

WHITE BLOOD COUNT AS A DIAGNOSTIC PARAMETER IN ACUTE APPENDICITIS: A DOUBLE BLIND STUDY

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ABSTRACT: BACKGROUND AND OBJECTIVES: Although appendectomy is the most commonly done emergency surgery still its diagnosis remains an enigmatic challenge, with persisting high rate of negative explorations. The objective of the study was to evaluate the role of accuracy of WBC measurement in the diagnosis of acute appendicitis and to reduce the morbidity by avoiding negative explorations. **METHODS:** The present study was conducted in 50 patients at the hospital have been clinically diagnosed by surgeons as having acute appendicitis and posted for emergency appendectomy. Preoperatively blood was sent for WBC estimation, (more than 10,000 per mmg) after operation all specimens were sent for HPE examination; results of WBC were correlated with HPE reports to evaluate their role in diagnosis of acute appendicitis. **RESULTS:** In present study, WBC has highest sensitivity and specificity of 97.7% and 85.7% with positive predictive value of 97.7%. Hence it was proved that WBC level can be used to rule out negative appendicitis, so that surgery can be deferred in them and to reduce rate of negative appendectomies. **INTERPRETATION AND CONCLUSION:** We continue to stress that history and clinical examination by a skilled surgeon still remain indispensable in diagnosis of acute appendicitis, and its importance cannot be undermined. But WBC helps to reduce negative appendectomy rate drastically and hence should always be included in diagnostic work up of acute appendicitis.

KEYWORDS: WBC – White blood cell, HPE – Histopathological examination.

INTRODUCTION: Acute appendicitis is one of the most common cause of Right Iliac Fossa [RIF] pain and one of the most common cause of surgical emergencies.

Its diagnosis is established by surgeon's clinical impression depending on presenting history, clinical evaluation and laboratory test.⁽¹⁾

Atypical presentations are not uncommon as many inflammatory and non-inflammatory conditions may mimic the presentation of acute appendicitis.⁽²⁾

The classic triad of history compatible with acute appendicitis, pain at McBurney's point has diagnostic accuracy rate of less than 80%.

This resulted in relatively high rate of about 15.30% of negative exploration for acute appendicitis. And postoperative morbidity associated with these negative explorations is 5-15%.

Traditionally surgeons have accepted a higher incidence of unnecessary appendectomies in order to decrease the incidence of perforation. This approach is being increasingly questioned in today's era of evidence based medicine. The high rate of negative explorations for appendicitis is a burden faced not only by the general surgeon, but also the patient and the society as a whole, since appendectomy like any other operation results in socioeconomic impact in the form of hospital expenses, lost working days and declining productivity.

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So the goal of surgical treatment is removal of inflamed appendix before perforation with a minimal number of negative appendicectomies.

Many reports have investigated the value of raised serum WBC measurement in improving the diagnosis of acute appendicitis.

In this study we correlated the serum levels of WBC with the histopathology of removed appendix. This study emphasized the impact of normal (rather than raised) serum WBC in reducing the rate of negative explorations.

MATERIALS AND METHOD: In this double blind study all patients who are diagnosed clinically as to have acute appendicitis form the source of study.

They were included after explaining them about the study and taking their written consent.

METHOD OF COLLECTION OF DATA: Patient with history of acute abdominal pain were examined by a surgeon, for establishing the diagnosis, complete patient history was obtained followed by examination by surgeon and decided for emergency appendicectomy.

Blood samples were drawn and sent for WBC examination before operation. Appendix specimen was sent for HPE comparing WBCs with HPE report, specificity and sensitivity of WBC calculated.

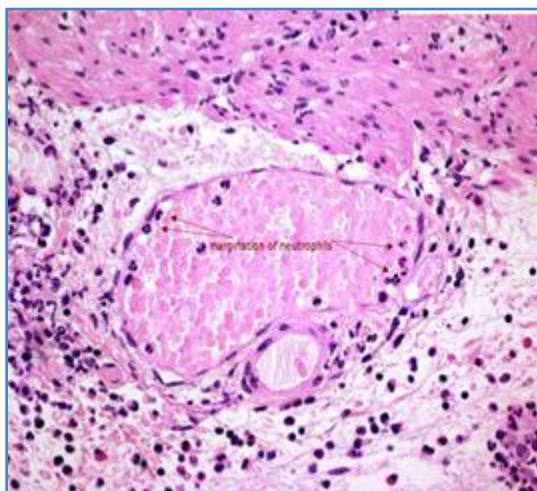


Fig. 1: Early stage showing margination of leucocytes



Fig. 2: Gangrenous tip of appendix as seen preoperatively

RESULTS AND ANALYSIS: In our study 50 cases were included who were diagnosed as having acute appendicitis clinically by surgeons.

In present study age of patient varies from 12-50 years, maximum number of patients was within age group of 21-30 years, i.e. 40% of study group which included 54% of female is 46% of male patients.

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All the patients in our study presented with pain abdomen, with most common site of pain being RIF (80%).

In 90% of patients McBurney's point tenderness noted, only 20% showed shifting tenderness.

Peroperatively most common position of appendix was found to be retrocaecal, out of 50 patients, 7 patients had normal HPE, so our negative appendectomy rate was 14%.

Histopathologically 58% of patients had acute suppurative appendicitis, remaining showed acute gangrenous or catarrhal type.

In present series 43 patients had elevated WBC count which is 86% of total study group.

7 patients had normal WBC level i.e. 14% of patients.

In these patients 6 that is 85.7% had normal appendix on HPE.

So in one study 96% of WBC test done are true whether levels were raised or it was normal.

Therefore total WBC count has sensitivity of 97.7% with specificity of 85.7% and positive predictive value of 97.7%.

DISCUSSION: So in our study of "WBC count as a diagnostic parameter in acute appendicitis - a double blind study". The diagnostic value of WBC was studied and after the study negative appendectomy rate was 14% which was comparable to study done by Khan MN et al.¹ 2004 with negative rate of 14.3% and with Vinoth Kumar et al.⁴ 2011 with negative rate of 10%.

In our study sensitivity of 97.7% specificity of 85.7% was compared with study by Dueholm et al.⁵ in which he demonstrate that WBC had best sensitivity of 83% and negative predictive value of 88%, MN Khan et al.³ showed sensitivity of 83% and positive predictive value of 92%. Hence serum WBC estimation does not undermine the importance of clinical diagnosis of skilled surgeon but complements it.

SUMMARY: With unaltered rate of negative appendectomy, appendicitis has continued to represent a diagnostic and therapeutic challenge to surgeons. In above study it was concluded that serum WBC has highest sensitivity and specificity, hence it proves definite association between raised serum WBC and acute appendicitis and hence WBC stands as best laboratory test which can be used to reduce negative appendectomy rate drastically.⁽⁶⁾

However elevated WBC supports the surgeon's diagnosis and hence avoids chances of error in diagnosis, due to atypical presentations.

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