

# COMPUTERIZED TOMOGRAPHY IN ACUTE ABDOMINAL PAIN: KEY INSIGHTS FROM A RETROSPECTIVE REVIEW IN A PUBLIC HOSPITAL EMERGENCY DEPARTMENT



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## ABSTRACT

**Background:** Acute abdominal pain is a common reason for presentation and readmission to the emergency department (ED). It involves a broad range of differential diagnoses, posing a diagnostic challenge to treating physicians. Computerized tomography (CT) scans of the abdomen are commonly utilized for patients presenting with abdominal pain, providing established diagnostic value. However, exposure to ionizing radiation, intravenous contrast material, the financial burden, and the impact on ED wait times necessitate investigating the diagnostic utility of abdominal CT scans in the ED. This study aims to assess the indications for CT scans, explore the diagnostic yield, and examine the rate of diagnosis alteration pre- and post-CT, with the goal of providing insights into the trends associated with abdominal CT requests and guiding local CT ordering protocols.

**Method:** A retrospective review of patient medical records from January to March 2024 was conducted on adult ( $\geq 18$  years) patients presenting to the ED with non-traumatic acute abdominal pain ( $< 7$  days) who underwent CT scans. Data collected included demographics, medical history, location of abdominal pain, provisional diagnosis, and CT scan findings. Descriptive statistics were used for categorical and continuous variables, and multi-logistic regression models explored relationships between clinical variables and scan outcomes.

**Results:** A total of 460 patients were enrolled in the study, 55% were male, with a mean age of 40 years. The most common comorbidities were hypertension and diabetes (10% each). Right iliac fossa pain was the most frequent presenting complaint (37%), followed by left flank (16%) and right flank pain (14%). Appendicitis was the most common pre-CT provisional diagnosis (40.8%), followed by renal stones (16.6%).

Overall, 74.6% of scans were positive, with appendicitis (21.9%) and urinary tract stones (20.1%) being the most common findings. CT scans altered the provisional diagnosis in 48% of cases. Gender was the only significant clinical variable associated with positive scan results; females were 50% less likely to have a positive scan compared to males.

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eISSN: 1658-8959



**Conclusion:** Overall, our results provide valuable insights into local patterns associated with the use of CT for acute abdominal pain and align with regional and international studies regarding the common indications and CT findings. The results are also comparable with the ratio of positive CT scan findings and the rate of post-CT diagnosis alteration, which, as shown in the literature, can guide critical clinical decisions. However, apart from gender, no other clinical variable significantly predicted positive CT results, underscoring the inherent diagnostic uncertainty in evaluating acute abdominal pain in the ED. These findings highlight the need for optimized CT scan protocols that balance diagnostic accuracy with resource utilization.