

Investigations for iron deficiency anaemia (IDA) in our hospital compared to British Society of Gastroenterology (BSG) guidelines 2011

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ABSTRACT

Aims: To analyse investigations performed in patients presenting with iron deficiency anaemia (IDA) in our hospital and to compare them to British Society of Gastroenterology (BSG) guidelines issued in 2011.

Methods: We performed a retrospective analysis of 298 patients who had either upper or lower gastrointestinal (GI) tract investigated for iron deficiency anaemia over a period of two years from 1st February 2012 to 31st January 2014 in our hospital. Out of these 298 patients only 151 (50.6%) had low haemoglobin (Hb) and serum ferritin of less than 12 µg/l. These 151 patients were considered to have iron deficiency anaemia as per BSG guidelines and were recruited in our study.

Results: 140 (92.7%) of these 151 patients with IDA had oesophagogastroduodenoscopy (OGD) and 122 (80.73%) had either colonoscopy or barium enema. 114 (75.4%) out of 151 patients had both upper and lower gastrointestinal (GI) tract investigated completely. In 74 (49%) out of 151 patients no cause for anaemia was found. In patients where a cause was found gastritis was the most common cause (n=20) followed by colonic carcinoma (n=11) and oesophagitis (n=10). Only 51 (36.4%) out of 140 patients who had OGD had duodenal biopsy and seven of these showed coeliac disease. Overall, 13 (8.6%) patients out of 151 had identifiable causes for anaemia in both upper and lower GI tract. In 100 (66.2%) out of 151 patients investigations fell short of guidelines.

Conclusion: Incomplete investigation of IDA is common practice in our hospital. Both upper and lower GI pathology was present in 8.6% of patients who had IDA. These patients should be investigated completely as per BSG guidelines in order to make an accurate diagnosis.

Keywords: iron deficiency anaemia, investigation, BSG, guidelines, comparison.

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1. INTRODUCTION

Iron deficiency anaemia (IDA) is a common presentation in our hospital requiring a series of investigations to find the underlying cause of the disease. It occurs in 2-5% of adult men and postmenopausal women in the developed world and is a common cause of referral to gastroenterologists. Gastrointestinal (GI) blood loss from colonic cancer or gastric cancer and malabsorption in coeliac disease are the most important causes that need to be identified. Patients require a thorough investigation of GI tract to rule out these causes. We retrospectively identified 298 patients who presented with IDA in our hospital and were subsequently investigated to find out the cause for this. We analysed the practice of investigations in IDA in 151 out of these 298 patients who were considered to have IDA as per BSG guidelines 2011. BSG guidelines suggest that lower limit of the normal range of haemoglobin (Hb) should be used to define anaemia and should be investigated in the presence of iron deficiency. The lower the haemoglobin, more likely it is that there is a serious underlying pathology and more urgent is the need for investigation. Serum ferritin is the most powerful test for iron deficiency (1).

1.1 Investigation of IDA- BSG Guidelines, 2011

BSG recommends that upper and lower GI investigations should be considered in all postmenopausal female and all male patients where IDA has been confirmed unless there is a history of significant overt non-GI blood loss. All these patients should be screened for coeliac disease. If OGD is performed as the initial GI investigation, only the presence of advanced gastric cancer or coeliac disease should deter lower GI investigation. In patients aged more than 50 or with marked anaemia or a significant family history of colorectal carcinoma, lower GI investigation should still be considered even if coeliac disease is found. Colonoscopy is preferred to CT colonography for investigation of the lower GI tract in IDA, but either is acceptable. Barium enema is useful if neither of these is available. Direct visualisation of the small bowel is not necessary unless there are symptoms suggestive of small bowel disease, or if the haemoglobin cannot be restored or maintained with iron therapy. In patients with recurrent IDA and normal OGD and colonoscopy results, helicobacter pylori should be eradicated if present. All premenopausal women with IDA should be screened for coeliac disease, but other upper and lower GI investigations should be reserved for those aged 50 years or older, those with symptoms suggesting gastrointestinal disease, and those with a strong family history of colorectal cancer. Upper and lower GI investigation of IDA in post gastrectomy patients is recommended in those over 50 years of age. Postmenopausal women and men aged more than 50 years should have GI investigation

if they present with iron deficiency without anaemia. Urine testing for blood is important in the examination of patients with IDA.

2. MATERIALS AND METHODS

Detailed history was recorded and complete clinical examination was performed in all patients who were referred as IDA over a period of two years from 1st February 2012 to 31st January 2014 in our hospital. Out of these 298 patients only 151 had serum ferritin of less than 12 µg/l and were considered to have iron deficiency anaemia as per BSG guidelines [1]. We checked the normal range for all the blood tests from the pathology laboratory in our hospital. Normal level of Hb in our laboratory was 12.5-15.9 g/dl in males and 11.5-14.8g/dl in females. We defined anaemia as haemoglobin of less than 12.5 g/dl in males and less than 11.5g/dl in females. Normal level of mean corpuscular volume (MCV) was 80-99 fl with <80 fl being microcytic and > 99fl being macrocytic anaemia. Normal range of serum ferritin was 18-370 µg/l in males and 10-200 µg/l in females. Normal mean corpuscular haemoglobin (MCH) was 26-33 picograms. We went through the notes of these 151 patients and recorded their Hb, MCV, MCH and serum ferritin levels at the time of their initial presentation. We recorded whether they had any investigation of the gastrointestinal tract in the form of OGD, colonoscopy, flexible sigmoidoscopy or barium enema. We considered GI investigations complete when patients had OGD and Colonoscopy up to caecum or barium enema with sigmoidoscopy. We recorded findings of these tests particularly where the findings could be the cause of anaemia. In patients who had OGD, it was recorded whether they had duodenal biopsy done to rule out coeliac disease.

3. RESULTS

98 (64.9%) of the 151 patients who were found to have IDA were females and 53 (35.1%) were males. Age range was 16 -78 years old with twenty four patients being less than 40 years of age. Average age of patients in this study was 62 years. Hb ranged from 3.7 to 12.3 g/dl. Range of MCV was 50.1-96.4 fl. Of the 151 patients only 132 (87.4%) had an MCV of less than 80 and rest had a normal MCV. Serum ferritin ranged from 6-11.9 µg/l. MCH was low in 116 (76.8%) patients, high in 14 (9.2%) and was normal in remaining 21 patients. (Table- 1).

Table- 1. Blood results in patients with iron deficiency anaemia

	MCV	Ferritin	MCH
Normal	19	00	21
Low	132	151	116
High	00	00	14
Not done	00	00	00

Forty four (29.1%) of 151 patients with IDA had blood transfusion ranging from 1-5 units. Of these 151 patients 114 (75.4%) had both upper and lower GI tract investigated completely. 140 (92.7%) out of 151 patients with IDA had OGD performed and 122 (80.73%) had either colonoscopy or barium enema with sigmoidoscopy carried out. Patients who had OGD performed only 51 had duodenal biopsy thus out of 151 patients only 33.7% had duodenal biopsy. Out of these 51 patients seven were found to have coeliac disease. OGD was normal in 69 (45.6%) out of 140 patients. Colonoscopy was done in 82 (67.2%) out of 122 patients who had lower GI tract completely investigated. Forty remaining patients had barium enema with flexible sigmoidoscopy carried out. (Table- 2).

Table-2. Number of patients who had investigations as per BSG guidelines

Investigation	No.
Oesophagogastroduodenoscopy	140
Colonoscopy/ Barium Enema	122
Both Upper and Lower GI seen	114
Duodenal biopsy	51

In 82 patients where colonoscopy was done it was completely normal in 39 patients. In 16 patients colonoscopy or barium enema showed diverticular disease but it was not considered a possible cause for anaemia. Polyps were found in 15 patients during lower GI tract investigations. In our study 13 (8.6%) out of 151 patients had positive findings in both upper and lower GI tracts. Both of these pathologies could be the cause of anaemia in these patients. This is consistent with reported incidence of dual pathology in about 10% cases of IDA. [2]. All these patients were above 65 years of age. The most common pathology found in OGD leading to anaemia was gastritis (n=20) followed by oesophagitis and duodenitis (Fig.1).

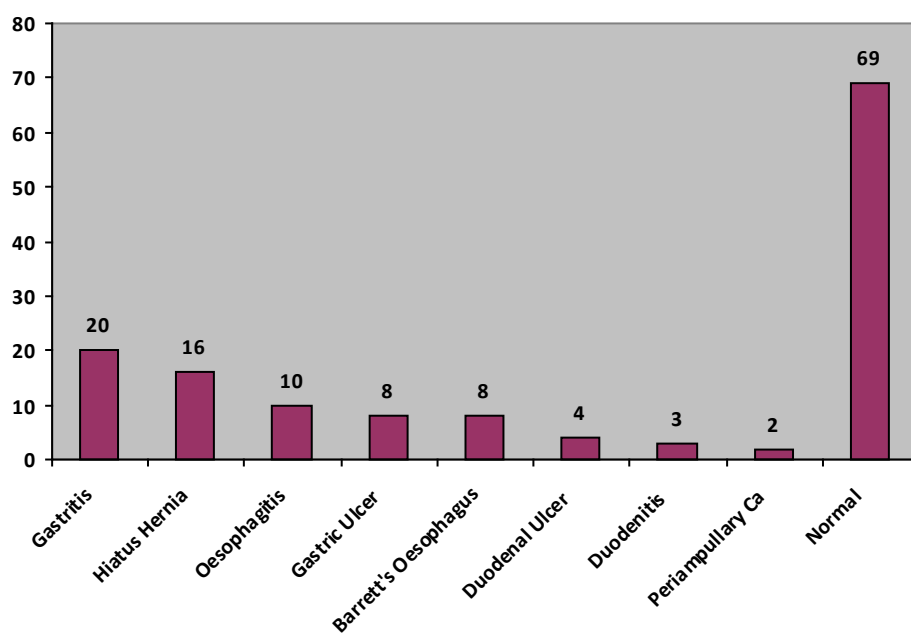


Fig. 1 Findings in OGD investigations.

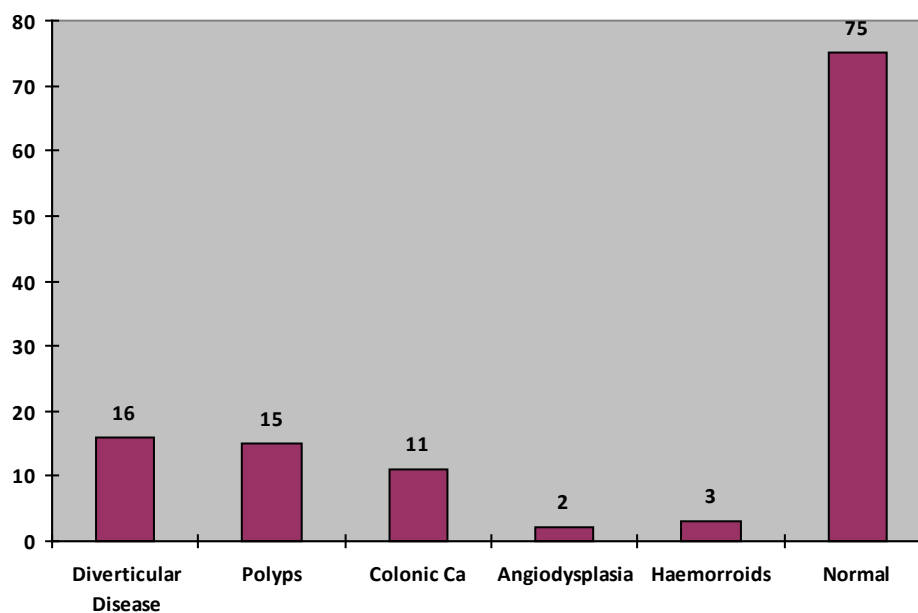


Fig. 2 Findings in Colonoscopy/ Barium enema investigations.

The most common lower GI tract cause of anaemia was colonic carcinoma in eleven patients. In 78 patients no definite cause of anaemia was found and they were started on iron therapy. Four of these patients were referred to haematology and two were referred for capsule endoscopy. In our series, in 11 out of 151 patients had small bowel study performed to find the cause of IDA. In ten of these 11 patients this was normal and in one patient it showed duodenal diverticulum. One patient had a red cell scan which was normal. In 14 patients out of 151 alternative source of blood loss explaining anaemia was found. This included menorrhagia in eight patients and non-GI malignancies in six.

4. DISCUSSION

IDA is a common clinical presentation of GI tract disorders particularly in adult men and postmenopausal women. These disorders can vary from benign causes like gastritis or peptic ulcer to malignant diseases like gastric or colonic carcinoma. In a large number of patients with IDA any obvious cause for their anaemia is not found even after all the investigations. In our study in 78 (51.6%) patients we did not find any cause for their IDA after investigations.

Incomplete investigation of IDA is common in clinical practice. A retrospective study from a tertiary hospital showed endoscopy rates as low as 31% in patients referred with IDA. It suggested that interventions other than guidelines were needed to change practice [3]. Another study showed that IDA is investigated twice more commonly than iron deficiency without anaemia. They suggested that iron deficiency without anaemia should be investigated in all patients over the age of 45 years [4]. A meta-analysis including eight studies from an

area with a high incidence of IDA and H pylori showed that H pylori eradication therapy combined with iron administration is more effective than iron administration alone for the treatment of IDA [5]. A European expert panel has shown that colonoscopy for IDA yields one colorectal cancer in every 9-13 colonoscopies and unanimously recommended colonoscopy in patients aged 50 years or above [6]. In our series 1 out of 11 patients where lower GI tract was investigated was found to have colonic cancer. Anaemia is present in 24% of males and 16% of females patients diagnosed with colorectal cancer. Those with right-sided and non-rectal cancers were significantly more likely to be anaemic than those with left-sided and rectal cancers [7]. A retrospective review of 3798 investigations in 2600 patients showed that a potentially curable gastrointestinal malignancy was diagnosed over 13 times more commonly using colonoscopy or barium enema compared to gastroscopy. They recommended that for patients presenting with IDA lower GI tract should be investigated first or both gastroscopy and colonoscopy should be performed during the same endoscopy list [8] Another study examined the effect of introducing an evidence-based clinical guideline on the diagnosis and evaluation of iron deficiency anaemia. It showed that there was a 30% increase in the proportion of IDA patients who underwent serum ferritin evaluation after introducing guidelines compared with the pre guidelines period. They further showed that proportion of anaemic patients who underwent endoscopic evaluation was 67% higher and patients where serious gastrointestinal lesions were found as a result of endoscopy in this group was 62% higher [9]. In the long term up to 89% patients have been shown to have improvement in their anaemia with iron therapy where no cause was found [10]. In patients presenting with IDA clinical symptoms and signs were poor indicators of a cause for the anaemia. [11]. One study from Italy has suggested that for non-hospitalized patients with IDA colonoscopy should be the initial investigation for those greater than 50 years of age, particularly men and those without upper-GI tract symptoms. In younger patients with lower values for MCV and Hb, OGD should be performed first particularly with a negative faecal occult blood test [12]. A higher incidence of gastrointestinal disorders has been found in men and postmenopausal women compared to premenopausal women with IDA [13,17]. Small bowel follow through can be positive in up to 38% patients if bidirectional endoscopy is negative. It was more useful in patients where faecal occult blood test was negative [14]. A study from Ireland similar to ours showed that duodenal biopsies were not taken in more than half of the patients [15]. 10% and 12% of patients presenting with iron deficiency anaemia in two studies were found to have gastrointestinal cancer [15, 16]. Multivariate analysis of predictive factors for a GI lesion in iron deficiency anaemia were abdominal symptoms, age more than 50 years and Hb less than 9 g/dl. [17].

5. CONCLUSION

A large number of patients have causes of IDA related to the GI tract. Patients presenting with IDA should have full investigations of both upper and lower GI tract to rule out important causes. Concurrent upper and lower GI tract causes should always be kept in mind in such a group of patients. Incomplete GI investigations may lead to omission of potentially

serious pathologies. Following BSG guidelines in the investigation of IDA will lead to higher diagnostic yield in this group of patients.

COMPETING INTERESTS

No competing interest exists

AUTHORS CONTRIBUTION

Author SD designed the study, wrote the manuscript and managed the literature searches. Author AB helped in literature search and preparation of the manuscript. Both authors read and approved the final manuscript.

ETHICAL APPROVAL

Not needed.

REFERENCES

- [1] Goddard AF, James MW, McIntyre AS, Scott BB. British Society of Gastroenterology Guidelines for the management of iron deficiency anaemia Gut. 2011; 60(10):1309-16.
- [2] Yates JM, Logan ECM, Stewart RM. Iron deficiency anaemia in general practice: clinical outcomes over three years and factors influencing diagnostic investigations. Postgrad-Med-J. 2004; 80 (945): 405-10.
- [3] Khadem G, Scott IA, Klein K. Evaluation of iron deficiency anaemia in tertiary hospital settings: room for improvement? Intern Med J. 2012; 42(6):658-64.
- [4] Brooklyn TN, Di Mambro AJ, Haslam N. Patients over 45 years with iron deficiency requires investigation. Eur J Gastroenterol Hepatol. 2003; 15(5):535-8.
- [5] Huang X, Qu X, Yan W, Huang Y, Cai M, Hu B et al. Iron deficiency anaemia can be improved after eradication of Helicobacter pylori. Postgrad Med J. 2010; 86(1015):272-8.
- [6] Peytremann-Bridevaux I, Arditi C, Froehlich F, O'Malley J, Fairclough P, Le Moine O et al. EPAGE II Study Group. Appropriateness of colonoscopy in Europe. Iron-deficiency anaemia and hematochezia. Endoscopy. 2009; 41(3):227-33.
- [7] Masson S, Chinn DJ, Tabaqchali MA, Waddup G, Dwarakanath AD. Is anaemia relevant in the referral and diagnosis of colorectal cancer? Colorectal Dis. 2007; 9(8):736-9.
- [8] Stephens MR, Hopper AN, White SR, Jugool S, Stratford R, Lewis WG et al. Colonoscopy first for iron-deficiency anaemia: a Numbers needed to investigate approach. QJM. 2006; 99(6):389-95.
- [9] Joannou GN, Spector J, Scott K, Rockey DC. Prospective evaluation of a clinical guideline for the diagnosis and management of iron deficiency anaemia Am J Med. 2002; 113(4):281-7.
- [10] Scott, Sahay R. Iron deficiency anaemia-how far to investigate? Gut 1993; 34:1427-1428.

- [11] McIntyre AS, Long RG. Prospective survey of investigations in outpatients referred with iron deficiency anaemia. *Gut* 1993; 34:1102-7.
- [12] Capurso G, Baccini F, Osborn J, Panzuto F, Di-Giulio E, Delle-Fave G et al. Can patient characteristics predict the outcome of endoscopic evaluation of iron deficiency anaemia: a multiple logistic regression analysis? *Gastrointest-Endosc* 2004; 59 (7): 766-71.
- [13] Luman W, Ng KL. Audit of investigations in patients with iron deficiency anaemia. *Singapore-Med-J* 2003; 44 (10): 504-10.
- [14] Annibale B, Capurso G, Baccini F, Lahner E, D-Ambra G, Di-Giulio E et al. Role of small bowel investigation in iron deficiency anaemia after negative endoscopic/histologic evaluation of the upper and lower gastrointestinal tract. *Dig-Liver-Dis* 2003; 35 (11): 784-7.
- [15] Patterson RN, Johnston SD. Iron deficiency anaemia: are the British Society of Gastroenterology guidelines being adhered to? *Postgrad-Med-J* 2003; 79 (930): 226-8.
- [16] Sari R, Aydogdu I, Sevinc A, Karıncaoglu M. Upper and lower gastrointestinal endoscopic investigation in elderly patients with iron deficiency anaemia. *Haematological-(Budap)* 2002; 31 (4): 327-32.
- [17] Nahon S, Lahmek P, Lesgourgues B, Nahon UK, Tuszynski T, Traissac L et al. Predictive factors of GI lesions in 241 women with iron deficiency anaemia. *Am-J-Gastroenterol* 2002; 97 (3): 590-3.