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Case Report

Endoscopic Diagnosis of Mixed Parasitic Infestation as an Uncommon Cause of Iron Deficiency Anaemia

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Abstract

Iron deficiency anaemia (IDA) is confirmed by a low level of haemoglobin (Hb), low ferritin or iron level in addition to hypochromic microcytic blood picture. It is ideal to get a coeliac screen with either anti-tissue transglutaminase (Anti-tTG) or anti-endomysial antibodies along with serum immunoglobulin IgA.

Gastroscopy and colonoscopy are essential to investigate the upper and lower gastrointestinal tract. When colonoscopy is contraindicated, CT colonography is a sufficient alternative. However, CT colonography lacks the advantage of the detection of vascular malformations like angiodysplasia.

Direct visualization of the small bowel with either small bowel video capsule endoscopy or double-balloon endoscopy, is not necessary unless there is an inadequate response to iron therapy, or the patient becomes transfusion dependent.

Despite the aim of the endoscopic examination is to diagnose mucosal pathology, on rare occasions, it can detect an unexpected cause of GI blood loss like luminal parasites.

Keywords: Anaemia; Iron deficiency; Taenia species worm; Trichuris trichiura

Introduction

Anaemia affects 24.8% of the population worldwide, and roughly half of them have IDA [1] which is a common cause for referral to the gastroenterology clinic [2].

The main causes of iron deficiency are deficient dietary intake, iron malabsorption, and chronic blood loss that could be gastrointestinal (GI) or non-gastrointestinal.

Case Presentation

Subjective data

30-year-old young Ethiopian lady who works as a housemaid was referred from her GP because of iron deficiency anaemia with haemoglobin level 74g/L. There was a history of mild abdominal discomfort, otherwise, the patient denied a history of overt GI bleeding, dysphagia, recent change in bowel habit or weight loss. There was no record of bleeding from different body orifices such as epistaxis, haemoptysis, haematuria, menorrhagia or metrorrhagia. The patient did not report the use of non-steroidal anti-inflammatory medications (NSAIDs) or anticoagulants. The patient mentioned that she had been consuming red meat in her diet. Following a retrospective enquiry about her dietary habits, the patient was unable to give a clear history about the ingestion of raw or undercooked meat.

There was no past medical history of GI disorders, surgery or anaemia. No family history of coeliac disease, inflammatory bowel disease, polyposis syndromes, GI cancer, IDA or bleeding disorders were reported. She neither smokes nor drinks alcohol.

Objective data

The patient was pale, otherwise, a thorough physical examination was unremarkable.

Laboratory investigations

- Hypochromic microcytic anaemia, Hb 74g/L (normal value 115-165), MCV 68fl (normal value 76 – 96), MCH 20.8pg (normal value 27.0 - 32.0), Ferritin 17mcg/L (normal value 20 – 275), Iron 3.8umol/L (normal value 7.0 - 29.0), Transferrin saturation 6% (normal value 15-55).
- Vitamin B12 and folate were normal.
- Na+, K+, urea and creatinine were normal.
- Anti-tTG was negative and IgA was normal.

Endoscopic examination

Gastroscopy (Figure 1) was reported normal and CLO test was negative. Duodenal biopsies came back normal.

Colonoscopy (Figure 2) showed heavy parasitic infestation with two different types of worms, one of them looked like a flat ribbon and the other one was thin whip-like. With the use of the suction trap, a sample of the worms was collected and sent to the parasitology laboratory. The result came back as Taenia species (Figure 2A, 2B red arrow & 2C) worm and Trichuris trichiura (female worm) (Figure 2B blue arrow & 2D).

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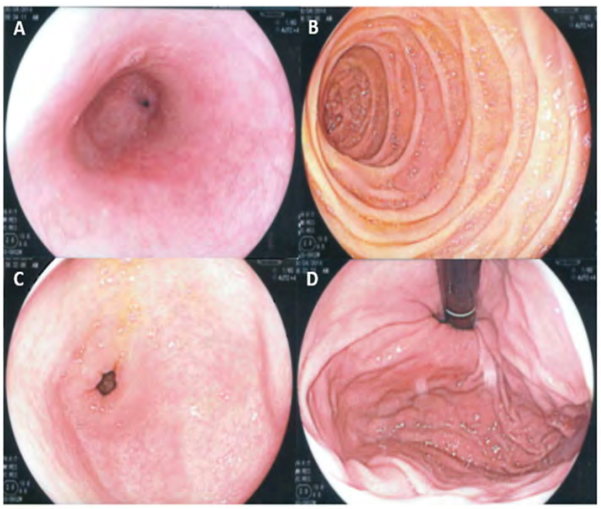

Figure 1: Gastroscopy images; A) Oesophagus, B) Gastric antrum, C) Duodenum second part, D) Gastric fundus.

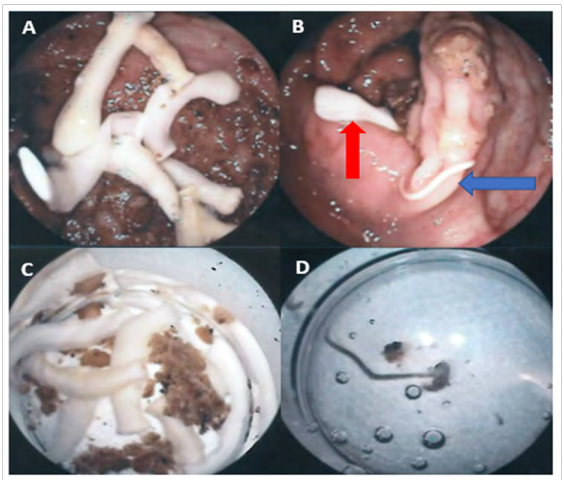

Figure 2: Colonoscopy images; A) Taenia worms, B) Taenia worms after sampling, C) Taenia worm (red arrow), Trichuris worm (blue arrow), D) Trichuris trichiura after sampling.

The patient was treated with a combination of praziquantel and ivermectin as advised by the tropical medicine consultant in addition to oral iron replacement. She was advised to avoid eating raw or undercooked meat in addition to maintain good personal hygiene and careful handwashing.

The patient was followed up in the clinic three months later, where she advised being generally well and did not report any complications or treatment side effects. Stool examination using concentration techniques did not reveal ova of parasites or proglottids of Taenia worm species.

A more recent blood test showed resolution of anaemia with Hb level 115g/L and Ferritin 24mcg/L. The patient was advised to continue oral iron for another three months.

Discussion

According to The World Health Organization anaemia is defined as haemoglobin (Hb) concentration below 130 g/L in males over 15 years of age, below 120 g/L in non-pregnant females over 15 years of age, and below 110 g/L in pregnant women [1]. Serum ferritin is the most accurate test for diagnosing iron-deficiency, provided the absence of inflammatory conditions because it is an acute-phase reactant [2]. Ferritin level below 15mcg/L is consistent with iron deficiency; however, using a higher ferritin cut-off value of 30mcg/L improves sensitivity from 25 to 92 percent, and specificity remains high at 98 percent [3]. In patients with chronic inflammatory disorders, a ferritin level of 50mcg/L or even greater may be still consistent with iron deficiency [2].

The initial assessment of a patient presenting with IDA may involve the following:

- Dietary history to identify poor iron intake.
- Menstrual history in premenopausal female patients.
- History of GI blood loss like haematemesis, melena or rectal bleeding.
- Symptoms suggestive of coeliac disease.
- History of extra-intestinal blood loss like haematuria.
- Multiple blood donations.
- The use of NSAIDs, antiplatelets or anti-coagulants.
- Previous history of bariatric surgery.
- Family history of coeliac disease, bowel cancer or other GI disorders.
- Family history of IDA, telangiectasia, or bleeding disorders.
- Urine dipstick test to detect microscopic haematuria as approximately one percent of patients with IDA may have a malignancy of the renal tract.

Clinical examination in cases of IDA is usually unhelpful, but particular attention should be taken to exclude:

- Abdominal masses.
- Cutaneous manifestations of Peutz-Jeghers syndrome.
- Cutaneous manifestations of hereditary haemorrhagic telangiectasia [3].

Once IDA is diagnosed, further investigations to look for possible occult GI blood loss have to be undertaken after the exclusion of excessive or irregular menstrual bleeding in premenopausal females [4].

It is important to identify coeliac disease that can present at any age and may be asymptomatic and the only presentation is IDA. Coeliac serology, tissue transglutaminase (tTG) antibody, or endomysial antibody should be checked at presentation, but if this has not been carried out, duodenal biopsy specimens should be taken. If coeliac serology is negative, small-bowel biopsies are not required during OGD unless there are other features, like diarrhoea, which may make the coeliac disease more likely [5].

Colonisation of the stomach with Helicobacter pylori may impair iron uptake and increase iron loss, potentially leading to iron deficiency and IDA. In anecdotal reports and small studies, Helicobacter pylori eradication appears to reverse anaemia [6].

One of the causes of chronic GI blood loss that may be overlooked is gastrointestinal parasites infestation (e.g., hookworm, whipworm), especially in developing countries. However, stool testing for parasites is not carried out routinely in the investigations of IDA.

If gastroscopy is carried out as the initial GI investigation, the presence of oesophagitis, peptic erosions and peptic ulcer disease should not be accepted as the cause of IDA until lower GI investigations have been conducted [2].

In this case, the blood investigations showed a negative coeliac screen which reduced the likelihood of coeliac disease even though normal duodenal biopsies had confirmed its absence. Gastroscopy did not show a pathologic finding to explain anaemia and Helicobacter pylori infection was excluded by the negative result of the CLO test.

Colonoscopy was performed because of normal gastroscopy and exclusion of coeliac disease and upper GI malignancy.

The Colonoscopy showed heavy mixed parasitic infestation with different types of helminths which is an uncommon cause of chronic GI blood loss and unusual to be diagnosed endoscopically.

It was a good idea to use the suction trap to collect a sample of the parasites.

The definitive hosts for Taenia worm species are humans who become infected by consuming raw or undercooked infected meat. The adult tapeworm can survive for years in the small intestine [7].

The adult worms of Trichuris trichiura (whipworm) usually live in the caecum and ascending colon [8].

Several cases of intestinal parasites including Taenia species have been diagnosed by capsule endoscopy through visualizing the adult worms [9].

Conclusion

Parasitic infestations are still an important cause of IDA particularly in people of low socioeconomic status, where faecal examination for parasites can be considered in the initial investigations of IDA.

Patients with IDA should have a serological screening for coeliac disease. In absence of an obvious cause for IDA (after excluding gynaecological causes in pre-menstrual women), all patients should have a gastroscopy with either colonoscopy or radiological imaging.

In some cases, the endoscopic examination can help to reveal rare causes of IDA like mixed parasitic infestation and allow sampling of the adult worms as in this patient.

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