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ACCURACY OF CLINICAL DIAGNOSIS IN ACUTE APPENDICITIS

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Abstract:

Introduction: About 7% in the general population there is lifetime risk of acute appendicitis (AA). Due to improvement in diagnostics and increasing surgical experience rate of negative appendectomies even in advanced medical centers fails to fall below 10% and the clinical diagnosis of appendicitis remains a diagnostic challenge. The clinical diagnosis of acute appendicitis is to balance diagnostic accuracy with appendiceal perforation. Centers with the most accurate diagnosis (89%) have a higher rate of appendiceal perforation (29%), and vice versa, presumably due to earlier operation. Although Appendicitis is difficult to proper diagnosis where there may not be classical symptoms and signs of appendicitis. There are different sign and symptoms for the diagnosis of acute appendicitis, there are number of causes leading to pain in right iliac fossa particularly in female patients. For diagnosis of the appendicitis is to facilitate the surgeon there are different scoring systems to avert negative appendicectomy. In the patients suffering from acute appendicitis classical symptoms occur just over half and accurate and timely diagnosis of atypical appendicitis which remains clinically challenging and one of the most commonly missed problems in the emergency department. Whenever missing of consequence appendicitis that leading to perforation, significantly increases morbidity and prolongs hospital stay. Non perforated appendicitis is less than 1 percent of mortality rate which may be as high as 5 percent or more in young and elderly patients. Due to delay in diagnosis it will lead to complications like increases morbidity whereas overzealous diagnosis may lead to negative appendectomy rate.

Aim: The aim of this study is to assess the diagnostic accuracy of clinical and laboratory parameters in the diagnosis of AA.

Material and Methods: This study was conducted in the Department of Surgery, SSPM Medical College from during the period of one year. All patients operated for appendicectomy during that period were included. All the patients' complete clinical history was collected and also physical examinations were done. All patients' data with the operative and discharge record were correlated with the case notes wherever necessary. Clinical findings such as, history of anorexia, pain followed by nausea, right lower quadrant pain, vomiting, rebound tenderness, guarding, rigidity and conventional appendectomies were carried out in this study. Data for age, sex, white blood cell count, abdominal USG results, histological findings and hospital stay were collected as Primary criterion for diagnosing acute appendicitis (AA).

Result: Even in the most experienced hands the diagnosis of appendicitis can be challenging, and is predominantly a clinical one. Accurate anamnesis and physical exam are important to prevent unnecessary surgery and avoid complications. Probability of appendicitis depends on age, clinical setting, and symptoms.

Conclusion: Acute appendicitis in emergency setting may be successfully ruled in with high accuracy based on lack of appetite and absence of diarrhea, elevated with signs of localized peritonitis. However CRP did not contribute to the overall diagnostic accuracy AA and its protocols is of no value. For

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successful diagnosis thorough assessment that contains adequate evaluation of laboratory parameters in combination with clinical exam.

Keywords: Appendicitis; Diagnosis, C-reactive protein; Laboratory clinics

Introduction:

About 7% in the general population there is lifetime risk of acute appendicitis (AA)[i]. Due to improvement in diagnostics and increasing surgical experience rate of negative appendectomies even in advanced medical centers fails to fall below 10%[ii] and the clinical diagnosis of appendicitis remains a diagnostic challenge[iii]. Practical diagnostic modalities as Routine history and physical examination are still remains. Histopathological examination of specimen and course possible at operation diagnosis is most practical diagnosis. The clinical diagnosis of acute appendicitis is to balance diagnostic accuracy with appendiceal perforation. Centers with the most accurate diagnosis (89%) have a higher rate of appendiceal perforation (29%), and vice versa, presumably due to earlier operation[iv]. Although Appendicitis is difficult to proper diagnosis where there may not be classical symptoms and signs of appendicitis. There are different sign and symptoms for the diagnosis of acute appendicitis, there are number of causes leading to pain in right iliac fossa particularly in female patients. For diagnosis of the appendicitis is to facilitate the surgeon there are different scoring systems to avert negative appendicectomy[v,vi]. According to Bailey, "A correct diagnosis is the hand maiden of successful operation" in spite of advancements in the fields of diagnosis the surprises never caese[vii]. The most common acute surgical condition of the abdomen is acute appendicitis[viii]. In spite of advance technologic diagnosis of appendicitis is still based primarily on the patient's history and the physical examination. Primary diagnosis of acute appendicitis surgical referral may reduce the risk of perforation and prevent complications[ix]. In the patients suffering from acute appendicitis classical symptoms occur just over half and accurate and timely diagnosis of atypical appendicitis which remains clinically challenging and one of the most commonly missed problems in the emergency department. Whenever missing of consequence appendicitis that leading to perforation, significantly increases morbidity and prolongs hospital stay. Non perforated appendicitis is less than 1 percent of mortality rate which may be as high as 5 percent or more in young and elderly patients. Due to delay in diagnosis it will lead to complications like increases morbidity whereas overzealous diagnosis may lead to negative appendectomy rate[x].

The aim of this study is to assess the diagnostic accuracy of clinical and laboratory parameters in the diagnosis of AA in tertiary care hospital.

MATERIAL AND METHODS:

This study was conducted in the Department of Surgery, at SSPM Medical College from during the period of one year. All patients operated for appendicectomy during that period were included. A clinical study of patients undergoing surgery were selected which has to come across this surgical emergency and treatment and skillful management in surgery department of our hospital. The patients with all age group were included in this study. From all the patients complete clinical history was collected and also physical examinations were done. All patients' data with the operative and discharge record were correlated with the case notes wherever necessary. Clinical findings such as, history of anorexia, pain followed by nausea, right lower quadrant pain, vomiting, rebound tenderness, guarding, rigidity and conventional appendectomies were carried out in this study. Data for age, sex, white blood cell count, abdominal USG results, histological findings and hospital stay were collected as Primary criterion for diagnosing acute appendicitis (AA). In 60 patients AA diagnosis was confirmed intra operatively and by histological analysis. From all the patients clinical and laboratory parameters, relevant to AA diagnosis, were analyzed.

OBSERVATIONS AND RESULTS:

Even in the most experienced hands the diagnosis of appendicitis can be challenging, and is predominantly a clinical one. Accurate anamnesis

and physical exam are important to prevent unnecessary surgery and avoid complications as shown in table no 1 below. Probability of appendicitis depends on age, clinical setting, and symptoms[xi, xii].

Table 1: Accuracy of findings from the history and physical examination in the diagnosis of appendicitis in patients.

Clinical finding	Number of cases
Right lower quadrant pain	7
Migration (periumbilical to right lower quadrant)	12
Initial clinical impression of the surgeon	7
Psoas sign	8
Fever	7
Pain before vomiting	6
Rebound tenderness	8
Rectal tenderness	5

In 1986 The Alvarado score was originally described which most widely reported scoring system for acute appendicitis is. However, this score alone is not accurate enough to diagnose or exclude appendicitis[xiii, xiv] which is shown in table 2 below.

Table 2: Alvarado score for the diagnosis of appendicitis.

Clinical finding	Points
Migration of pain to the right lower quadran	1
Anorexia	1
Nausea and vomiting	1
Tenderness in the right lower quadrant	2
Rebound pain	1
Elevated temperature (≥99.1° F - 37.3° C)	1
Leukocytosis (≥10,000 white blood cells per mm^3)	2
Shift of WBC count to the left (>75 percent neutrophils)	1

Patients with a score of ≥7 points have a high risk of appendicitis. Patients with a score of<5 points have a very low risk of appendicitis.

For diagnosing acute appendicitis the overall accuracy is approximately 80%, which corresponds to a mean false-negative appendectomy rate of 20%. Diagnostic accuracy varies by sex, with a range of 78%- 92% in male and 58%- 85% in female patients as shown in table 3 below.

Table: 3. Sensibility and specificity of symptoms and signs on the diagnosis of acute appendicitis

Symptoms and signs	Sensibility	Specificity
Hyporexia	58%- 91%	37%-40%
Nauseas e vomiting	40%-72%	45%-69%
Diarrhoea	9%-24%	58%-65%
Fever	27%-74%	50%-84%
Rebound pain	80%-87%	69%-78%
Leukocytosis	42%-96%	53%-76%
C-reactive-protein	41%-48%	49%-57%

DISCUSSION:

Pain in the right lower quadrant of the abdomen remains a clinical difficulty for surgery for surgeons. Traditionally a clinical diagnosis for acute appendicitis may not present with the 'classical' symptoms and signs of acute appendicitis. However atypical signs and symptoms having patients can be admitted to hospital for a period of observation, laboratory tests and medical imaging may be diagnostic for acute appendicitis. Mostly in developing countries all medical practice environments relating to facilities, administration of oral and/or rectal contrast, the scanners are expensive which leading to prolong to stay, administered of IV contrast there is a risk of allergic reaction or nephrotoxicity[xv,xvi]. The most reliable clinical findings indicate a diagnosis of acute appendicitis as Percussion tenderness, guarding, and rebound tenderness. Voluntary muscle guarding in the right lower quadrant is common and usually precedes the tenderness. Acute appendicitis with sign and symptom are the mostly described whereas it shows less than 40% of patients with acute appendicitis and even their absence should not prevent the examiner from establishing an accurate diagnosis[xvii,xviii&xix]. Similar to results were also found in other studies as symptoms of typical migratory pain and localized signs of peritonitis in the right lower quadrant which are very specific, relatively rare in patients with AA[xx]. In this study there is no change in appetite; diarrhea and dysuria are important negative predictors for AA especially when combined with normal WBC and positive results of urine test strip analysis. However, there is no sign & symptom or laboratory test or their combination which is 100% reliable in the diagnosis of acute appendicitis should keep in mind for attending surgeons which is similar to other studies[xxi].

CONCLUSION:

Acute appendicitis in emergency setting may be successfully ruled in with high accuracy based on lack of appetite and absence of diarrhea, elevated WBCs and negative urine test strip in combination with signs of localized peritonitis. Especially in women, the positive urine test strip results rejection of the AA diagnosis. However CRP did not contribute to the overall diagnostic accuracy AA and its protocols is of no value. For successful diagnosis thorough assessment that contains adequate evaluation of laboratory parameters in combination with clinical exam.

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