

Desiderosmia as the presenting feature of iron deficiency anaemia secondary to undiagnosed ulcerative colitis in an adolescent – A Case Report

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Case Report

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Abstract

Desiderosmia, the compulsive craving to smell non-food odours, is an under-recognised manifestation of iron deficiency anaemia (IDA). We report a 15-year-old boy with a one-year history of compulsive inhalation of petrol and kerosene along with mild fatigue on exertion. Investigations confirmed severe IDA (haemoglobin 5.8 g/dL) with elevated inflammatory markers and positive faecal lactoferrin. Sigmoidoscopy demonstrated Mayo grade 2 ulcerative colitis. He was managed with mesalazine, corticosteroids and iron supplementation. His craving to smell kerosene completely resolved few weeks after starting treatment. Recognising desiderosmia as a clue to IDA will lead to earlier identification of an underlying condition and prevent toxic complications of inhalant exposure.

Introduction

Desiderosmia (from Latin desiderare, to long for, and Greek osme, smell) describes a persistent, often compulsive desire to smell specific odours such as petroleum products, household cleaners. Unlike pica, it does not involve the ingestion of the substance. Evolving evidence and case reports link certain cases of desiderosmia to iron deficiency, with resolution following iron repletion [1,2]. Awareness among clinicians remains limited, and the symptom is easily misattributed to behavioural or psychiatric causes, delaying diagnosis of both the deficiency and its underlying cause. We describe an adolescent in whom desiderosmia was the dominant presenting symptom of severe iron deficiency anaemia (IDA) caused by previously undiagnosed ulcerative colitis.

Case presentation

Patient information.

A 15-year-old previously healthy schoolboy was referred with a one-year history of an irresistible urge to inhale petrol and kerosene, accompanied by mild exertional fatigue of six months' duration. He had been incidentally exposed to petrol fumes at his father's vehicle repair garage since childhood, but the deliberate, repetitive sniffing behaviour was new. It progressively intensified and had become compulsive. He denied classic symptoms of anaemia such as exertional breathlessness, pica or lethargy. There was no history of bleeding manifestations like melaena or passage of dark urine. He denied a family history of haemolytic disease or transfusion dependence. He consumed a balanced diet and had no dietary restrictions. On directed questioning, he reported intermittent loose stools without blood or mucus, abdominal bloating and excessive flatulence over the preceding few years; he had not regarded these symptoms as significant.

Clinical findings.

On examination, he was thin (body mass index 19 kg/m²) and significantly pale. There was no icterus, lymphadenopathy, koilonychia, glossitis, organomegaly or abdominal tenderness. Cardiovascular, respiratory and neurological assessments were unremarkable.

Diagnostic Assessment

His Investigations are summarised in Table 1. Severe microcytic hypochromic anaemia with reactive thrombocytosis, a low serum iron and elevated inflammatory markers were demonstrated. Although serum ferritin was within the laboratory reference range, it was inappropriately low in the context of active inflammation, in which ferritin behaves as an acute-phase reactant. A positive faecal lactoferrin prompted lower gastrointestinal endoscopy. His sigmoidoscopy revealed continuous mucosal erythema, friability with a Mayo endoscopic sub score of 2. The multiple biopsies from rectum and sigmoid colon confirmed the diagnosis of ulcerative colitis.

Table 1
Laboratory and endoscopic findings at presentation.

Parameter	Value	Reference range
Haemoglobin	5.8 g/dL	12.0–17.0
Mean corpuscular volume (MCV)	50 fL	80–100
Mean corpuscular Hb concentration (MCHC)	26 g/dL	32–36
Red cell distribution width (RDW)	21.6%	11.5–14.5
White cell count	$8.23 \times 10^9/\text{L}$	4–11
Platelet count	$793 \times 10^9/\text{L}$	150–400
Serum iron	10 µg/dL	65–175
Total Iron Binding Capacity (TIBC)	350 µg/dL	255–450
Iron saturation	10%	15–50
Serum ferritin	32.2 ng/mL	13–83 (inappropriately low for inflammation)
Erythrocyte sedimentation rate	60 mm/hr	< 15
C-reactive protein	100 mg/L	< 5
Faecal lactoferrin	Positive	
Peripheral blood film	Hypochromic microcytic cells, anisocytosis, pencil and tear-drop cells	—
Histology	Colonic mucosa with distorted architecture and mild mucosal erosion. Lamina propria expanded by lymphocytes, plasma cells and neutrophils. Mild mucin depletion, cryptitis and cryptic abscesses seen. Compatible with inflammatory bowel disease. (Nancy grade 4)	

After transfusion of two units of packed red cells which raised the haemoglobin to 7 g/dL, he was commenced on intravenous hydrocortisone, mesalazine suppository and oral mesalazine for ulcerative colitis together with oral ferrous sulphate. He was discharged on tapering oral prednisolone, maintenance mesalazine and oral iron supplements. During the clinic visit, two months later, his iron deficiency had been corrected and his craving to smell kerosene had completely resolved.

Discussion

Desiderosmia is being reported as an under recognised manifestation of iron deficiency, although it remains absent from most standard textbook descriptions of IDA. Hansen et al first proposed - desiderosmia as a discrete olfactory craving which is distinct from pica as a manifestation associated with severe iron deficiency anaemia [1]. In subsequent series, a substantial proportion of women evaluated for IDA reported similar olfactory cravings, most commonly for cleaning fluids, soap, rubber and petroleum products, with consistent resolution after iron repletion [2,3]. The exact pathophysiology is inconclusive; but the most accepted idea is that the brain's reward system (the mesolimbic circuit) is affected. This involves dopamine and opioid signals that need iron to work properly. Problems with these iron-dependent dopamine and opioid pathways may explain the behaviour, similar to the theories used for pica and restless legs syndrome [3].

Two features of the present case deserve emphasis. First, desiderosmia was the dominant complaint; classical features of IDA, such as pica, or the symptoms of anaemia were absent despite a haemoglobin of 5.8 g/dL. Such a presentation can easily mislead the clinician toward a behavioural or psychiatric diagnosis, particularly in an adolescent with prior environmental exposure to petrol who might be assumed to have inhalant misuse. The compulsive quality of the craving and its resolution with iron supplementation will support a primary haematological rather than addictive pathophysiology [1,3].

Second, the investigation of the cause for iron deficiency led to the underlying diagnosis of inflammatory bowel disease (IBD). Anaemia is the commonest extraintestinal manifestation of IBD and may precede overt gastrointestinal symptoms by years, particularly in adolescents who frequently dismiss mild diarrhoea or flatulence as trivial [4,5].

Beyond its diagnostic utility, desiderosmia for hydrocarbons carries a direct hazard. Chronic intentional inhalation of petrol and kerosene can produce chemical pneumonitis, and if systemically absorbed, central nervous system and hepatic toxicity. Prompt recognition and iron repletion typically extinguish the craving within weeks, often before haemoglobin fully normalises [2,3].

Conclusion

Desiderosmia is an uncommon and often underrecognized symptom, but it has been associated with iron deficiency anaemia (IDA). Its presence should prompt clinicians to actively evaluate for underlying iron deficiency anaemia. When IDA confirmed, an underlying cause of iron loss should be sought. In adolescents and young adults, inflammatory bowel disease must be considered as an aetiology of IDA even when bowel symptoms are mild or apparently absent. Early recognition of this interesting symptom and prompt treatment of its cause prevents the potentially serious toxic sequelae of chronic hydrocarbon inhalation associated with this symptom.

Declarations

Patient perspective

The treatment was well tolerated, and the patient and his family were pleased with the improvement in his symptoms. His parents were particularly relieved that his persistent urge to smell kerosene completely resolved following treatment and iron supplementation.

Ethics and consent to participate.

Not applicable.

Consent to Publish.

Written informed consent for publication of this case report was obtained from the patient's parent/legal guardian; assent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-In-Chief of this journal upon request.

Availability of data and materials.

Not applicable

Competing interests.

The authors declare no competing interests.

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Authors' contributions.

All authors contributed to patient management, drafting and critical revision of the manuscript, and approved the final version for submission.

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References

1. Hansen, B.R., Bottner, W.A, et al. (2017), Desiderosmia (olfactory craving): A novel symptom associated with iron deficiency anemia. Am. J. Hematol., 92: E93-E94.

<https://doi.org/10.1002/ajh.24706>

2. Barton JC, Barton JC, Bertoli LF. Pica associated with iron deficiency or depletion: clinical and laboratory correlates in 262 non-pregnant adult outpatients. *BMC Blood Disord*. 2010 Dec 22;10:9. doi: 10.1186/1471-2326-10-9. PMID: 21176208; PMCID: PMC3022645.
3. Borgna-Pignatti C, Zanella S. Pica as a manifestation of iron deficiency. *Expert Rev Hematol*. 2016 Nov;9(11):1075–1080. doi: 10.1080/17474086.2016.1245136. Epub 2016 Oct 19. PMID: 27701928.
4. Kaitha S, Bashir M, Ali T. Iron deficiency anemia in inflammatory bowel disease. *World J Gastrointest Pathophysiol* 2015; 6(3): 62–72 [PMID: 26301120 DOI: 10.4291/wjgp.v6.i3.62]
5. Dignass AU, Gasche C, Bettenworth D, et al. European consensus on the diagnosis and management of iron deficiency and anaemia in inflammatory bowel diseases. *Journal of Crohn's and Colitis*. Volume 9, Issue 3, March 2015, Pages 211–222, <https://doi.org/10.1093/ecco-jcc/jju009>