Clinical accuracy of u/sound combined with inflammatory markers

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Introduction

Traditionally acute appendicitis has been a clinical diagnosis based on patients history and physical examination, but the accuracy of clinical diagnosis ranges from 70-95%.
The accuracy of diagnosis can be enhanced by non invasive investigatory modalities such as ultrasonography, CT scan, magnetic resonance imaging and inflammatory markers which have been recommended as cost effective, but In an age accustomed to early and accurate pre operative diagnosis acute appendicitis still remains an enigmatic challenge, because of the various commonly used diagnostic aids for appendicitis no single test alone can reduce the rate of negative appendectomy. Hence some authors have recommended a combination of two or more investigations to increase accuracy and therefore the use of ultrasonography, and CT scan is gaining support.

Objectives

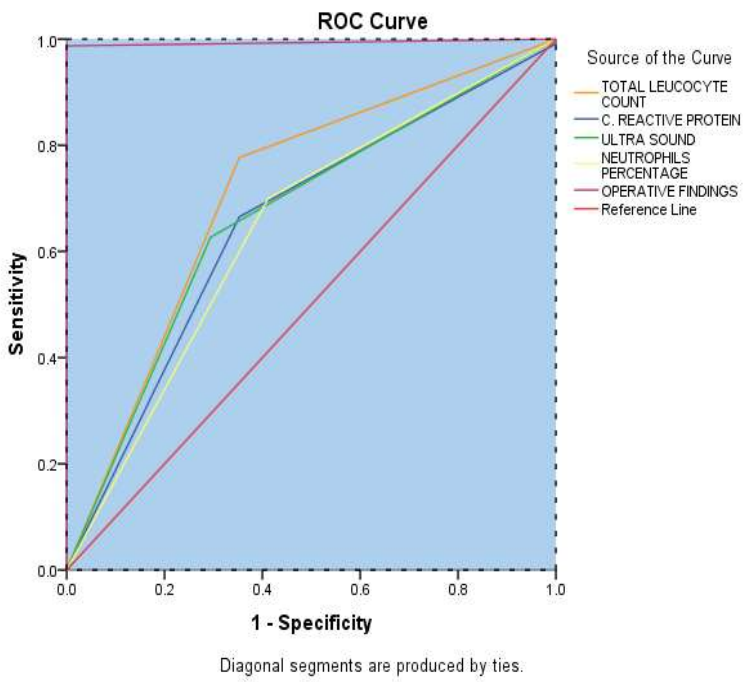
The objective of the study was to determine the clinical accuracy of ultrasound, combined with inflammatory markers such as CRP, WBC and neutrophilia in acute appendicitis keeping histopathology as gold standard

Methods

The study was conducted in a Tertiary care hospital in Peshawar during the period from 1st September 2014 to 31st of March 2015 on 250 patients who have been clinically diagnosed of having acute appendicitis and admitted for emergency appendicectomy
All patients having acute appendicitis were subjected to blood sampling for CRP, TLC and neutrophil%. After that all these patients were subjected to ultrasonography to detect the presence or absence of appendicitis. All removed appendices were sent for histopathology which was taken as the gold standard.

Results

In this study, WBC had the highest sensitivity (77.68%) followed by neutrophil% (69.96%), CRP(67.10%) and U/Sound (62.96%) respectively. While U/Sound had the highest specificity (70.59%) followed by CRP and TLC (64.71% each) and neutrophil% (58.82%) respectively.
When all the four tests were combined the sensitivity, specificity,(99.17% and 98.45%) increased significantly. It was seen that when all the four tests were negative, appendicitis could be safely ruled out and surgery could be deferred in these patients .It would reduce the rate of negative appendicectomies.



COMBINED SENSITIVITY USING THE ADDITION RULE OF PROBABILITY

TLC+CRP	92.63%
TLC+CRP+NEUT%	77.82%
TLC+CRP+NEUT%+U/SOUND	99.17%

Conclusions

WBC contains important information about infection states and hence should always be included in the diagnostic workup of acute appendicitis. The sensitivity of CRP and Neut. % is low individually, but when combined with WBC and u/sound the sensitivity and specificity increases significantly.
Ultrasonography is also useful in establishing alternative diagnoses, and its availability and cost-effectiveness should be considered. Also when all four tests are negative Acute appendicitis is very unlikely and surgery can be safely deferred in these patients thereby reducing the negative appendicectomy rates.
But it is stressed that history and clinical examination by a skilled surgeon still remain important in diagnosing acute appendicitis , and its importance cannot be denied. The investigations can be used as an adjuvant to a surgeon's clinical diagnosis.