



Original research

The role of computed tomography in the preoperative assessment of gastrointestinal causes of acute abdomen in elderly patients



Alfonso Reginelli ^{a,*}, Anna Russo ^b, Antonio Pinto ^c, Francesco Stanzione ^d,
Ciro Martiniello ^b, Salvatore Cappabianca ^a, Luca Brunese ^e, Ettore Squillaci ^f

^a Department of Internal and Experimental Medicine, Magrassi-Lanzara, Institute of Radiology, Second University of Naples, Piazza Miraglia 2, 80138 Naples, Italy

^b Department of Radiology, S.G. Moscati Hospital, Aversa, Italy

^c Department of Radiology, A. Cardarelli Hospital, Naples, Italy

^d Department of General and Emergency Surgery, Metabolic Care, Clinic Pineta Grande, Castel Volturno, Caserta, Italy

^e Department of Health Science, University of Molise, Campobasso, Italy

^f Department of Diagnostic Imaging, Molecular Imaging, Interventional Radiology and Radiotherapy, University of Rome Tor Vergata, Rome, Italy

ARTICLE INFO

Article history:

Received 15 May 2014

Accepted 15 June 2014

Available online 23 August 2014

Keywords:

Acute abdomen

Elderly patients

CT

Gastrointestinal emergencies

ABSTRACT

Gastro-intestinal disorders in older patients is a medical emergency that requires immediate medical care. Chances of recovery improve with an early diagnosis and treatment. It might be caused by a number of different diseases, including perforations by foreign bodies, colon cancer, diverticulitis, ischemia. CT is often the initial modality used to assess patients with acute abdomen, the radiologist may be the first to suggest such a diagnosis. Computed tomography allows to identify the site of gastrointestinal perforations, of ischemia and to determine the most predictive signs in this diagnosis. The purpose of this study was to assess the diagnostic performance of CT gastrointestinal emergency of elderly patients with nontraumatic acute abdominal pain.

The cases of 126 consecutively registered patients 65 years old or older presenting to the emergency department with acute abdominal pain and who underwent CT were retrospectively reviewed by two radiologists. Diagnostic accuracy was calculated according to the level of correctly classified cases in both the entire cohort and a surgical subgroup and was compared between readings. Agreement between each reading and the reference diagnosis and interobserver agreement were assessed with kappa statistics.

In both the entire cohort (87.5% vs 85.3%, $p = 0.07$) and the surgical group (94% vs 91%, $p = 0.15$), there was no significant difference in CT accuracy between diagnoses made by the radiologist. Agreement between the CT diagnosis and the final diagnosis was excellent.

In the care of elderly patients, CT is accurate for diagnosing the cause of acute abdominal pain, particularly when it is of gastrointestinal surgical origin. Thus CT interpretation should not be delayed until complete clinicobiologic data are available, and the images should be quickly transmitted to the emergency physician so that appropriate therapy can be begun.

© 2014 Surgical Associates Ltd. Published by Elsevier Ltd. All rights reserved.

1. Introduction

Gastrointestinal (GI) diseases are common in older patients, and the clinical presentation, complications, and treatment may be different from those in younger patients. Aging is accompanied by a decline in the healthy function of several organs in response to different mechanisms like oxidative stress and elevated ROS (Reactive oxygen species) overproduction [1–3]. With the marked increase in population aged 65 years and over, the study and care of GI disorders should be a high priority for both clinicians and

* Corresponding author.

E-mail addresses: alfonso.reginelli@unina2.it (A. Reginelli), annarusso81@yahoo.it (A. Russo), antopin1968@libero.it (A. Pinto), fstanzione@yahoo.it (F. Stanzione), ciromartiniello@tin.it (C. Martiniello), salvatore.cappabianca@unina2.it (S. Cappabianca), lucabrunese@libero.it (L. Brunese), ettoresquillaci@tiscali.it (E. Squillaci).

researchers. Both the usual course of aging and the accumulation of multiple disease states can lead to impairments in GI function. Older individuals' propensity to use multiple medications, combined with years of acquired lifestyle choices, can disrupt the integrity and functioning of the GI system. Most problems encountered occur at the proximal and distal ends of the GI tract [4–6]. Acute abdomen in elderly patients poses a difficult challenge for emergency physicians. Elderly patients have a diminished sensorium, allowing pathology to advance to a very dangerous state before developing symptoms. In the presence of serious intra-abdominal pathology, elderly patients are more likely to present with vague symptoms and to have nonspecific findings on examination. The frequently disorders that occurs in elderly patients are: mesenteric ischemia, intestinal perforation by colon rectal cancer, diverticulitis, and foreign bodies [7]. CT with intravenous contrast provides superb anatomical detail and diagnostic specificity by directly imaging of the intestinal wall, detecting primary and secondary signs of bowel disease within the surrounding mesentery and depicting even small amounts of intestinal ischemia and extraluminal air into the peritoneal cavity [8].

2. Material and method

Between February 2012 and September 2013, all patients with symptoms of acute severe abdominal pain (with positive signs on clinical examination most commonly guarding and peritonism) and who were referred for an urgent CT scan as part of their evaluation were included in the study. CT scans performed within a 24-h period of the radiology request were defined as urgent. Patients with acute abdominal pain secondary to trauma (blunt or penetrating) and patients who were referred for a CT of the kidneys, ureter and bladder to establish the clinical diagnosis of renal colic or for abdominal vascular emergencies were excluded. The cases of 126 consecutively registered patients 65 years old or older presenting to the emergency department with acute abdominal pain and who underwent CT were retrospectively reviewed by two radiologists. Diagnostic accuracy was calculated according to the level of correctly classified cases in both the entire cohort and a surgical subgroup and was compared between readings. Agreement between each reading and the reference diagnosis and interobserver agreement were assessed with kappa statistics.

2.1. Imaging protocol

CT scans were performed on a Ge 64 scanner and acquired in double phase at 40 and 60 s after i.v. contrast administration. Oral contrast agent was not administered routinely. The scan was reconstructed to create contiguous 2.5 mm axial sections from the lung bases to the pubic symphysis. Coronal and sagittal reconstructions were also made available.

3. Results

126 consecutive scans fulfilled the inclusion criteria (114 patients; 85 women; mean age 75 years). The correct clinical diagnosis was made in 87.5% of cases based on CT findings. The lack of intravenous contrast limited diagnostic interpretation in 6 of the 15 discrepant cases. CT was unable to define early inflammatory changes in three patients and early caecal carcinoma in one. A right paraduodenal internal hernia was difficult to detect in another patient. Interobserver agreement was 93%, but with a low kappa value of 0.27. A paradox exists due to an imbalance in the positive and negative agreement of 96% and 31%, respectively. In both the entire cohort (87.4% vs 85.3%, $p = 0.07$) and the surgical group (94% vs 91%, $p = 0.15$), there was no significant difference in CT accuracy

between diagnoses made by the radiologist. Agreement between the CT diagnosis and the final diagnosis was excellent.

4. Discussion

Imaging is playing an increasingly important role in the assessment of the acute surgical patient with plain radiography, ultrasonography, CT and magnetic resonance imaging (MRI) all being used in this situation. While plain abdominal X-rays and erect chest X-rays are useful screening tools, their findings are often non-specific. Ultrasonography is inexpensive and free from ionising radiation or contrast. However, it is of reduced accuracy in obese patients or those with low mobility and can be unpleasant in patients with a very tender abdomen. CT provides greater accuracy than ultrasonography together with a greater detection of alternative diagnoses, especially with regards to retroperitoneal, bone and bowel pathology and detecting free gas. On the other hand it comes at the cost of exposure to radiation and contrast media as well as being far more expensive. The usefulness of CT in the diagnosis and management of acute gastrointestinal emergencies is well established, and confirmed by the results of this study, in which the CT diagnosis correlated with the final diagnosis in very high rate.

4.1. Intestinal ischemia

Mesenteric ischemia leading to bowel infarction is a relatively common catastrophic occurrence in the elderly. In this condition the diagnosis may be difficult, but time is of the essence for survival, because the prognosis is poor, and the treatment is almost inconsequential if performed too late [9–11]. Acute mesenteric ischemia is a true surgical emergency. Risk factors for acute mesenteric ischemia in patients of advanced age include atherosclerosis, arrhythmias, hypovolemia, congestive heart failure, recent myocardial infarction, valvular disease, deep venous thrombosis, intra-abdominal malignancy, and the use of medications with vasoconstrictive effect on the splanchnic vascular district, such as digitalis, beta-blockers, somatostatin, and vasoactive amines. The diagnosis of acute mesenteric ischemia may be overlooked because of the vague nature of the patient's symptoms [12–15]. Patients may present with recurrent episodes of post-prandial abdominal pain (intestinal angina), but often the clinical presentation consists of vomiting or diarrhoea with occasional blood in the stool and localized or generalized abdominal pain of either acute or sub-acute onset. The characteristic of this disease is that symptoms typically are out of proportion to findings. Acute mesenteric ischemia is a syndrome in which inadequate blood flow through the mesenteric circulation causes ischemia and eventual gangrene of the bowel wall. The aetiology could be arterial or venous; the arterial disease can be subdivided into non-occlusive and occlusive ischemia [16,17]. Occlusion of the superior mesenteric artery may be caused by embolism or thrombosis. Emboli may occlude the proximal portion or one of the distal branches of the superior mesenteric artery, whereas thrombosis more frequently involves the origin of superior mesenteric artery, where wall aortic atheromatous apposition may cause partial obstruction of the orifice. When the superior mesenteric artery is obstructed at the origin by an embolus, most of the small intestine and the right colon are subject to ischemia [18,19]. Non-occlusive mesenteric ischemia, most frequent in the elderly, results from decreased arterial perfusion that is not related to the presence of endovascular obstruction but rather is caused by an insufficient cardiac output from congestive heart failure, from myocardial infarction, or from a decreased blood pressure with a low-flow state caused by hypovolemia or shock. Occlusion of the superior mesenteric vein may be

Download English Version:

<https://daneshyari.com/en/article/4286605>

Download Persian Version:

<https://daneshyari.com/article/4286605>

[Daneshyari.com](https://daneshyari.com)