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Case Report

Iron pill associated duodenitis: a less recognised clinical entity

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ABSTRACT

Iron supplementation is a widely prescribed treatment for anemia, but its association with gastrointestinal complications, specifically duodenitis, remains inadequately acknowledged in clinical practice. One of the common oral iron preparations to treat iron deficiency anemia is ferrous sulphate. Iron preparations have been known to cause gastric side effects, including gastritis and duodenitis. This case report explores the emerging concern of iron pill-associated duodenitis, shedding light on the potential adverse effects of oral iron supplementation on the duodenal mucosa. Existing literature and clinical cases are reviewed to highlight the connection between iron pill consumption and duodenal inflammation. From asymptomatic cases to severe symptoms like abdominal pain and gastrointestinal bleeding, the clinical spectrum is diverse. Histopathological analysis of endoscopic biopsies reveals characteristic features of duodenitis linked with iron deposits, raising concerns about long-term consequences. In conclusion, this case underscores the significance of recognizing iron pill-associated duodenitis as a distinct clinical entity, necessitating further investigation for optimized patient care and the safe administration of iron supplements in managing anemia.

Keywords: Anaemia, Iron deficiency, Duodenitis, Ferrous sulphate

INTRODUCTION

Iron deficiency anemia is a prevalent global health concern, often managed through oral iron supplementation. While this therapy is generally considered safe, emerging evidence suggests a less recognized and potentially significant complication-iron pill-associated duodenitis. The duodenum serves as the primary site for iron absorption, and the direct contact of iron supplements with the duodenal mucosa may lead to inflammatory changes. Limited awareness of this clinical entity is evident in the sparse literature addressing the adverse effects of iron supplementation on the gastrointestinal tract. Recent studies have reported cases of duodenitis associated with iron pill use, with varying clinical presentations ranging from mild discomfort to more severe symptoms such as abdominal pain and gastrointestinal bleeding.[1,2] Histopathological analysis of endoscopic biopsies from affected individuals reveals distinct features of duodenal inflammation linked to iron deposits.[3] The potential long-term consequences of this phenomenon remain unclear, necessitating a comprehensive exploration of risk factors, diagnostic challenges, and the broader clinical implications. This introduction aims to draw attention to the need for increased awareness among physicians regarding iron pill-associated duodenitis.

CASE REPORT

We hereby report a case of a 24-year-old female, student by profession. She presented to the emergency with a history of sudden onset unconsciousness while waiting for elevator. The episode lasted for about 5 minutes and was associated with spontaneous passing of urine. She regained consciousness spontaneously.

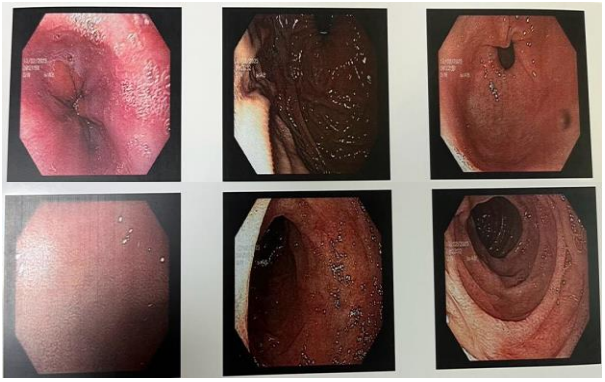

Figure 1: Endoscopy findings: antral and duodenal erosions.

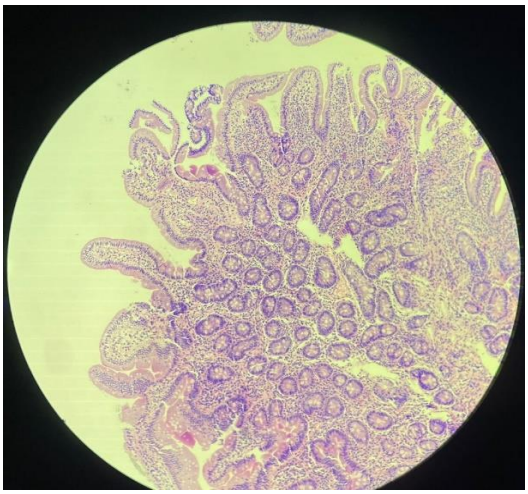

Figure 2: Lymphoplasmacytic cells admixed with few eosinophils and occasional neutrophils in the lamina propria with occasional intraepithelial polymorphs.

There was no history of confusion after regaining consciousness. There was no history of abnormal body movements, uprolling of eyes, tongue bite or clinching of teeth. There was no history of fever, loose stools, headache, vomiting, photophobia, rashes or weight loss. Similar episode also occurred 6 months ago. No history suggestive of malena or hematemesis or bleeding from any site. There is no history of diabetes mellitus, hypertension, tuberculosis or any other chronic illness in the past. Family history was insignificant. Patient gave a history of consumption of iron pills for about 6 months. Her menstrual history revealed cycles of normal duration and flow. On examination, she was conscious, cooperative and well oriented to time, place and person. Her vitals were; BP 90/60 mmHg, pulse rate 92 beats/minute regular, respiratory rate 18 breaths/minute, SpO2 of 97% on room air and was afebrile. General physical examination revealed pallor. Icterus, cyanosis, clubbing, lymphadenopathy and edema were absent. Systemic examination showed no significant abnormality. Patient was admitted with a provisional diagnosis of syncope under evaluation. She was put on IV fluids and other supportive management. On investigating, Complete blood count revealed Hemoglobin 8.1 g/dl, TLC 6.04 thou/ul, Platelet count 291 thous/ul. Peripheral blood smear showed microcytic hypochromic red blood cells. Liver and kidney function tests were within normal limits. In view of history of syncope, Head Up Tilt Test was done which was suggestive of vasodepressor syncope.

After 14 minutes of standing, patient had giddiness, Stoke Adams, BP unrecordable with heart rate of 55 beats/min. Symptoms, heart rate and BP settled to normal after tilting the table to baseline position. 24-hour Holter monitoring and Carotid Doppler showed normal study. EEG showed generalised epileptiform discharges.

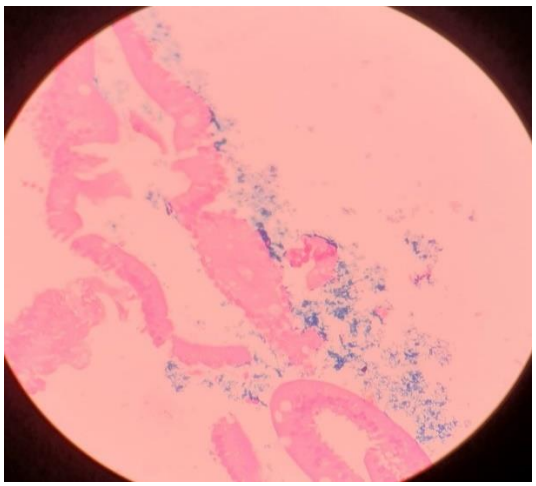

Figure 3: Perl stain: iron deposits seen on mucosa luminal surface.

Fundus examination was normal. Endocrine evaluation showed a low serum cortisol; 8 am-6.5 mcg/dl, 4 pm-5.1 mcg/dl. ACTH stimulation test was done. S. cortisol value before administration of Inj. Cosyntropin was 7.3 mcg/dl. After 1 hour, S. cortisol value was 19.6 mcg/dl, whereas the same was 23.8 mcg/dl after 1 hour. Plasma ACTH was found to be 13.6 pgml. A detailed workup of anemia was done. Anemia profile was suggestive of iron deficiency anemia. Stool for occult blood was positive. In view of upper GI bleed, upper GI endoscopy was done which showed duodenal and antral erosions. Duodenal D2 biopsy showed moderate excess of lymphoplasmacytic cells admixed with few eosinophils and occasional neutrophils in the lamina propria; occasional intraepithelial polymorphs were seen, villous architecture largely preserved. Few refractile golden brown iron pigment deposits (Perls stain positive) were seen along the luminal surface. Above findings are consistent with iron pill associated duodenitis.

After detailed evaluation, final diagnosis of Vasodepressor syncope, hypocortisolism and duodenitis was made. Patient was put on bisoprolol, low dose systemic steroids and intravenous iron therapy. She also received a packed RBC transfusion. She improved with

the line of management. She was discharged on low dose oral steroids and bisoprolol.

DISCUSSION

Oral iron preparations have been used for a long time to treat iron deficiency anemia. One of the most common oral iron preparations prescribed is ferrous sulphate. Around 30% of patients consuming iron supplements complain of gastrointestinal adverse effects, namely nausea, vomiting, dyspepsia, bloating, flatulence and vague abdominal discomfort.[4,5] These side effects resolve on discontinuation of the iron preparation. Less commonly, mucosal inflammation and injury have also been reported in gastric and duodenal biopsies.[6,7] This has been seen even at therapeutic doses of iron. It is known that iron absorption occurs in duodenum and jejunum. The mechanism of iron pill associated musical injury is not clearly understood, although some theories have been postulated. A possible mechanism is that when iron absorbing receptors are saturated, excess iron gets deposited in the duodenal mucosa leading to generation of reactive oxygen species, which causes mucosal injury.[8] Pre-existing lesions like mass or polyp may lead to trapping of iron in spaces resulting in prolonged contact with mucosa leading to injury.[4,9] In initial phase of oral iron consumption, crystalline iron deposits over the mucosa. When iron pill consumption is continued longer, iron deposits are left in lamina propria and are taken up by macrophages. Iron is also taken up by epithelial cells and is seen as granular deposits in the cells. Above mentioned pattern of gastric mucosal injury was termed as “iron-pill gastritis” by Marginean et al.[10] Histological findings of changes in duodenal mucosa are different from those seen in iron pill associated gastritis. It is characterised by brown or black iron deposits in the macrophages of lamina propria predominantly in the villous tips. Such a histologic pattern is termed as “pseudomelanosis duodeni”.[6,8,11] It is usually diagnosed incidentally during endoscopic evaluation. Only few cases of mucosal injury seen in histopathological examination have been described.[4] Clinicians should be aware of gastrointestinal mucosal injury caused by oral iron preparations. As per the severity or clinical need, switch to parenteral iron may be considered.

CONCLUSION

The recognition of iron pill-associated duodenitis as a less acknowledged clinical entity sheds light on potential complications arising from oral iron supplementation. The existing literature and clinical cases emphasize the need for heightened awareness among physicians to enhance patient care. The varying clinical presentations, from subtle discomfort to severe symptoms, underscore the importance of considering this entity in the differential diagnosis of unexplained gastrointestinal issues during iron therapy. Additionally, histopathological findings linking duodenal inflammation with iron deposits raise concerns about the long-term implications. After going through such case report, physicians can ensure the judicious use of iron supplements and mitigate potential complications associated with iron pill-induced duodenitis.

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