ELSEVIER

Clinical Imaging 36 (2012) 231–235

CLINICAL IMAGING

Beyond routine abdominal CT in the ER: a patient with indeterminate recurrent abdominal pain benefits from CT enterography

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Received 18 July 2011; accepted 25 August 2011

Abstract

We report the case of a 52-year-old female with multiple medical complaints and extensive prior clinical and imaging workup who presented to the emergency department with weakness and recurrent episodes of abdominal pain. She had had multiple inconclusive routine computed tomographic (CT) examinations. A 7-mm small bowel tumor was diagnosed on CT enterography and subsequently confirmed to be a carcinoid tumor of the ileum by enteroscopy and at surgery. The diagnosis was suggested prospectively utilizing CT enterography performed in the emergency radiology suite.

Keywords: Carcinoid tumor; CT enterography; Enteroscopy; Abdominal pain

1. Introduction

The patient with vague abdominal symptoms is a commonly encountered problem in the emergency department (ED), and clinical evaluation often leads to a request for computed tomography (CT) of the abdomen and pelvis [1]. While rare, small bowel carcinoid tumors present with such nonspecific symptoms as abdominal pain, weight loss and gastrointestinal (GI) bleeding [2]. Early and accurate diagnosis of small bowel carcinoid tumors poses a challenge for both clinicians and radiologists, as such tumors are usually missed on routine CT due to their small size and obscuration by positive oral contrast [3]. Endoscopic evaluation is also difficult as colonoscopy and esophagogastroduodenoscopy are limited in their ability to completely evaluate the small bowel [4].

In this case, our patient presented with recurrent episodes of abdominal pain, with multiple normal prior CT studies. A CT enterography (CTE) examination was protocoled by the emergency room (ER) radiologist to clarify the cause of recurrent abdominal pain, and a 7-mm distal small bowel carcinoid tumor was successfully identified. Protocoling CT examinations to evaluate the small bowel should be a consideration in select patients in the ER — particularly those who present with recurrent episodes of abdominal pain and have prior inconclusive or negative routine CT studies of the abdomen. Appropriate utilization of CTE with its superior visualization of bowel mucosa has potential to decrease the need for multiple routine CT examinations.

2. Case report

We report the case of a 52-year-old African American female, with a history of gastroparesis and gastroesophageal reflux disease, who presented to the ED complaining of mild chest pain with leg and arm cramps. Laboratory studies revealed iron deficiency anemia with a hematocrit of 22.7 and a positive fecal occult blood test. She had a prolonged history of chronic fatigue, weakness,

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doi:10.1016/j.clinimag.2011.08.020

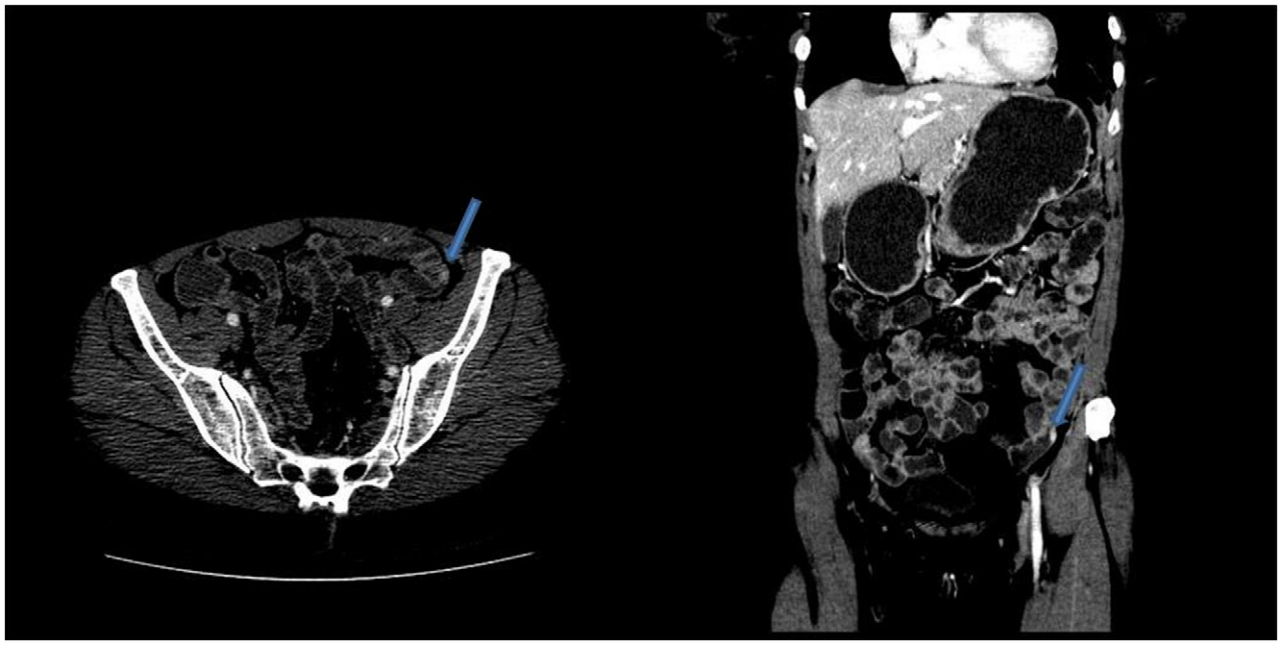

Fig. 1. Axial and coronal contrast-enhanced CTE obtained in arterial phase demonstrates a 7-mm enhancing intraluminal nodule within small bowel in the left lower quadrant (arrows).

nausea and vomiting and recurrent episodes of abdominal pain, which led to multiple prior ER visits and hospital admissions. Prior imaging workup including abdominal–pelvic CT without and with positive oral contrast, upper GI series, and upper and lower GI tract endoscopy did not demonstrate any significant acute abnormality.

At this presentation, CTE was performed to identify a likely small bowel source GI bleeding. At our institution, CTE includes use of negative oral contrast (Volumen, three bottles given over 60 min prior to exam) and thin section (acquired at 1.25 mm) helical CT acquired in arterial and venous phases (45- and 70-s delay) with multiplanar coronal and sagittal reconstructed images.

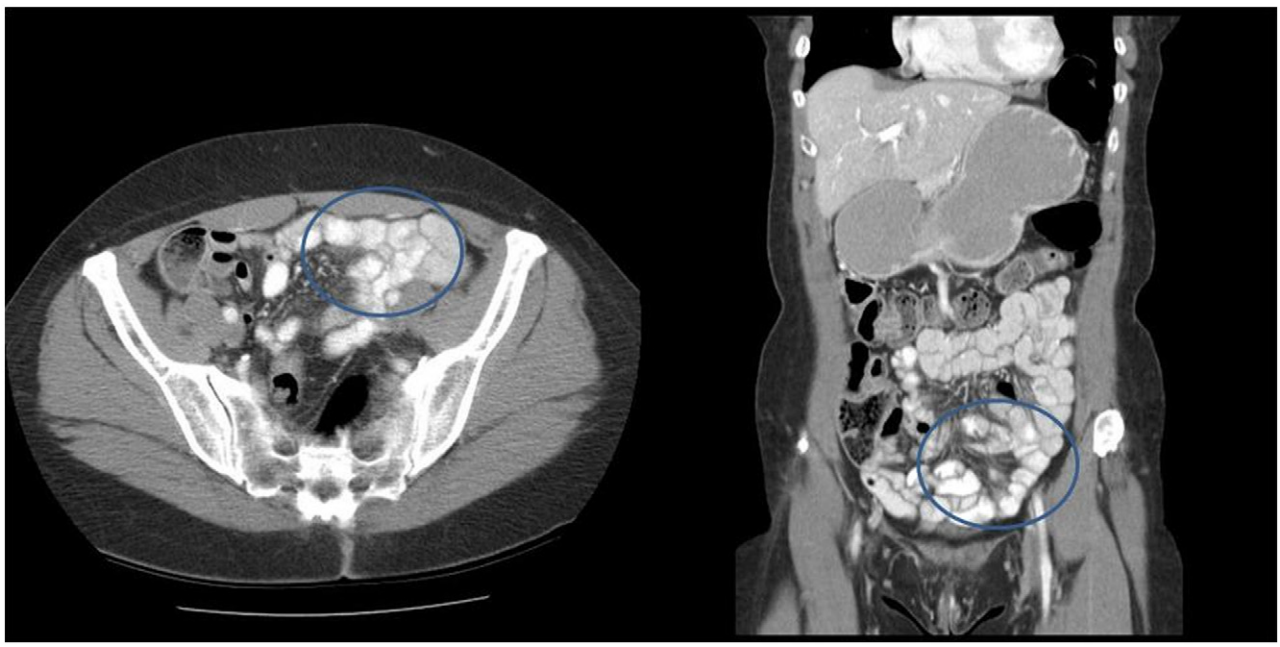

Fig. 2. Prior routine contrast-enhanced multidetector row CT with positive oral contrast in the portal venous phase demonstrates complete obscuration of the small bowel lesion (expected location denoted by a circle).