Gastrointestinal Lesions in African American Patients with Iron Deficiency Anemia

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Abstract

Background: Iron deficiency anemia (IDA) is a frequent disorder that is associated with many serious diseases. However, the findings of an evaluation of IDA associated gastrointestinal disorders are lacking among African American patients.

Aim: To determine the most prevalent gastrointestinal lesions among African American patients with IDA especially in young men.

Methods: We reviewed medical records (n=422) of patients referred for evaluation of IDA from 2008 to 2012. IDA was diagnosed using clinical laboratory tests. The results of esophagogastroduodenoscopy (EGD), colonoscopy and pathology specimens along with demographic data were abstracted and analyzed using STATA.

Results: The mean age was 61.9 years, and 50.5% were female. 189 patients (45%) had gross GI bleeding. The most frequent diagnoses were gastritis (40%), benign colonic lesions (13%), esophagitis (9%), gastric ulcer (6%), and duodenitis (6%). By sex, duodenal benign tumors were significantly more represented among females: 4% vs 1% (p=0.05) while left colon malignancy was more prevalent among males: 3% vs 0.05% (p=0.05). Benign and malignant colonic lesions were significantly more present among older patients: 16% vs 6% (P=0.005) and 5% vs 0% (p=0.008), respectively. Colitis was more prevalent in younger patients (≤50%): 11% vs 2% (p=0.001). In patients with gross lower GI bleeding, the top diagnoses were gastritis (25%), benign colonic tumors (10%), and duodenitis (6%). Colon cancer was diagnosed among 15 patients and all these patients were older than 50 years of age.

Conclusion: This exploratory analysis of IDA associated GI lesions revealed that gastritis and colonic lesions are most common lesions found among African Americans with IDA with minimal age and sex differences. Colitis was found more in young patients while IDA was more associated with lower GI malignancies in older patients. Upper GI endoscopy might be required if colonoscopy is unrevealing of the cause of IDA.

Keywords: Iron Deficiency Anemia; GI lesions; EGD and Colonoscopy

Abbreviations

IDA: Iron Deficiency Anemia; African American; GI: Gastrointestinal; EGD: Esophagogastroduodenoscopy

Background

Iron Deficiency Anemia (IDA) definition is based on the lower limit of normal in adults: 13g/dL in men and 12g/dL in women according to the World Health Organization (WHO) criteria. The mean normal value of hemoglobin is dependent on age, gender, race, and altitude. Patients with IDA have physiologic levels of hemoglobin and hematocrit that are lower than the above mentioned range [1].

These commonly applied limits have changed, especially when race is taken into account since African-Americans have physiologic levels of hemoglobin and hematocrit that are lower than this range. Iron deficiency anemia (IDA) is a common disorder that is associated with many serious diseases, including malignancies particularly of the gastrointestinal tract. Occult or gross bleeding from gastrointestinal (GI) lesions is a common cause of IDA in men and postmenopausal women [2].

Iron deficiency anemia (IDA) occurs in 2-5% of adult men and postmenopausal women [3,4] in the developed world and is a common cause of referral to gastroenterologists [5-8]. Malabsorption syndrome and Gastrointestinal (GI) blood loss from colonic cancer, gastric cancer are the most important causes that need to be sought [5]. In spite of invasive procedures such as bidirectional GI endoscopy, it is sometimes challenging to diagnose the probable gastrointestinal (GI) tract source of bleeding that ultimately leads to IDA [9]. Endoscopy reveals a source of IDA in 30-50% of cases. Endoscopic evaluation should not be done in women without predictive factors; abdominal symptoms, age > 50yrs, and Hb < 9g/dL. Conversely, these factors are strongly associated with a GI lesion [10,11].

GI lesions are common sources of Iron deficiency and GI evaluation is obligatory in the evaluation of this disease among men and women, young and old if the cause is not readily apparent [12].
However, there is lack of data on the etiology of IDA among African Americans.

In this study, we evaluated GI disorders among African Americans with IDA to determine potential GI causes of iron depletion.

Methods

Patients

In this retrospective study, we reviewed 650 patients’ medical records. From 2008 to 2012, referred for evaluation of IDA that was diagnosed using clinical laboratory tests based on hemoglobin, ferritin and iron saturation. Based on ICD9-code, we selected patients. Out of, 650 patients who got endoscopy, 422 (65%) patients had GI pathology and 228 (35%) patients had a normal GI endoscopy. We focused on patients with GI pathology and evaluated them. GI bleeding was defined as, hematochezia, melena, hematemesis. Including 77% of male and 65% females (P = 0.006). In patients ≥50 colorectal cancers. Except for GI bleeding, which was significantly higher while the frequency of lesions (13%), esophagitis (9%), gastric ulcer (6%), and duodenitis (6%). There were 3 stomach cancers, 2 esophageal cancers and 15 colorectal cancers. In the overall analyzed group, the most frequent diagnoses based on clinical laboratory tests were iron deficiency Anemia except celiac patients got bidirectional endoscopy.

Our study was done in African Americans and in our study just we had 2 cases of celiac that was excluded. H. Pylori test was positive in 17 (4%) patients. The study was approved by Howard University Institutional Review Board (IRB).

Statistical analysis

Association of GI lesions in IDA patients with gender and age groups were assessed by Fisher’s exact test. We also built logistic regression models to predict the GI lesion in IDA patients if applicable. All analyses were performed by STATA 13.0 (Stata Corp., College Station, TX).

Results

The median (interquartile range) age was 58 (48-71) years with 50% female patients in the study group. Gross GI bleeding was observed in 189 patients (45%) while 233 patients (55%) had occult GI bleeding. In the overall analyzed group, the most frequent diagnoses based on endoscopy and histopathology were gastritis (46%), benign colonic lesions (13%), esophagitis (9%), gastric ulcer (6%), and duodenitis (6%). There were 3 stomach cancers, 2 esophageal cancers and 15 colorectal cancers. Except for GI bleeding, which was significantly more frequent in male (P = 0.001), the frequency of other lesions wasn’t significantly different between the two genders (Table 1).

Among all patients with IDA, 299 (71%) were 50 years or older, including 77% of male and 65% females (P = 0.006). In patients ≥50 years old, the frequency of GI bleeding, colon benign and colon malignant tumor was significantly higher while the frequency of colitis was significantly lower compared to younger age group (Table 2).
In a multivariate analysis, older age (OR= 2.1, 95%CI: 1.3-3.2) and male gender (OR= 1.5, 95%CI: 1.1-2.2) were associated with a higher rate of GI bleeding diagnosis.

Discussion

Many patients with undetermined causes of IDA and lacking any gastrointestinal disease symptoms pose a challenge for their treatment, as long as the IDA-causing disorder is not elucidated. In this study, we found that gastritis and colonic lesions are the most common GI lesions found among African Americans evaluated for IDA. Some gender and age related differences were observed. Benign and malignant colonic lesions were significantly more present among older patients and colitis was more prevalent in younger patients. Duodenal benign tumors were significantly more represented among females while colon malignancy was more prevalent among males.

Occult GI bleeding was found in 55% of patients. The frequency of gastritis and esophagitis without gross GI bleeding were more than gastric ulcer and duodenal ulcer. Since H. Pylori-associated gastritis and autoimmune atrophic gastritis can cause malabsorption, so more etiology investigation and studies are required to evaluate occult GI bleeding in the context of GI disorders.

The prevalence of benign and malignant colorectal tumors (13% and 3%, respectively) was similar to other studies [10]. Furthermore the frequency of inflammatory GI lesions such as gastritis and esophagitis was more prevalent than GI ulcers and tumor lesions. In addition, GI lesions as a source of IDA were more frequently located in the upper GI tract than in the colon, a finding in agreement with previously reported studies [13-17].

Although, the leading cause of IDA in men older than 50 and postmenopausal women is chronic gastrointestinal (GI) bleeding of GI lesions, the evaluation of the GI tract in younger men should also be considered seriously [18,19]. In our study, among young men with IDA, gastritis and colitis are the leading findings and there is a paucity of data in the literature regarding the etiology of IDA among young men. Our study suggests that inflammatory processes may contribute to IDA in younger patients [20]. In contrast, elderly patients in our study revealed a prevalence of malignancies’ association with IDA. Indeed, a high rate of colon malignancies, predominantly right-sided colon carcinoma in post-menopausal women and older men with asymptomatic IDA has been reported [21]. Our results also show the benign and malignant colon Cancer can be one of the important etiology of IDA and this is consistent with other studies [22].

Because GI lesions leading to IDA are more frequently found in the upper GI tract than in the colon, Esophagogastroduodenoscopy (EGD) resulted in a better yield than lower GI endoscopy and was the most recommended procedure, except for elderly patients and/or those with specific symptoms such as abdominal pain or constipation who are more prone to lower GI tract lesions. In most patients, bidirectional endoscopy was required except for patients in whom the malignant lesions were detected through the initial endoscopy [23].

Because of the gastrointestinal malignancy risk, iron deficiency anemia requires extensive investigation. If no other sources of blood loss are apparent, the gastrointestinal tract is examined to detect sources of occult blood loss. Sometimes, small bowel series or capsule endoscopy is required for diagnosis of IDA with unknown GI source.

Van Mook et al. Mentioned that in the absence of gastrointestinal symptoms, the colon should be examined first, especially in the elderly [24]. According to some studies like Van Mook, et al, upper gastrointestinal malignancy will probably be an infrequent finding and EGD should always be performed in patients with iron deficiency anemia after a negative colonoscopy. The presence of a significant, treatable lesion is most likely in the elderly and in those with a history of NSAID or ASA use. Routine duodenal biopsies should be performed to further increase the outcome of EGD to evaluate for malabsorption [24].

In our study, we found Gastritis and Colitis more associated with IDA in young patients and our recommendation was considering Upper GI endoscopy if colonoscopy is normal in the evaluation of IDA especially in young patients. In our study, Gastritis was more than peptic ulcer. Celiac disease was rare. We had just 2 celiac disease (0.004%) that was less than the average celiac disease prevalence in other populations.

Conclusion

This exploratory analysis of IDA associated GI lesions revealed that gastritis and colonic lesions are most common lesions found among African Americans with IDA with minimal age and sex differences. Colitis was found more in young patients while IDA was more associated with lower GI malignancies in older patients. Upper GI endoscopy might be required if colonoscopy is unrevealing of the cause of IDA.

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