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Hyperbilirubinaemia: A New Diagnostic Marker for Appendicular Perforation

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I. INTRODUCTION

- Appendicitis is one of the commonest causes of abdominal pain requiring emergency surgery.
- Diagnosing acute appendicitis clinically still remains a common surgical problem as the clinical signs and symptoms of other abdominal pathologic conditions mimic the diagnosis of acute appendicitis.
- Delay in diagnosis and surgery for this condition may lead to various complications like perforation, abdominal abscess etc.
- By knowing perforation prior to the exploration, we can manage the condition very effectively in terms explaining the prognosis of disease, morbidity of surgery, wound infection, and requirement of emergent nature of surgery.
- Aim of the study is to determine of role of hyperbilirubinemia as a new diagnostic marker to predict gangrenous/perforated appendicitis.

II. MATERIALS AND METHODS

- It's a prospective study was conducted in the department of surgery, MMCRI, Mysore during the period of January 2018 to December 2018
- The patients presenting to the emergency department of general surgery K. R. hospital Mysore, India, suspected to have acute appendicitis or perforated appendicitis by patient history, clinical examination, complete hemogram, ultrasound abdomen were selected for the study
- A 4ml of blood, serum is separated and used for LFTs done by enzymatic method using fully automated chemistry analyzer

INCLUSION CRITERIA

- Patients of 18 years of age and above scheduled for appendectomy for acute appendicitis at emergency unit of our hospital.

EXCLUSION CRITERIA

• Age below 18 years
• Patient with appendicular lump
• Previous history of chronic alcoholic liver disease
• Hemolytic or liver disease associated with hyperbilirubinemia
• History of drug induced hepatitis
• Previous history of any malignancy
• All patients with positive HBsAg.

III. METHODOLOGY

The sensitivity, specificity, positive predictive value and negative predictive value was calculated from a 2x2 table.

All appendicular perforation cases were managed by lower midline incision, appendicectomy through peritoneal wash with normal saline and no.28 drain in situ and post-operative antibiotics for seven days. Appendicular perforation confirmed by intra operatively as well as histopathological examination.

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IV. RESULTS

Table 1 - Distribution of cases according to histopathological diagnosis

Histopathological diagnosis	No of cases
Acute appendicitis	66
Gangrenous appendicitis	04
Perforated appendicitis	30
Normal appendix	00
Total no of cases	100

Table 2 – Correlation of acute appendicitis and appendicular perforation with total serum bilirubin levels (intraoperative) or (histopathological examination)

Chi Square	P-Value	Conclusion
0.688	0.0001	Significant i.e there is a high correlation/association between serum bilirubin levels and status of appendicitis

Serum bilirubin levels	Acute appendicitis (Number)	Appendicular perforation (Number)
<1.2	49	3
>1.2	17	31
Total	66	34

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V. DISCUSSION

- In the present study of 100 patients, 68 patients (70%) were males while the remaining 32 patients (30%) were females. The mean age in present study population (100 patients) was 29.16 ± 11.21 years.
- Hyperbilirubinemia (> 1.2 mg/dL) in present study was found in 48 patients (48%) of all the 100 patients (n=100) included in the study, while 52 patients (52%) had normal bilirubin levels (≤ 1.2 mg/dL)
- Estrada et al, had found hyperbilirubinemia in 59 (38%) of 157 patients studied with acute appendicitis[6.]
- The association between the elevated SB levels and the variety of infectious diseases has been noted in few studies.[7-15]
- Some bacteria including E. Coli have been associated with increased levels of total serum bilirubin levels.[16]
- Amongst the patients diagnosed with Acute appendicitis pre-operatively (n=66), 17 patients (26%) were found to have increased bilirubin (>1.2 mg/dL) while 49 patients (74%) has normal bilirubin levels (≤1.2 mg/dL).
- In patients diagnosed with appendiceal perforation (n=34), 31 patients (91.17%) had bilirubin elevated (>1.2 mg/dL) and 3 patients (8.82%) had normal bilirubin (<1.2 mg/dl).
- Thus, Hyperbilirubinemia was found in most of the patients diagnosed with appendiceal perforation (91.17%) compared to that of acute appendicitis (26%)
- The sensitivity, specificity, positive predictive value and negative predictive value was calculated from a 2x2 table.
- Sensitivity and specificity of bilirubin in predicting acute appendicitis and appendiceal perforation diagnosis was 94.43% and 70.76% respectively.
- Similarly, positive predictive value and negative predicative value of bilirubin in predicting acute appendicitis and appendiceal perforation diagnosis was 56.46% and 97.32% respectively.

VI. CONCLUSION

- It is concluded from present study that elevated total serum bilirubin without elevation of liver enzymes is a good indicator of appendicular perforation.
- Total serum bilirubin appears to be a new promising laboratory marker for diagnosing appendicular perforation.
- The patients with clinical signs and symptoms of appendicitis and with hyperbilirubinemia should be identified as having a higher probability of appendicular perforation suggesting, total serum bilirubin levels have a predictive potential for the diagnosis of appendicular perforation.

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