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# Role of LFT in Acute Appendicitis and Its Complication: A Prospective Study in VIMSAR, Odisha

**1 .Dr. Sudarsan Sethy, 2.Dr. Manabhanjan Bhimasingh Kanhar, 3.*Dr. Abinasha Mohapatra, 4.Dr. Rajendra Kumar Sahoo, 5.Dr. Susil Kumar Sahu,**

*[1]Assistant Professor, Department of General Surgery, Veer Surendra Sai Institute of Medical Science And Research(VIMSAR), Burla, Sambalpur, Odisha, India, 768017.*

*[2]Assistant Professor, Department of General Surgery, S.C.B. Medical College, Cuttack, Odisha, India, 753001.*

*[3]Assistant Professor, Department of General Surgery, Veer Surendra Sai Institute of Medical Science And Research(VIMSAR), Burla, Sambalpur, Odisha, India, 768017.*

*[4,5]Junior Resident Department of General Surgery, Veer Surendra Sai Institute of Medical Science And Research(VIMSAR), Burla, Sambalpur, Odisha, India, 768017***.**

**Corresponding Author –Dr. Abinasha Mohapatra,**

## Abstract

**Background :** Acute appendicitis is one of the most common disease faced by general surgeon. So many scoring system, lab. Investigation, CT, usg has been attempted to diagnose it accurately . **Materials and Methods :** A total of 66 cases with acute appendicitis and its complications which are clinically diagnosed (Alvarado score ≥ 7) and USG confirmation are included and studied in the present prospective study conducted at Department of General Surgery, Veer Surendra Sai Institute of Medical Sciences and Research, Burla , Sambalpur from December 2021 to November 2022. **Results :** In Complicated Appendix, sensitivity of total biliribin, SGOT/AST, SGPT/ALT, & ALP are 81.25%, 50%, 15.62%, & 18.75% respectively (which are higher than inflammed appendix). In Complicated Appendix, specificity of SGOT/AST and SGPT/ALT are 96.42% and 100% respectively (which are higher than inflammed appendix). In Complicated Appendix, Positive Predictive Value of SGOT/AST and SGPT/ALT are 94.11% and 100% respectively (which are higher than inflammed appendix). **Conclusion :** LFT is easily available and cheap blood investigation, it is added to already existing laboratory tests to avoid any unnecessary delay in appendectomy and it can also help in prevention of negative appendectomy.

**Key words :** Acute Appendicitis, Liver Function Test, Alkaline Phosphatase, Aspartate Transaminase, Alanine Transaminase.

## Introduction

Acute appendicitis is one of the most common disease faced by general surgeon **[1]** . In some cases symptom and sign are variable and a firm diagnosis can be difficult . So many scoring system, lab. Investigation, CT, usg has been attempted to diagnose it accurately **[2]** . But none of these method stands alone as they all come in support of primary clinical assessment. And none of the test still now specific to predict the acute appendicitis and its complication. These might delay laparotomy and leads to complication and increase in morbidity. Another safe alternative seems to be appendectomy as soon

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as the condition is suspected, but this strategy leads to unnecessary negative appendectomies **[3]** . The present study was undertaken to find out the role of LFT as lab. marker to aid the diagnosis of acute appendicitis and its complication.

## Aim & Objective

To evaluate the association between the derangement of LFT and severity of acute appendicitis and its complications.

## Materials & Methods

This is a Prospective was conducted in Department of General Surgery, Veer Surendra Sai Institute of Medical Sciences and Research, Burla , Sambalpur.

**Study population**- Total no. of patients = 66. Informed consent taken. Abdominal usg, blood sample taken for routine investigation, LFT and after appendectomy histopathology examination report were collected. Then master chat prepared by entering all the data.

**Inclusion criteria:**

The patient admitted in unit-3 irrespective of age and sex were recruited for the study. The patients with acute appendicitis and its complication which are clinically diagnosed (Alvarado score ≥ 7) and USG confirmation are included.

**Exclusion criteria:**

The patients with acute appendicitis and its complication with liver disease, hemolytic disorder, past h/o of jaundice, h/o alcohol intake (AST/ALT>2), h/o hepatotoxic drug intake, h/O gastrointestinal or hepatobiliary malignancy.

## Results

**Table 1 : Distribution of Normal and Pathological appendix -**

| Type of Appendix | No. of Patients | Percentage (%) |
|---|---|---|
| Normal Appendix | 06 | 9.09 |
| Perforated Appendix | 10 | 15.15 |
| Gangrenous Appendix | 22 | 33.33 |
| Inflammed Appendix | 28 | 42.42 |

Out of total appendicectomies , 28 (42.42%) cases are inflamed appendix, 32 (48.48%) cases are complicated appendix and rest 06 (9.09%) are normal appendix .

**Table 2 : Relationship between LFT parameters and different appendicular pathology -**

| | Total Billirubin | | SGOT / AST | | SGPT / ALT | | ALP | |
|---|---|---|---|---|---|---|---|---|
| | Elevated | Normal | Elevated | Normal | Elevated | Normal | Elevated | Normal |
| Pathological Appendix | 32 | 28 | 17 | 43 | 05 | 55 | 06 | 54 |
| Normal | 00 | 06 | 03 | 03 | 01 | 05 | 00 | 06 |

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|---|---|---|---|---|---|---|---|---|
| Appendix | | | | | | | | |
| Total | 32 | 34 | 20 | 46 | 06 | 60 | 06 | 60 |

In case of pathological appendix 32 out of 60, 17 out of 60, 5 out of 60 and 6 out of 60 have raised total bilirubin, AST, ALT, ALP respectively. In case of normal appendix total bilirubin and ALP not raised in any case. But 3 out of 6 and 1 out of 6 cases have raised AST and ALT respectively.

**Table 3 : Relationship between LFT parameters with inflamed appendix and complicated appendix -**

| | **Total Billirubin** | | **SGOT / AST** | | **SGPT / ALT** | | **ALP** | |
|---|---|---|---|---|---|---|---|---|
| | Elevated | Normal | Elevated | Normal | Elevated | Normal | Elevated | Normal |
| Inflammed Appendix | 06 | 22 | 01 | 27 | 00 | 28 | 00 | 28 |
| Gangrenous / Perforated Appendix | 26 | 06 | 16 | 16 | 05 | 27 | 06 | 26 |

In 26 cases of complicated appendix 06 cases of inflamed appendix have raised total bilirubin, 16 cases of complicated appendix have raised AST. ALT and ALP raised in 05 and 06 cases of complicated appendix respectively but not raised in inflamed appendix.

**Table 4 : Sensitivity, specificity, PPV of LFT to pathologic appendix and its complications -**

| | **Sensitivity** | | **Specificity** | | **PPV** | |
|---|---|---|---|---|---|---|
| | Inflammed Appendix | Complicated Appendix | Inflammed Appendix | Complicated Appendix | Inflammed Appendix | Complicated Appendix |
| Total Billirubin | 53.33 % | 81.25 % | 100 % | 78 % | 93.33 % | 81 25 % |
| SGOT / AST | 27.75 % | 50 % | 50 % | 96.42 % | 85 % | 94.11 % |
| SGPT / ALT | 8.3 % | 15.62 % | 83.33 % | 100 % | 83. 33 % | 100 % |
| ALP | 10 % | 18.75 % | 100 % | 100 % | 100 % | 100 % |

In Complicated Appendix, sensitivity of total biliribin, SGOT/AST, SGPT/ALT, & ALP are 81.25%, 50%, 15.62%, & 18.75% respectively (which are higher than inflammed appendix).

In Complicated Appendix, specificity of SGOT/AST and SGPT/ALT are 96.42% and 100% respectively (which are higher than inflammed appendix).

In Complicated Appendix, Positive Predictive Value of SGOT/AST and SGPT/ALT are 94.11% and 100% respectively (which are higher than inflammed appendix).

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## Discussion

Out of 66 cases 60 cases were found to have pathologic appendix and rest 6 cases were undergone negative appendicectomy. And out of 60 cases 32 are complicated appendix. This large number may be due to late presentation or late diagnosis of cases. The derangement of LFT can be explained by study of Utlil R et al, Dieulafoy G and Sisson RG et al. Utili et al, describe about the dose dependent decrease in bile salt excretion from liver by in vitro infusion of endotoxin into isolated rat liver **[4,5]** . Dieulafoy g, study gave an evidence about the bacterial translocation from inflamed gastrointestinal tract to liver by portal vein that leads to pyogenic liver abscess **[6]** . Sission RG et al, describes pathogenesis of appendicitis and its complications **[7]** .

Translocation of pathological organisms from the inflamed appendix or gangrenous/perforated appendix to liver occurs through portal vein. If the bacterial load is high to overcomes the capacity of phagocytic cells and that leads to local multiplication of organisms and release of cytokines like TNF, IL-6 etc. it leads to damage of liver parenchyma and alteration of liver function test **[8]** .

## Conclusion

LFT is easily available and cheap blood investigation, it is added to already existing laboratory tests. So that the diagnosis of acute appendicitis and specifically its complications in clinically suspected cases can be made with fair degree of accuracy and the need for CECT and MRI can be reduced and unnecessary delay in appendectomy can be avoided and it can also help in prevention of negative appendectomy.

Conflict of Interest – NIL

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