

The relation of liver enzymes and laparoscopic appendectomy

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Abstract

Introduction: Acute appendicitis is one of the most common surgical emergencies with a lifetime prevalence of approximately 1 in 7.¹ Appendectomy remains the only curative treatment of appendicitis which is the common surgical emergency, hence appendectomy is one of the most common surgeries performed by a general surgeon. Laparoscopy is a minimally invasive access to the peritoneal cavity for both diagnosis and many surgical interventions which were previously possible only by open surgeries. Laparoscopic surgeries have an advantage that there is a reduction in patient morbidity, reduction in the duration of hospitalization and early return to normal activity. It has been noticed that, following laparoscopic surgery, the level of certain serum liver enzymes rose markedly in most patients who had shown normal LFT. This observation raised several questions this study to assessed the prevalence of disturbances in liver enzymes following laparoscopic appendectomies. The study was a prospective experimental study conducted on 100 cases evaluated and diagnosed as acute appendicitis and were admitted to Hospital who underwent laparoscopic appendectomy from the time period. The study was done at the KMC medical college at Mangalore, AJ medical college Mangalore, and at the unity hospital Mangalore.

The levels of serum bilirubin, serum alanine amino transferase (ALT), serum aspartate aminotransferase (AST) and serum alkaline phosphatase were all measured pre-operatively once and then post-operatively on Day 1 and Day7.

Results: In our study we found that the alkaline phosphatase levels, conjugated bilirubin, unconjugated bilirubin levels, SGOT levels, SGPT levels increased first day post operatively statistically significantly with a p value <0.001 and returned to the baseline levels seventh day post operatively.

Introduction

Acute appendicitis is one of the most common surgical emergencies with a lifetime prevalence of approximately 1 in 7.¹ Appendectomy remains the only curative treatment of appendicitis which is the common surgical emergency, hence appendectomy is one of the most common surgeries performed by a general surgeon.²

Laparoscopy is a minimally invasive access to the peritoneal cavity for both diagnosis and many surgical interventions which were previously possible only by open surgeries. Laparoscopic surgeries have an advantage that there is a reduction in patient morbidity, reduction in the duration of hospitalization and early return to normal activity.³

In the last decade, several studies have shown 'unexplained' changes in postoperative liver function tests in patients undergoing laparoscopic procedures. It has been noticed that, following laparoscopic surgery, the level of certain serum liver enzymes rose markedly in most patients who had shown normal LFT. This observation raised several questions. Are these changes of any clinical significance? What is the mechanism responsible? No definite causes for this elevation were documented but these changes might be attributed to hepatocellular dysfunction secondary to CO₂ pneumoperitoneum.³

There are various studies done on the effect of laparoscopy on hepatic enzymes during other laparoscopic surgeries but no studies done on the effect

of laparoscopy on hepatic enzymes during laparoscopic appendectomy.^{4,5} This study to assessed the prevalence of disturbances in liver enzymes following laparoscopic appendectomies.

The study was a prospective experimental study conducted on 200 cases evaluated and diagnosed as acute appendicitis and who underwent laparoscopic appendectomy. A pretested pro-forma was introduced which included the vital details of the patient and the clinical features of the clinical condition the patient is suffering from patients who came for admission for undergoing appendectomy. The levels of serum bilirubin, serum alanine amino transferees (ALT), serum aspartate aminotransferase (AST) and serum alkaline phosphatase were all measured pre-operatively once and then post-operatively on Day 1 and Day7

The following were the criteria defined:

Inclusion Criteria

1. Patients above 14 years of age
2. Patients willing to part take in the study
3. Patients with appendicitis confirmed on imaging
4. Patients for whom same anaesthetic was used other than halothane

Exclusion Criteria

1. Patients who have diagnosed to have other causes of right lower quadrant pain.
2. Patients with preoperatively elevated liver enzymes
3. Age less than 14 years.
4. Pregnant women

5. Patients with known liver disease
6. Patients who had a palpable appendicular mass

Results and observations

In our study we found that the alkaline phosphatase levels, conjugated bilirubin, unconjugated bilirubin levels, SGOT levels, SGPT levels increased first day post operatively statistically significantly with a p value <0.001 and returned to the baseline levels seventh day post operatively.

Discussion

Abdominal pain remains the foe runner of complaints' presenting to the general surgeon in the present world.

Acute appendicitis is the most common of the acute abdominal conditions presenting which requires immediate surgical intervention.

With the introduction of minimal invasive techniques and the increasing awareness of the common man towards the various treatment options for the surgical treatment of appendicitis, there is an increased demand of the present day population towards the so called computer surgery or laparoscopic surgery as for the lay man it is minimally invasive, cosmetic and best treatment option available as projected by various information systems readily available to the common man.

Each technique has its own advantages and pitfalls. Alteration of liver enzymes transiently is a well-known fact in laparoscopic surgeries. There are many studies to check the level of effect on laparoscopic surgeries in acute cholecystitis, and gynecological surgeries, but there are no studies reported to evaluate these findings in appendicitis. As appendectomy is a very commonly performed surgical procedure in our institution we evaluated the effect on liver functions in laparoscopic appendectomies for acute appendicitis.

In our study we found that the enzyme and bilirubin levels increased first day post operatively statistically and returned to the baseline levels seventh day post operatively.

Similar findings were seen studies by Tan M,⁶ Tsubo et.al,⁷ Giraud G, et.al,⁸ Tareq et al,⁹ Tauro et. al,¹⁰ in which there as transient elevation of the SGOT levels increased first day post operatively and returned to the baseline levels seventh day post operatively.

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