



PROSPECTIVE STUDY TO COMPARE THE PERFORMANCE OF CRP, WBC, SYSTEMIC INFLAMMATORY RESPONSE SYNDROME, TOTAL BILIRUBIN, TIME PERIOD OF SYMPTOM EVALUATION IN PREOPERATIVE PREDICTION OF PERFORATED APPENDICITIS

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KEYWORDS :**BACKGROUND**

Appendicitis is most common acute surgical condition of abdomen. Its overall mortality of 0.3% increases up to 6.5% in cases of perforation. In cases of appendicular perforation multiple potential life threatening complications such as bacterial peritonitis and sepsis, urinary retention, small bowel obstruction and abdominal abscess formation are encountered. Advanced bacterial peritonitis of untreated perforated appendicitis reaches a natural mortality as high as 80 to 100%.

Proper clinical history, physical examination and laboratory investigation can timely diagnose appendicitis and even perforated appendicitis without other specific imaging modalities. Diagnostic accuracy can be increased by X-ray, USG, CT-scan and MRI. Since these are not available everywhere, diagnosis has to be made mainly based on clinical history, physical examination and few easily available laboratory investigations.

Despite extraordinary advances in modern radiographic imaging and diagnostic laboratory investigations, the diagnosis of appendicitis, even perforated remain essentially clinical requiring a mixture of observation and clinical acumen. Different protocol were introduced to make early diagnosis of acute appendicitis by different researchers which include Lidverg, Fenyó, Christian, Ohman and Alvarado. All these use clinical features and basic investigations. Modified Alvarado scoring system (MASS) has been widely accepted and successfully tested. The diagnosis of acute appendicitis can be wrongly made or initially overlooked leading to unnecessary operation and delay respectively. The negative appendectomy rate ranges from 22 to 28% and post admission delay for more than 6 hours due to diagnostic uncertainty occurs in 20-29% cases. Appendix was found to be perforated in 13-37% of these cases. Chances of perforation increase with increase in time from initial symptoms.

In cases of perforated appendicitis inflammatory markers such as CRP, WBC increase more compared to simple appendicitis. Time period of symptom evaluation is more in case of perforated appendicitis. In case of perforated appendicitis E.Coli endotoxin and other bacterial toxins have been shown to impair physiological bile flow through mesenteric vascular invasion leading to pyelophlebitis, hyperbilirubinemia and increase in other liver enzymes.

METHODS

A prospective observation study comparing a non randomized cohort admitted in PBM hospital followed until discharged and after discharge to compare the performance of CRP, WBC, Total bilirubin (TB), Systemic inflammatory response syndrome (SIRS) and time period of symptoms in prediction of perforated appendicitis.

Patient included are those having appendicitis (perforated and non perforated) diagnosed by clinical history, physical examination, lab investigation and imaging.

Non perforated appendicitis- acute inflammation of mucosa with neutrophil infiltration of appendicular wall without necrosis and gangrene.

Perforated appendicitis- rupture of appendicular wall to the serosal surface evidenced by surgeon during surgery and confirmed by histopathological examination as necrosed and gangrenous appendix with turbid and purulent fluid collection.

Sensitivity, specificity, positive predictive value and negative predictive value was calculated.

RESULTS

Study was conducted on 50 patients of acute appendicitis treated surgically admitted in P.B.M and A.G.HOSPITAL S.P. Medical College, Bikaner from July 2010 to December 2010.

14 patients (28%) had perforated appendix with purulent collection and 36 (72%) had non perforated appendix.

Average age was 26 in cohort, 21 in perforated appendix and 28 years in non perforated appendix.

83% patients with non perforated appendicitis had SIRS Point 0-2 compared to 29% patients with perforated appendicitis.

71% patients with perforated appendicitis had SIRS point 3-4 compared to 17% patients with non perforated appendix.

Mean value of TLC in perforated appendicitis cases (14867) is slightly higher than mean value of TLC in non perforated cases (13475).

Mean value of CRP in perforated cases was 185 compared to 84 in non perforated cases.

Mean value of TB was 1.62 in perforated cases and 0.84 in non perforated cases.

Mean value of time period of symptom evaluation in hours was 86 in perforated cases and 36 in non perforated cases.

Mean value of hospital stay was 6.42 in perforated cases and 2.94 days in non perforated cases.

| Study of patients | sensitivity | specificity | Positive predictive value | Negative predictive value |
|-------------------|-------------|-------------|---------------------------|---------------------------|
| WBC | 78 | 25 | 30 | 75 |
| CRP | 100 | 14 | 31 | 100 |
| TB | 71 | 86 | 66 | 88 |
| TPSE | 64 | 86 | 41 | 100 |
| SIRS | 71 | 86 | 68 | 88 |

CONCLUSION

Conclusion of present study is that patients with clinical signs and symptoms of acute appendicitis with higher level of total serum bilirubin (>1mg/dl) and prolonged time of evolution of symptoms (>50 hrs) with SIRS points > 2 and higher level of CRP (>185) have a higher probability of being a perforated appendix.

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