COMPARISON STUDY TO EVALUATE THE RELEVANCE OF CT SCAN OVER ALVARADO SCORE

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ABSTRACT

For acute appendicitis diagnosis and treatment are described with emphasis on the significance of ultrasonography, computed tomography (CT), and laparoscopic appendectomy. The traditionally diagnosis of acute appendicitis by making physical examination and blood tests. CT scan imaging are very useful for determining whether surgery is compulsory or not. CT can visualize hypertrophy, disturbance, and disruption of the layered structure of the appendiceal wall, accumulation of purulent fluid, and the presence of a fecolith in the appendix. Keyword: - Acute appendicitis; Imaging diagnosis; Abdominal ultrasonography; Laparoscopic appendectomy

I. INTRODUCTION

Acute appendicitis is one of the most common condition which can be only be treated by an emergency clinical operation for its treatment. All clinical practitioner face this clinical condition from a wide range medical specialties including internal medicine and pediatrics, as well as surgeons, encounter patients with this condition in their daily practice. Acute appendicitis Show typical symptoms, it is easy to diagnose and treatment. In young children, elderly persons, and those presenting with various atypical symptoms, however, the diagnosis appendicitis. It also called appendicectomy which mean there is surgical removal of vermiform appendix. It may be performed laparoscopically or as an open operation. Both uncomplicated (non-perforated) and complicated. Appendectomy is generally accepted as a first-line treatment for no complicated acute appendicitis. Reports have shown that pre-operative radiographic evaluation has helped to decrease negative appendectomy rates from 20% to as low as 5%. Computed tomography has been frequently used for an imaging modality which help in the evaluation of acute appendicitis and has improved the diagnostic ability leading to a significant reduction in the number of negative appendectomies. With a reported sensitivity of up to 96.5% and specificity of about 98%, the main aim of this study was to knowing the CT criteria and clinical Alvarado scoring system to find out the best cut off value for appendiceal diameter in the diagnosis of acute appendicitis.

II. MATERIALS AND METHODS

Study Population

Patients. Total 150 patients who complaining acute pain abdominal within 24 – 48. Total 150 patients who had abdominal CT for acute abdomen, within 24–48 hours after the beginning of the acute pain, in which (male, 105 (70.9%); female, 45 (29.1%); mean age 50 years; range, 16–78 years). In Rama Medical College Hospital Research Centre from January 2021 to June 2021 study period is about 7 months.

Imaging Technique

CT examinations were done on PhilipsMX8000 four-detector row scanner. All patients were scanned in spine position at the level of diaphragm to the level of liver symphysis pubis. 100–120 mL iodinated contrast medium was injected via the antecubital vein at a rate of 3 mL/second with a delay of 60 seconds between contrast administration and data acquisition. 5 mm thick axial images were obtained. Soft tissue kernel was used and reconstruction in increment was 1 mm.

Image Interpretation

In axial CT images radiologist measured
measured the appendiceal diameter and analyzed the presence and absence of appendicolith inflammation, and free fluid. The Pathological diagnosis was used as the reference standard.

CT evaluation of the appendix was based on the following criteria

1. Diameter of the appendix,
2. Periappendiceal inflammation,
3. Presence of extraluminal fluid collection around the appendix,

i. **Diameter**: it was measured at the greatest portion of visible appendix on axial scans. Sometimes appendix was not seen for that condition we traced it from coronal reformat images.

ii. **Appendicolith**: It was defined as a high attenuation structure of any size within the appendix. It may detected by the presence or absence of Appendicolith.

iii. **Inflammation**: it was analyzed by the presence and absence of periappendiceal inflammation. If there was founding of inflammation than it is classified in to 2 group mild to moderate and severe.

iv. **Free fluid**: it was suggestive for perforation and abscess formation was evaluated.

**Inclusion Criteria**

The criteria for including the individuals from the study was as follows-

1. Sudden pain that begins on the right side of the lower abdomen.
2. Sudden pain that begins around your navel and often shifts to your lower right abdomen.

**Exclusion Criteria**

1. Pain in upper quadrants of abdominal

**Statistical Analysis**: Statistical analysis was performed by using computer based software, Statistical Package for Social Science (SPSS). Mean values of parameters were compared to determine.

### III. RESULT

Out of 150 patient 100 patient files were taken for appendectomy surgery 65 patient were male and 35 were female which mean age 40 year for male and for female 35 year. These 100 patient were histopathology proven that they were suffering from acute appendicitis. Left 30 patient had clinical acute appendicitis which was clinical judged by surgeon but according histopathology it was not acute appendicitis. 15 patients showing abdominal pain but not need any surgical treatment they were sending home after getting treatment and continue follow up. 5 patients were diagnosed with nephrolithiasis, 10 patients were diagnosed with cholecystitis. The diameter of appendiceal and WBC were correlated to the inflammation of the appendix ($P=0.001<0.05$). The patient with acute appendicitis had mean diameter of 7.6 mm with mean WBC count of $15.4 \times 10^9/L$. In case of the patients whose normal appendix had a mean appendix diameter was $2.5 \text{mm}$ with mean WBC count of $6.6 \times 10^9/L$. The mean Alvarado score of the patients with acute appendicitis was 6.6.

### IV. DISCUSSION

Our study analyzed that the CT criteria and clinical Alvarado scoring system in for the best cut-off value for appendiceal diameter in the diagnosis of acute appendicitis. For acute appendicitis CT diagnosis can be based on four criteria which are appendiceal diameter, presence of appendicolith, periappendiceal inflammation, and free fluid. It is very tough to determine maximum diameter of appendix with CT for accurate diagnosis of the acute appendicitis. While comparing our study with Ishiyama et al. it showed a significant relationship between our current study and there study of appendicolith and the severity of acute appendicitis in a retrospective study with on total number of 254 patients who had pathologically proved that they having acute appendicitis. Another study of Nelson et al. who carried out study for the examination to relevance of clinical assessment in diagnosing appendicitis in the era of routine use of CT scan in the total of 664 patients. Those cases show high clinical suspicion, the surgeon's clinical assessment was reliable while in cases initial impression was slow for acute appendicitis, while diagnosis as pathological 87% of these patients had confirmed appendicitis. This results was suggested that the surgeon's overall clinical assessment was imperfect at best. The authors concluded that although physical examination remains crucial, but as the CT has become the primary modality dictating care of patients with presumed appendicitis. While comparing our study with McKay et al it was recommended that surgical consultation if clinical presentation suggested acute appendicitis by an Alvarado score of 7 or higher. They reported that CT scan was not indicated in patients with Alvarado scores of 3 or lower to diagnose acute appendicitis. Wanget al. researched the use for CT in patients with...
suspected acute appendicitis who had relatively low Alvarado scores was low as compared to our study. Ultrasonography play an important role in the diagnosis of acute appendicitis since it is a widely available. It has been reported to have a sensitivity between 60% to 98% and specificity is about 95% in the literature.

V. CONCLUSION

CT is very accurate imaging modality for the diagnosis of acute appendicitis. Presence of CT criteria of appendiceal diameter above 7.6 mm, periappendiceal inflammation, fluid, and appendicolith should prompt the diagnosis of acute appendicitis. Even though the optimal use of CT scan in evaluating patients with suspected appendicitis is not clear, it is necessary for patients with relatively low Alvarado score and leukocytosis and also when physical examination is confusing. Such type of more study is required for better understanding for acute appendicitis and better treatment.

REFERENCE

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