
One comorbidity	10 (16.6)
Two comorbidities	20 (33.4)
Three or more comorbidities	29 (48.4)
Three Most Common Comorbidities	
HT	44 (73.3)
DM	30 (50)
CAD	17 (28.3)

ASA, Acetylsalicylic acid; HT, Hypertension; DM, Diabetes mellitus; CAD, Coronary artery disease.

Table-3. Comparison of esophagogastroduodenoscopy and colonoscopy findings of patients with iron-deficiency anemia by age groups.

FINDINGS	Age groups			p
	65-74	75-84	≥85	
Esophagogastroduodenoscopy findings				0.195
Normal	15 (36.6)	6 (35.3)	0 (0)	
Atrophic gastritis	6 (14.6)	7 (41.2)	0 (0)	
HP-positive gastritis	10 (24.4)	1 (5.9)	1 (50)	
Polyps	4 (9.8)	2 (11.8)	1 (50)	
Gastric cancer	1 (2.4)	1 (5.9)	0 (0)	
Other*	5 (12.2)	0 (0)	0 (0)	
Colonoscopy findings				0.130
Normal	12 (29.3)	4 (23.5)	0 (0)	
Polyps	12 (29.3)	2 (11.8)	0 (0)	
Diverticulum	5 (12.2)	4 (23.5)	0 (0)	
Angiodysplasia	5 (12.2)	0 (0)	1 (50)	
Polyp + diverticulum	4 (9.8)	2 (11.8)	0 (0)	
Other**	3 (7.3)	5 (29.4)	1 (50)	

HP, Helicobacter pylori

*Others: Esophageal cancer (1), bulbus ulcer (1), angiodysplasia (1), stomach ulcer (1), and HP-positive gastritis + hiatus hernia (1);

**Others: Colon cancer (5), polyp + angiodysplasia (2), terminal ileum ulcer (1), and diverticulum + angiodysplasia (1)

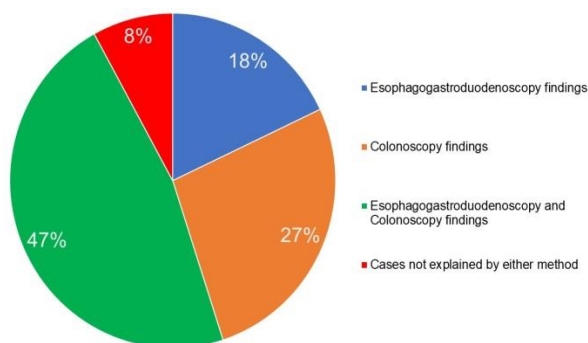


Figure-1. Endoscopic diagnostic methods in determining the etiology of iron-deficiency anemia.

DISCUSSION

IDA is one of the major health problems in the geriatric population, and the Third National Health and Nutrition Examination Survey (NHANES III, 1988-1994) demonstrated that the prevalence of IDA in the older adults is ~10.6% (2). Note that 63%–86% of IDA cases in the geriatric population are attributed to bleeding gastrointestinal lesions (10-14).

Although there are specific symptoms in GIS-related anemia, it is recommended that upper and lower gastrointestinal endoscopic examinations be performed concurrently. Because different etiological reasons may be together (12). While the cause of IDA cannot be determined in 30%–50% of those undergoing only gastroscopy in etiological evaluation, this rate decreases to 15% when gastroscopy and colonoscopy are performed together (15-17). Note that 20% of older patients have a negative upper and lower endoscopy, and two-thirds of these have a lesion in the small intestine (18). After negative standard dual endoscopic evaluations, it is important to examine the small intestine in all patients with unexplained IDA (19). In a study conducted by Çoban et al. on the etiology of IDA in the geriatric population in Turkey, although both upper and lower GIS endoscopy was performed, no etiological cause was reported in GIS scanning in 15.6% of patients (20). In our study, the results that could explain the IDA of the patients were reported only in esophagogastroduodenoscopy in 18.3% patients, only in colonoscopy in 26.7%, in both esophagogastroduodenoscopy and colonoscopy in 46.7% patients, and no results were detected in either endoscopic method in 8.3% patients. Compared to the literature, the ratio of patients in this study where either method failed to provide

any results is lower. This is possibly attributed to an experienced tertiary center; during the procedure, a team comprising a specialist physician, a minor assistant and an experienced nurse performed the procedure, which minimized possible overlooked lesions.

In the literature that in postmenopausal women and men >50 years of age, 2%–15% of patients were diagnosed with colorectal cancer and 2%–6% were diagnosed with upper gastrointestinal system cancer in investigations because of IDA (14, 21-23). In studies conducted in Turkey, a diagnosis of adenocarcinoma was made in 0.9%–7.7% of patients who underwent upper gastrointestinal endoscopy and in 4.7%–9.5% of patients who underwent lower gastrointestinal endoscopy for IDA (24, 25). In another study in Turkey in which endoscopy and colonoscopy was performed because of IDA in the geriatric population, upper GIS cancer was reported in 4.4%–7.3% of patients and colon cancer was reported in 6%–8.3% of them (18, 26). In this study, gastric cancer was reported in 3.3% and colon cancer in 8.3% of the cases. As per these results, the incidence of gastric cancer was less compared to other studies conducted in the geriatric population; however, the colon cancer incidence was similar to the rates reported in the literature.

In a study examining the cause of anemia because of chronic blood loss or malabsorption as per different age groups, bleeding lesions were reported to be 29% in adult patients (50–64 years) and 45.5% more in older patients (65–74 years). Iron-deficiency because of malabsorption (Hp-positive pangastritis, atrophic gastritis and celiac disease) was reported in 80.6% of adults and 56.2% of the older patients (27). Studies demonstrated that the prevalence of celiac disease in patients with IDA is 3%–15%, the prevalence of atrophic gastritis is 20–27%, and the rate of Hp-positive gastritis is 25%–44% (26, 28, 29). In this study, the rate of atrophic gastritis was 21.7% and Hp-positive gastritis was 20%, which is consistent with the literature. Furthermore, in this study, the rate of atrophic gastritis and Hp-positive gastritis was reported to be higher in the 75–84 age group compared to the 65–74 age group; however, statistical significance was not observed. Duodenal biopsy was considered for celiac disease in 53.3% of our cases; however, no disease was reported in any of the patients. These results support the

necessity of biopsy in terms of Hp-associated gastritis and atrophic gastritis, although there is no obvious lesion in the upper GIS examination in patients with IDA.

Hemorrhoids are one of the results obtained in examining the lower gastrointestinal system. In the literature, hemorrhoids have been reported in 39% of colonoscopies performed for routine colorectal cancer screening (30). In studies conducted in Turkey, hemorrhoids were reported with a rate of 13.6%–33.4% (25, 31, 32). In this study, 73.3% of patients had internal and/or external hemorrhoids. As per the literature, there is no clear explanation for this high rate; however, attributing anemia to hemorrhoids in patients with a history of hemorrhoids may lead to overlooking the presence of other underlying etiologies.

There are certain limitations of this study. These include the retrospective design, limited number

of patients, lack of occult blood data in the stool, lack of information on the drugs regularly used by the patients, lack of information on patient symptoms, and lack of small intestinal examination in the patients with normal lower and upper endoscopic examinations.

CONCLUSION

In the older population, blood loss from GIS is the most important cause of IDA; hemorrhoids seen in anal examination alone cannot explain IDA. While examining the etiology of patients diagnosed with IDA, performing both esophagogastroduodenoscopy and colonoscopy is an accurate approach for illuminating the underlying cause and not missing a possible malignancy.

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