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Cameron Ulcer Causing Severe Anemia in a Patient with Diaphragmatic Hernia

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Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
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Conflict of interest: None declared

Patient: Female, 51
Final Diagnosis: Cameron's ulcer
Symptoms: —
Medication: —
Clinical Procedure: Endoscopy
Specialty: Gastroenterology and Hepatology

Objective: Rare co-existence of disease or pathology

Background: Cameron lesions are linear gastric erosions on the mucosal folds at the diaphragmatic impressions found in patients with large hiatal hernias. While usually asymptomatic, hiatal hernias can result in serious sequelae, as this case report will clearly illustrate. Cameron lesions are clinically significant because of their ability to cause significant acute, chronic, or obscure gastrointestinal bleeding, often requiring blood transfusions.

Case Report: In this report, we present the case of a 51-year-old white woman who originally presented to the Emergency Department with complaints of a runny nose, dry cough, generalized weakness, and muscle cramping ascribed to a viral infection. However, closer examination revealed substantial pallor with pale conjunctiva prompting further workup that revealed substantial anaemia. Upon further inquiry of her past medical history, she revealed the need for previous blood transfusions, and meticulous review of her medical record indicated a previous diagnosis of hiatal hernia with the presence of Cameron lesions based on esophagogastroduodenoscopy 2 years prior.

Conclusions: This case emphasizes the need for a high index of suspicion for Cameron lesions as a causative agent of substantial blood loss in patients with hiatal hernias after other common causes of gastrointestinal bleeding have been ruled out.

MeSH Keywords: Anemia • Endoscopy • Hernia, Diaphragmatic • Stomach Ulcer

Full-text PDF: <http://www.amjcaserep.com/abstract/index/idArt/894145>

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Background

First described by Cameron and Higgins in 1986 [1], Cameron lesions are erosions that may lead to ulcerations in the gastric mucosa located at the diaphragmatic hiatus in patients with hiatal hernia [2]. Cameron erosions are a milder form of the disease, while Cameron ulcers are a more severe form of the same disease spectrum [3]. With respect to morphology and location, Cameron lesions can be round or ellipsoid, but linear forms are most common; they usually found on the lesser curvature of the stomach at the level of the diaphragmatic hernia [4]. Clinically, Cameron lesions are relevant due to their ability to cause acute, chronic, or obscure gastrointestinal bleeding resulting in substantial anaemia requiring blood transfusions. The diagnosis is usually confirmed with esophagogastroduodenoscopy [5]. This case report underscores the importance of recognizing Cameron lesions as a discrete clinical entity in the evaluation of a patient with severe indolent or acute anaemia and a history of diaphragmatic hernia.

Case Report

A 51-year-old white woman presented to the Emergency Department with a runny nose, non-productive dry cough, and subjective fever without night sweats with the onset of cold weather. Weakness, myalgia, and bone pain in her hands accompanied these symptoms, along with fatigue and lightheadedness for the past 2 weeks. Despite her cough, she continued to smoke 1 pack of cigarettes daily. She denied any environmental factors at home, including pets. Her past medical history was significant for chronic obstructive pulmonary disease, emphysema, anaemia, gastritis, gastroesophageal reflux disease, hiatal hernia, and Cameron lesions. Her past surgical history was significant for bilateral tubal ligation and partial hysterectomy and right breast lumpectomy. Social history was significant for a 30-pack/year tobacco history as well as daily alcohol use for the past 30 years, both of which she discontinued at symptom onset. Her current medications included Albuterol, Salbutamol and Esomeprazole, and allergies were significant for both non-steroidal anti-inflammatory drugs and hydrocodone, which caused her legs to swell. A cursory physical examination in the Emergency Department was consistent with her chief complaint and included rhinorrhea, cough, and generalized weakness; however, she was tachycardiac, pale, and exhibited conjunctival pallor. She also exhibited a 2/6 systolic ejection murmur on both inspiration and expiration, with 1+ non-pitting edema to bilateral legs, a capillary filling time of greater than 2 seconds, and a positive fecal occult blood test. She had cyanosis to bilateral fingertips with expiratory wheezing diffusely over bilateral lung fields when auscultated. Integumentary exam revealed swollen nasal turbinates, dry mucous membranes, and blisters on the lips. Rapid flu

and Monospot tests both done in the Emergency Department were negative but the anemic clinical picture prompted further workup. Substantial anemia was discovered on routine laboratory studies, with a hemoglobin and hematocrit of 4.8 gm/dl and 16.4%, respectively. Complete differential blood count revealed 2+ anisocytosis, 2+ microcytosis, 2+ hypochromic cells, but liver function tests and lactate dehydrogenase levels were within normal limits. Iron profile was significant for an iron level of 13 gm/dl, iron saturation of 4%, serum ferritin of 4.1 ng/ml, all indicative of severe iron deficiency anemia. Serum haptoglobin, total Iron-binding capacity, reticulocyte count, and transferrin were all normal, making hemolytic anemia less likely.

The patient was subsequently admitted and transfused with 4 units of packed red blood corpuscles. A gastrointestinal bleeding source was immediately considered as the most likely cause of the iron-deficiency anemia because of the positive fecal occult blood test. Before further gastrointestinal workup was considered, an extensive review of the medical record revealed an admission 4 years prior for symptomatic microcytic anemia, but not as severe as in the current admission. Esophagogastroduodenoscopy performed during that admission revealed a large hiatal hernia 36–42 cm in size, with linear erosions and a punctuate ulceration involving the diaphragmatic hiatus, consistent with Cameron erosions (Figures 1–4). Concurrent colonoscopy was normal except for a tortuous colon. The patient spent 2 otherwise uneventful nights in the hospital while blood transfusions and hematologic studies were performed, and was subsequently discharged without incident. The need for repeat esophagogastroduodenoscopy and colonoscopy was precluded by her previous diagnosis of Cameron lesions, to which her anemia was ascribed.

Discussion

Hiatal hernias are defined as the protrusion of the upper part of the stomach into the thorax through a tear or weakness in the diaphragm. Three main types of hiatal hernia exist, with the sliding hiatal hernia being the most common, and it gradually increases with age [6]. Cameron lesions are linear gastric ulcers or erosions on the mucosal folds at the diaphragmatic impressions generally found in patients with large hiatal hernias. The prevalence of Cameron lesions depends on the size of the hiatal hernia, with larger hernias associated with an increased risk [7]. While no clear pathogenesis has been discovered, these lesions can be attributed to various causes ranging from mechanical trauma secondary to diaphragmatic contraction from respiratory excursions [1,8] and acid injury [9], to ischemia resulting in the superficial erosions characteristic of Cameron lesions. The clinical relevance of Cameron ulcers lie in their ability to cause acute, chronic, or obscure

Figure 1. Horizontal Cameron ulcer marked by white arrow.

Figure 3. Longitudinal Cameron lesion marked by white arrow.

Figure 2. Longitudinal Cameron ulcer marked by white arrow.

Figure 4. Longitudinal Cameron lesion marked by white arrow.

Table 1. List of all the cases of Cameron lesion reported in literature to date.

Reported cases of Cameron lesions	Date reported	Number of cases
Richter IA, Rabin MS [8]	1979	3
Cameron AJ, Higgins JA [1]	1986	18
Moskovitz M, Fadden R, Min T, Jansma D, Gavalier J [9]	1992	16
Fry LC, Bellutti M, Neumann H, Malfertheiner P, Mönkemüller K [15]	2009	2
Gilbert D, O'Malley S, Selby W [16]	2011	2
Kapadia S, Jagroop S, Kumar A [17]	2012	1
Djurić Z, Nagorni A [4]	2013	1
Aypak C, Çakmak N, Görpelioğlu S [18]	2013	1
Gupta P, Suryadevara M, Das A, Falterman J	2015	1

gastrointestinal bleeding, which can even lead to severe symptomatic anemia. Cameron lesions may be easily missed on endoscopic inspection if the clinician is not actively searching

for them [10–12]. Occasionally, Cameron lesions are often missed on first esophagogastroduodenoscopy [10,11] and are discovered during push enteroscopy [13]. Due to the lack of

circumferential involvement and their variable degrees of severity that may ranging from erosions to ulcerations, a complete evaluation of the neck of the hernia, including antero-grade, retrograde and perpendicular views, is important for the detection of Cameron lesions [2]. Endoscopic findings such as edema, erythematous changes, and ecchymosis may often accompany Cameron lesions in the gastric mucosal folds [1,14].

Conclusions

This report presented a case of severe anemia in a female patient, partly unrelated to her presenting symptoms of vague, nonspecific, flu-like symptoms, as well as fatigue, light-headedness, and malaise. Her diagnosis was obtained through careful review of her medical records, which revealed prior admission for symptomatic anaemia secondary to the presence of

Cameron lesions. While few cases of Cameron lesions have been documented in the literature (Table 1), this case in particular is even more poignant because such a case of severe anemia necessitating transfusion in Cameron lesions has never before been documented. Although a rare cause of chronic gastrointestinal bleeding, it brings to light the importance of Cameron lesions as a consideration in the differential diagnosis in patients with hiatal hernia and anemia after the more common causes of gastrointestinal bleeding have been ruled out.

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