



ISSN: 0976-3376

Available Online at <http://www.journalajst.com>

ASIAN JOURNAL OF  
SCIENCE AND TECHNOLOGY

Asian Journal of Science and Technology  
Vol. 10, Issue, 06, pp.9736-9738, June, 2019

## RESEARCH ARTICLE

### THE ROLE OF INCREASED TOTAL SERUM BILIRUBIN IN PATIENTS WITH ACUTE APPENDICITIS

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#### ARTICLE INFO

**Article History:**

Received 17<sup>th</sup> March, 2019

Received in revised form

24<sup>th</sup> April, 2019

Accepted 09<sup>th</sup> May, 2019

Published online 28<sup>th</sup> June, 2019

**Key words:**

Commonest aetiology  
Abdominal laproscopy  
Detecting method.

#### ABSTRACT

Acute appendicitis considered one of the commonest aetiology of the cases attended into the emergency unit as a case of acute abdomen. Its detection depends on clinical examination, lab. Investigations, sonography, and some times abdominal laproscopy is needed. The increased level of serub bilirubin is considered to be a new detecting method.

**Citation:** Riyadh H. Alzakar, Ammar Z. Yahya, Abdulbari M. Jasim 2019. "The role of increased total serum bilirubin in patients with acute appendicitis", *Asian Journal of Science and Technology*, 09, (06), 9736-9738.

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#### INTRODUCTION

Acute appendicitis considered as a commonest surgical case of acute abdomen which attending the emergency units. It is diagnosed by history, clinical examination, labrotary investigations, ultrasound, and sometimes MRI and abdominal laproscopy. Through labrotary investigatins, they noticed that some patients of acute appendicitis (with or without perforation) have shown increased level of bilirubin. So, hyperbilirubinemia may be suggested as a new detecting sign of acute appendicitis.

#### Aim of the study

To detect if there is a relation between acute appendicitis and hyperbilirubinemia in order to be depended as a detecting sign.

#### PATIENTS AND METHOD

This study is a prospective one and it was done at Emergency Unit in Alhamdaniya General Hospital, Mosui-Iraq from June 2018 to June 2019. 132 Patient with signs and symptoms of acute appendicitis were recruited in this study.

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Patients were evaluated by history, physical and clinical examination, and investigations to approve the diagnosis of acute appendicitis. These investigation include Complete blood picture and ESR, GUE, TSB, Dermatological Inspection for skin color, and ultrasound.

#### RESULTS

The total number of cases were 132. their age ranged from 13-60 years old (Table 1) the mean was 28.50 . 74 patient were male and 58 were female The duration of symptoms ranged from 4 hours to 5 days. The mean was 1.73. Operatively 89 patients have acute inflammed appendix and 43 patients have complicated appendix (perforated or gangrenous) The TSB level ranged from 0.3-3.20 the mean was 1.58 (Table 2). the TSB was within normal range in 35 patients and elevated in 97 patients.

Among the 89 patients with uncomplicated appendicitis the TSB was normal in 33 patients and elevated in 56 patients the mean was 1.29±0.53 while in the 43 patients with complicated appendicitis the TSB was normal in only 2 patients and was elevated in 41 patients the mean 2.17±0.55 (Table 3). There was direct relation between level of TSB and duration of illness.

Table 1. The age distribution of the involved sample

Age groups (years)	No.	%
< 20	31	23.48
20 – 29	39	29.55
30 – 39	42	31.82
40 – 49	13	9.85
≥ 50	7	5.30
Total	132	100.00

Table 2. The total serum bilirubin levels of the patients, (n= 132)

Total serum bilirubin level	Mean	SD	Minimum	Maximum
TSB (mg/l)	1.58	0.68	0.30	3.20
	No.	%		
Normal TSB (≤ 1.2 mg/l)	35	26.50		
Elevated TSB (> 1.2 mg/l)	97	73.50		

Table 3. The interrelation between the operative finding and the titer of TSB in the study sample

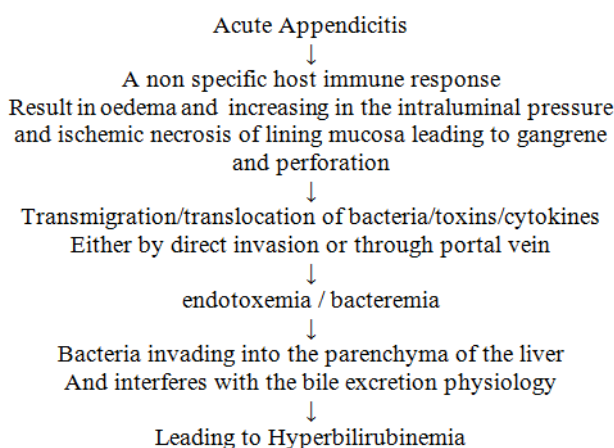
TSB titer	Uncomplicated appendicitis		Complicated appendicitis		Total		P-value
	No.	%	No.	%	No.	%	
Normal TSB (≤ 1.2 mg/l)	33	94.29	2	5.71	35	100.00	0.000*
Elevated TSB (> 1.2 mg/l)	56	57.73	41	42.27	97	100.00	
Total	89	67.42	43	32.58	132	100.00	---
TSB (Mean ± SD)	1.29 ± 0.53		2.17 ± 0.55		1.58 ± 0.68		0.000**
TSB (Range)	0.3 – 2.5		1.0 – 3.2		0.3 – 3.2		---

\* Chi-square test was used.

\*\* Independent T-test of two means was used.

## DISCUSSION

Acute appendicitis considered as one of the commonest cause of attending cases in the emergency unit as acute abdomen. Appendectomy is the commonest performed operation. Acute appendicitis is mostly seen between the second and third decade. Acute appendicitis shows no sex difference. In young adults, it is more in the males. It is estimated that about 7% of population have acute appendicitis and appendectomy during their life. People have acute appendicitis mostly due to obliteration of the lumen of the appendix by a faecoliths and to a lesser extent by hypertrophy of lymphoid tissue, tumors, or by a paracitic infection. The majority of bacteria seen in appendix are *Escherichia Coli* and *Bacteroides fragilis* in acute appendicitis (with or without perforation). Acute appendicitis is usually diagnosed clinically. When there is acute abdomen, it is better to remove a normal appendix than to delay diagnosis in order to avoid further complications like perforation in about 50% of the patients especially in elderly. The increased level of Serum Bilirubin may help to confirm the diagnosis of acute appendicitis. The increased level of Serum Bilirubin in Acute Appendicitis is due to these patho-physiological changes:



In our study, males were 74 (56%) while females were 58 (44%). The mean age in our study was  $28.50 \pm 10.56$ . The young adults between the 2<sup>nd</sup> and 3<sup>rd</sup> decade of life were the most involved age group and this is go with many previous studies. In this study, 97 (73.5%) patients have elevated TSB and 35 patients (26.5%) have normal TSB which is approximately close to that achieved by Madhu Sn et al<sup>47</sup> where he found hyperbilirubinemia in 72.4% of patients with acute appendicitis and in 100% in patients with appendicular perforation. Our study is also supported by the results reached by Khan S where he found TSB was elevated in (82.07%) cases of acute appendicitis. And Dipen P.al that found hyperbilirubinemia in 82% of cases with acute appendicitis.

## Conclusion

Hyperbilirubinemia was elevated in a considerable number of the patients with acute appendicitis especially the complicated one. The elevated level of TSB was directly proportional to the duration of symptoms.

## Recommendations

This study was distreced by (to some extent) a small number of patients involved. More future studies involving large number of cases and samples are needed to support and confirm the relation between hyperbilirubinemia and acute appendicitis and to predict the complicated cases.

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