CASE REPORT

Severe iron deficiency anaemia associated with heavy lice infestation in a young woman

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SUMMARY

Lice feed on human blood, and heavy and chronic lice infestation can lead to chronic blood loss with resultant iron deficiency anaemia. Although no definite relationship between lice infestation and iron deficiency anaemia has been described, the concurrent presence of these two conditions has been reported in children and adults, as well as in cattle. We present a case of a young woman with severe iron deficiency anaemia that could not be explained by the known causes of iron deficiency anaemia. However, the patient was found to have heavy and chronic head lice infestation.

BACKGROUND

Lice feed on human blood after piercing the skin and injecting saliva, which induces an allergic reaction, pruritus and chronic blood loss, into the host. According to one study, one adult female louse feeds three to five times per day and can suck 0.0001579 mL in a single feed; thus, a heavy infestation with lice (approximately 2657 lice) may lead to blood loss of 0.7 mL/day or 20.8 mL/month.¹ This amount of blood loss might be insignificant in a healthy, well-nourished individual with a short-term infestation. However, chronic infestation may cause significant blood loss leading to clinically significant anaemia.

Although there is no established causal relationship between iron deficiency anaemia and lice infestation, these two conditions have been reported in cattle,² children^{3,4} and adults.⁵ We present a case of a young woman with severe iron deficiency anaemia associated with a heavy lice infestation.

CASE PRESENTATION

A 23-year-old woman with known depression, taking antidepressant medications, presented to our emergency department with a 1-month history of chest discomfort on exertion, palpitation, light headedness and generalised fatigability. She denied any history of loss of consciousness, significant shortness of breath, bleeding from any site, black discolouration of stools or bleeding per rectum, abdominal pain, or change in bowel habit. She had no history of weight loss or anorexia and had no eating disorder, and she did not crave unusual foodstuffs. Her medical history was significant for depression, which began with the loss of her mother 4 years previously, but she had no history of any other chronic medical illness or hospital admission. Her gynaecological history was notable for secondary amenorrhoea for the previous

6 months. She stated that she had been eating well (three meals/day) and that she rarely went outdoors or engaged in activities. On arrival to the emergency department, her vitals were as follows: blood pressure, 91/51 mm Hg; heart rate, 115 bpm; temperature, 36°C; oxygen saturation, 96% on room air; and respiratory rate, 22 breaths/min. She appeared pale without evidence of jaundice, had a thin build (body mass index of 21 kg/m²) and seemed depressed, fatigued and uninterested in conversation. Chest and heart examination findings were normal. The patient's abdomen was soft and lax with no tenderness, hepatosplenomegaly, or palpable masses, and a rectal examination was negative for melaena. We noticed that her head was covered with lice, and lice nits were visible. Examination of the scalp revealed scratch marks; no lice were seen on the rest of the body, including within the pubic hair.

INVESTIGATIONS

The patient's complete blood count showed a haemoglobin level of 2.2 g/L, haematocrit of 12%, mean corpuscular volume of 60 µm³, mean corpuscular haemoglobin of 19.7 pgm, platelet count of 405 000 µL, white cell count of 7.3×10³/mm³, lactate dehydrogenase level of 83 IU/L, total bilirubin level of 0.6 mg/dL, albumin level of 3.4 g/dL and normal liver function. ECG showed regular sinus tachycardia with no ST-segment changes. Cardiac enzymes were within normal limits. A peripheral blood film showed severe microcytic hypochromic anaemia with mild anisocytosis and adequate platelet numbers. A pregnancy test was negative, three faecal occult blood tests came back negative and abdominopelvic ultrasound was normal except for a borderline enlarged spleen of 12.8 cm. The patient's ferritin level was 1.19 ng/dL, serum iron level 3 µg/dL, vitamin B12 level 523.8 pg/mL, folate level 8.8 ng/dL and haemoglobin electrophoresis was normal. We offered upper and lower gastrointestinal endoscopy, but the patient refused.

TREATMENT

After receiving 2 units of packed red blood cells, the patient's haemoglobin level rose to 5 g/L. She was treated with permethrin 0.4% and shampoo for the head lice and intravenous iron therapy for the anaemia. After ensuring good body hygiene and psychological therapy, she began to communicate more and exhibit improvement in her symptoms. She was also referred to a gynaecologist for work up of secondary amenorrhoea; her hormonal

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profile showed normal levels of follicle-stimulating hormone, luteinising hormone and thyroid-stimulating hormone, and her prolactin level was 103.4 ng/mL.

OUTCOME AND FOLLOW-UP

The patient was discharged with a haemoglobin level of 6 g/L, oral iron and folic acid supplements and instructions to return to the outpatient clinic after 1 month. Unfortunately, she did not return for follow-up, and attempts to contact her failed.

DISCUSSION

Iron deficiency anaemia is prevalent among young females, in whom chronic blood loss is the most common cause (eg, menstrual blood loss, gastrointestinal bleeding).⁶ Other causes of iron deficiency anaemia are dietary insufficiency or decreased iron absorption. Our patient presented with severe iron deficiency anaemia. Her history and laboratory investigation findings did not reveal any obvious condition as the underlying cause of her anaemia. However, physical examination revealed a heavy and chronic head lice infestation. Severe iron deficiency in the presence of heavy lice infestation is believed to occur secondary to chronic blood loss, and a greater chronicity and quantity of lice can lead to a significant drop in haemoglobin.¹

Although no causal relationship between head lice infestation and iron deficiency anaemia has been established, several case reports have described iron deficiency anaemia in individuals with heavy and chronic lice infestation in the absence of other causes of iron deficiency anaemia. Since 1953, this association has been reported in cattle² and children.^{3, 4} Additionally, Guss *et al*⁵ recently published a case series of five patients who presented with signs and symptoms of anaemia, who were found to have heavy infestations of head and/or body lice. The lowest haemoglobin reported was 3.2 g/L (range, 5.7–3.2 g/L). The authors investigated the patients for all possible causes of anaemia, including performing upper endoscopy and colonoscopy examinations for four of the patients. All examination findings were normal, and the authors found no other cause to explain the anaemia other than chronic and heavy infestation with lice.

Our patient presented with a very low haemoglobin level of 2.2 g/L. Notably, all of the patients in the case series by Guss *et al*⁵ were homeless, with limited access to hygiene, which led to the chronic and heavy lice infestation. Our patient was also affected by diminished personal hygiene partly because of her psychiatric illness (depression) without cognitive therapy.

Other factors that may contribute to the development of such severe anaemia are stress and malnutrition, although our patient

was not malnourished, as evidenced by her acceptable body weight according to her age and her normal albumin level. It is unlikely that dietary insufficiency would cause this severe degree of anaemia.

We conclude that chronic and heavy lice infestation could be the cause of iron deficiency anaemia in the absence of an obvious cause of iron deficiency anaemia such as menstrual loss or chronic gastrointestinal bleeding.

Learning points

- ▶ Heavy and chronic lice infestation can be associated with severe iron deficiency anaemia.
- ▶ Lice infestation should be considered as a possible cause of iron deficiency anaemia in patients with poor hygiene, such as children, homeless patients and psychiatric patients.
- ▶ Whether anti-lice treatment has a major role in treating the associated iron deficiency in addition to treatment with blood transfusion and iron therapy is unclear.

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