THE DIAGNOSTIC YIELD OF UPPER GASTROINTESTINAL ENDOSCOPY IN PATIENTS WITH IRON DEFICIENCY ANAEMIA

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ABSTRACT

Objectives: The aim of this study was to determine the diagnostic yield of upper gastrointestinal endoscopy in patients with iron deficiency anaemia.

Design: This was a descriptive study.

Place and duration of study: The study was carried out at Military Hospital Rawalpindi from Sept 2003 to Feb 2004.

Patients and Methods: Study was performed on 50 patients of iron deficiency anaemia of both sexes more than 18 years of age. Major upper gastrointestinal symptoms were asked. Esophagogastroduodenoscopy was performed on all the patients. Endoscopic biopsies of 2nd & 3rd part of duodenum were taken from the patients with insignificant endoscopic findings for histopathological examination.

Results: Endoscopic examination of the upper gastrointestinal tract showed a causative lesion in 33 (66%) patients. The most common abnormality in the upper gastrointestinal tract was peptic ulceration (duodenal ulcer in 11 patients, gastric ulcer in 4). Seventeen (34%) patients with negative endoscopic studies underwent 4 to 5 duodenal biopsies. Histopathological examinations of biopsies from 2 patients were consistent with Coeliac disease. Symptoms as dyspepsia and epigastric pain were predictive of disease in the corresponding portion of the bowel.

Conclusions: Upper gastrointestinal lesions are frequently found in patients with iron-deficiency anaemia particularly in patients with upper abdominal pain and dyspepsia.

Keywords: Iron deficiency anaemia, esophagogastroduodenoscopy, upper gastrointestinal

INTRODUCTION

Iron deficiency is the commonest cause of anaemia worldwide [1]. Blood picture in iron deficiency anaemia (IDA) is microcytic and hypochromic characterized by low mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH) and mean corpuscular haemoglobin concentration (MCHC) [2]. Iron deficiency is confirmed by low serum iron, ferritin and transferrin saturation with high total iron binding capacity of haemoglobin and absence of iron stores in bone marrow [3].

It is vital that the underlying cause of negative iron balance should be identified, and where ever possible treated [1]. The most likely cause of iron deficiency depends upon the age and sex of the patient. In 90% of premenopausal women with IDA, the usual cause is either excessive menstrual loss or the increased physiological demand of pregnancy [4]. In older children, men, and postmenopausal women there is likely to be a pathological cause for iron deficiency which is usually increased blood loss from the gut [5, 6]. Gastrointestinal bleeding is usually clinically inapparent and is difficult to detect. This is attributed to its intermittent nature and decreased sensitivity of tests for detection of faecal occult blood (unable to detect blood loss of less than 20 ml/day). For this reason, several stool samples require to be tested. Nevertheless, endoscopic and barium studies are still suggested in males and postmenopausal women even in the absence of clinical findings of gut pathology [7].

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A thorough examination of the upper gastrointestinal tract has therefore become standard practice. Indeed, many clinicians advocate upper gastrointestinal endoscopy regardless of signs or symptoms of disease in the upper gastrointestinal tract [8]. Both endoscopic evaluations (esophagogastroduodenoscopy and colonoscopy) and radiographic tests (air-contrast barium enema and upper gastrointestinal series) have been used to evaluate the gastrointestinal tract in patients with iron-deficiency anaemia. Radiographic studies are generally effective for detecting mass lesions and large ulcerating lesions. However, in comparison, endoscopic procedures are far more sensitive for detecting vascular ectasias and mucosal lesions (esophagitis or colitis) [9]. This makes endoscopic investigations most cost-effective and recommended approach towards the diagnosis.

The small bowel should be considered as a potential site of bleeding in patients with IDA particularly with negative results on examinations of the colon and upper gastrointestinal tract. Malabsorption of iron may occasionally be responsible. Among other important causes, Coeliac disease, a classic disorder of the small bowel, can lead to malabsorption of iron as well as to occult bleeding. However, the role of routine biopsy of the small intestine in patients with negative evaluations of the upper and lower gastrointestinal tracts for investigation of Coeliac disease is controversial [10].

The aim of our study is to determine the diagnostic yeild of upper gastrointestinal endoscopic evaluation in patients with IDA. It will also help to identify clinical features that may predict the likelihood of detecting or otherwise a gastrointestinal lesion. In addition, frequency of various etiologies of IDA in patients between 18 years of age and above can also be determined.

PATIENTS AND METHODS

A descriptive study was carried out in Military Hospital Rawalpindi, which is 900 bedded, tertiary referral centre. All patients referred to Military Hospital Gastroenterology department from September 2003 to February 2004 with suspected IDA were prospectively screened for enrollment in the study. Detailed clinical data was obtained from all patients enrolled in the study, with an emphasis on gastrointestinal symptoms. All patients above 18 years of age with IDA were included in study. IDA is defined as a haemoglobin concentration below 12.5 g per deciliter for men (normal range, 13.5 to 17.5) and below 10.6 g per deciliter for women (normal range, 11.6 to 15.8), accompanied by the following laboratory values consistent with iron deficiency: hypochromic microcytic anaemia, serum iron concentration below 45 µg per deciliter (8.1 µmol per liter; normal range, 50 to 150) with a transferrin saturation not higher than 10 percent (normal range, 16 to 60 percent), a serum ferritin concentration below 20 µg per liter for men (normal range, 20 to 450) and below 10 µg per liter for women (normal range, 10 to 250). Patients were asked to inform about the specific major of the upper gastrointestinal tract symptoms like dysphagia, odynophagia, heartburn, dyspepsia, nausea, vomiting, anorexia, upper abdominal pain related to eating or relieved by antacids and drug intake. The dyspepsia was defined as upper abdominal fullness or pain that is aggravated by eating associated with bloating or belching. The experienced gastroenterologists of Military Hospital Rawalpindi performed the upper gastrointestinal endoscopy by Olympus CE-10. Patients were sedated for endoscopic procedures with intravenous diazepam or midazolam, while vital signs and oxygen saturation were monitored. The lesions considered being sources of blood loss included esophagitis with erosions involving at least 5 percent of the mucosal surface of the esophagus, erosive gastritis (defined as at least 50 erosions of 1 mm or more with white bases encircled by erythema), a duodenal or gastric ulcer or carcinoma, adenomatous polyps, and vascular ectasias. Multiple biopsies of 2nd and 3rd portion of duodenum were taken for histopathological examination in patients who did not have lesion on upper gastrointestinal endoscopy. Patient with

obvious cause of blood loss (e.g., epistaxis or heavy menstrual flow or bleeding per rectum or esophageal varices), patients with definitive lower gastrointestinal symptoms and active gastrointestinal haemorrhage or severe cardiopulmonary disease were also excluded from study.

Data Analysis

The statistical analysis was done using SPSS Version 10.0. Descriptive statistics i.e mean + SD for numerical variables and frequency along with percentage for categorical variables were used to describe the data. Chi- square test has been applied and statistical significance has been assumed when p value < 0.05.

RESULTS

The study group consisted of 50 patients, 32 inpatients and 18 outpatients. Out of which 17 (34%) were females and 33 (66%) were males (fig. 1). The mean (±SD) age was 39.78 ±11.28 years (table), with a range of 18 to 60 years. Eight women were menstruating; none had a history of unusual or heavy blood loss. All the patients were anaemic, with serum ferritin levels or transferrin-saturation values consistent with iron deficiency. The commonest reported symptom related to anaemia was fatigue (70%) followed by exertional dyspnoea (52 %) and palpitation (29%) (table). Dyspepsia and upper abdominal pain were major symptoms related to abdomen while 14 patients did not have any symptoms relating to abdomen (fig. 2).

Thirteen (26%) patients had concomitant medical illnesses including organic heart disease (04 patients), rheumatologic disorders (2 patients) and non-gastrointestinal cancer (2 patients).

Esophagogastroduodenoscopy demonstrated lesions in 33 (66%) patients, while 17 (34%) patients had normal upper gastrointestinal endoscopy (fig. 3). Peptic ulceration (of the duodenum, stomach,) was accounted as the most common lesion identified in 15(30%) patients of study population followed by erosive gastritis 9 (18%). None of the patients had an actively bleeding ulcer. 3 patients with gastritis were taking nonsteroidal antiinflammatory drugs. 2(4%) patients with esophagitis had severe inflammation with extensive erosions and ulceration. Multiple vascular ectasias (gastric

Table -1: Frequency of symptom (related to anaemia) n=50)

Symtoms	No of patients	Percentage
Fatigue	35	70%
Exertional dyspnoea	26	52%
Palpitation	21	42%
Malaise	10	20%

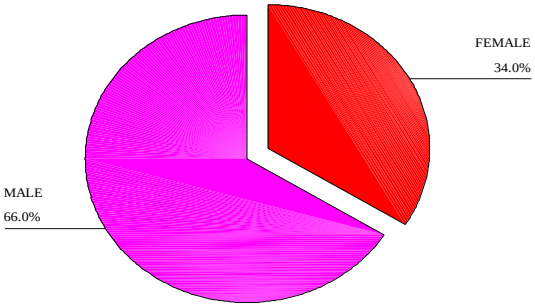

Fig. 1: Gender distribution (n=50).

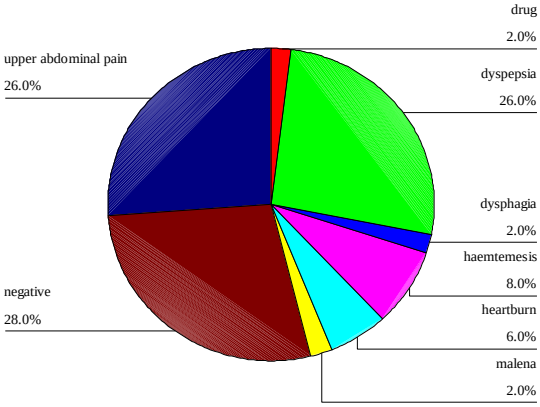

Fig. 2: Frequency of major symptoms (related to abdomen) (n=50).

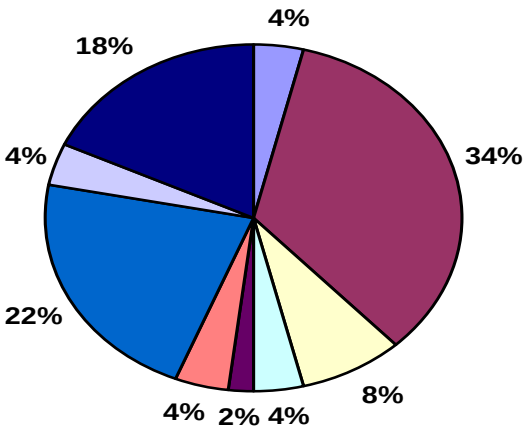

Fig. 3: Esophagogastroduodenoscopy findings n=(50).

in one patient and proximal duodenal in one) were found in 2(4%) patients. We observed that out of 36(72%) patients with upper gastrointestineal symptoms only 30 (60%) had gastrointestinal lesions. Out of 14 asymptomatic patients 3(6%) also had gastrointestinal lesions attributing to IDA. There was a significant relationship of symptoms with presence of lesion ($p<0.05$)

Lesions considered unlikely to be responsible for chronic blood loss in the 17(34%) patients with negative endoscopic studies included antral hyperemia and minimal esophagitis. No stigmata of bleeding were identified in connection with any of these lesions. Histopathology reports of duodenal biopsies of patients with negative study revealed Coeliac disease in 2(4%) patients.

DISCUSSION

Idiopathic iron-deficiency anaemia in adults is widely believed to result from chronic colonic blood loss particularly in adult men and postmenopausal women [5, 6]. But in over 90 % of pre menopausal women with IDA the cause is excessive menstrual loss or increased physiological demand during pregnancy [4]. Consequently these are rarely investigated. This approach may miss serious gastrointestinal disorders.

In our study, mainly the patients were between 18 to 60 years of age with male predominance (66 % male), which is a contrasting fact to studies by Rockey and Cello [11]. This fact may be attributable to dominance of young male soldiers in Armed Forces.

We identified lesions consistent with chronic blood loss in 33(66%) of the 50patients. Peptic ulceration of the duodenum and stomach was the most common (30%) cause. The prevalence of gastrointestinal tract lesion varies from study to study. Azam and colleagues in their study found gastric erosions to be the most common cause of upper gastrointestinal tract bleeding [12]. But their selection criteria were based on finding 20 or more Gastric erosion measuring between 1 and 5 mm. Their results were probably biased because IDA is generally associated with 50 or more gastric erosion. The study by Rockey and Cello revealed peptic (gastric and duodenal) ulceration the most common upper gastrointestinal lesion as per our study but they did not evaluate patients for Coeliac disease assuming the disease to be quite rare [11] This is contrary to other studies published else where [13, 14]. It is also recommended that all patients with negative endoscopy must be evaluated for Coeliac disease [13]. In addition presence of upper gastrointestinal lesions does not rule out Coeliac disease and it should be looked and included routinely in differential diagnosis of IDA. [14]

Symptoms related to the upper gastrointestinal tract have strong association with presence of lesions usually detected by Esophagogastroduodenoscopy. Our results strongly suggest that for iron deficient patients with specific gastrointestinal symptoms, the initial examination should be directed towards these symptoms. Clinicians may therefore reasonably elect to undertake an upper gastrointestinal endoscopy guided by symptoms related to upper gastrointeninal tract [9, 11]. This approach helps in limiting the costs and potential risks of additional studies. Clinical judgment and follow-up, however, are essential. Since most of the substantial lesions of the upper gastrointestinal tract are related to acid-peptic disease, an intensive course of anti-acid therapy and iron replacement can be expected to correct the anaemia. If the anaemia does not resolve or if it returns after discontinuation of therapy, then a reevaluation including a colonic examination is recommended.

Over one third of the patients in our study had no lesions compatible with gastrointestinal bleeding and they showed good response to antacid therapy. Most of these patients were asymptomatic. Conditions such as unreported menstrual losses (potentially in 3 patients in our study) or insufficient dietary intake of iron may have

been responsible for occult iron deficiency. Alternatively, ulcerations or benign lesions may have caused blood loss in the past but then healed and thus were not detected. Although less likely, small ulcers or polyps may have led to chronic bleeding. Finally, abnormalities such as polyps or vascular ectasias may have been missed during the endoscopic examination. All the patients with persistent anaemia had serious underlying medical illnesses, which is consistent with the possibility that their anaemia was associated with chronic disease.

CONCLUSION

Gastrointestinal lesions are frequently found in patients with IDA particularly those who have symptoms of dyspepsia and upper abdominal pain. Peptic ulcerations (duodenal and gastric ulcer) are the commonest cause of IDA due to occult blood loss. Therefore, the initial investigation should be directed toward site-specific symptoms.

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