International Journal of Research in Health and Allied Sciences
Journal home page: www.ijrhas.com
Official Publication of "Society for Scientific Research and Studies" [Regd.]
ISSN: 2455-7803

Original Research

Evaluation of lipid profile in patients undergoing laparoscopic cholecystectomy

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ABSTRACT:
Background: Gallstones disease is a chronic recurrent hepatobiliary disease. Lipid and BA metabolisms are functionally interrelated. Even though lipid and BA metabolisms are functionally related, how gallbladder removal affects lipids is not well understood. Hence; the present study was conducted for assessing the lipid profile in patients undergoing LC. **Materials & methods:** Assessment of 20 patients reporting with chief complaint of Cholelithiasis and scheduled to undergo LC was enrolled. Entire surgical procedure was explained to all the patients. Blood samples were obtained from all the patients before the starting of the surgery. LC was carried out and blood samples were obtained again and compared with preoperative values. **Results:** A total of 20 patients were enrolled. Mean age of the patients was 45.3 years. Majority of the patients were females. During the preoperative period, mean TC levels, HDL levels and TG levels was found to be 172.3 mg %, 46.5 mg % and 183.6 mg % respectively. During the postoperative period, mean TC levels, HDL levels and TG levels was found to be 159.2 mg %, 44.8 mg % and 221.6 mg % respectively. While analysing statistically, significant alteration in the mean lipid profile of all the patients was seen postoperatively. **Conclusion:** Significant alterations in the serum lipid profile occur in patients undergoing laparoscopic cholecystectomy.
Key word: Laparoscopic cholecystectomy, Lipid profile

Received: 29 May, 2021 Accepted: 5 June, 2021

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This article may be cited as: Jamwal MK, Katoch S, Kumar S. Evaluation of lipid profile in patients undergoing laparoscopic cholecystectomy. Int J Res Health Allied Sci 2021; 7(4): 1-3.

INTRODUCTION

Gallstones disease is a chronic recurrent hepatobiliary disease. It is one of the emerging health problems worldwide and is becoming more common with an incidence of 1.4 per 100 persons. By the time they become symptomatic, many patients need surgical intervention. Based on the evidence, more than 50% of patients with gall stones have some sort of lipid disorder. Though lipid and bile acids metabolisms are functionally correlated, how cholecystectomy affects lipid profile is not well-comprehended. High lipid profile readings, consisting of elevations in chylomicron, low-density lipoprotein (LDL), very-low-density lipoprotein (VLDL), and intermediate-density lipoprotein (IDL) levels, are becoming increasingly prevalent, especially with the spreading factors among the Saudi population, such as urban residence, increasing age, especially 40 years; physical inactivity, overweight and obesity, diabetes mellitus, frequent fast food consumption, and so on.[1-3] Most of the gallstones patients present with severe abdominal pain requiring investigations and treatment. Many of them need surgical intervention by the time they are symptomatic. If the gallbladder is removed, the bile in the liver will directly enter the upper part of the intestine. As a result, Bile acids (BA) circulate faster, thus exposing the enterohepatic system to a greater BA flux. Lipid and BA

metabolisms are functionally interrelated. Even though lipid and BA metabolisms are functionally related, how gallbladder removal affects lipids is not well understood.[4- 7] Hence; the present study was conducted for assessing the lipid profile in patients undergoing LC.

MATERIALS & METHODS

The present study was conducted for assessing the lipid profile in patients undergoing LC. Assessment of 20 patients reporting with chief complaint of Cholelithiasis and scheduled to undergo LC was enrolled. Entire surgical procedure was explained to all the patients. Blood samples were obtained from all the patients before the starting of the surgery and lipid profile was evaluated. LC was carried out and blood samples were obtained again and compared with preoperative values. Recording all the results was done in SPSS software. Mann-Whitney U test was used for evaluation of level of significance.

RESULTS

A total of 20 patients were enrolled. Mean age of the patients was 45.3 years. Majority of the patients were females. During the preoperative period, mean TC levels, HDL levels and TG levels was found to be 172.3 mg %, 46.5 mg % and 183.6 mg % respectively. During the postoperative period, mean TC levels, HDL levels and TG levels was found to be 159.2 mg %, 44.8 mg % and 221.6 mg % respectively. While analysing statistically, significant alteration in the mean lipid profile of all the patients was seen postoperatively.

Table 1: Comparison of lipid profile

Lipid profile	Preoperative	Postoperative	p-value
Mean TC (mg %)	172.3	159.2	0.00*
HDL (mg %)	46.5	44.8	0.23
TG (mg %)	183.6	221.6	0.00*

*: Significant

DISCUSSION

The gallbladder is a small, thin-walled green sac, lies on the underside of the liver in the main liver Scissura at the junction of the right and left lobes of the liver. The Choledocholithiasis is defined as a presence or formation of gallstones in the common bile duct (CBD). Cholecystectomy has long been considered as a safe procedure, while secondary effects have been overlooked where the gallbladder is a 'controller' operating in concert with key pathways governing metabolic homeostasis. Most of the gallstones patients present with severe abdominal pain requiring investigations and treatment. Many of them need surgical intervention by the time they are symptomatic. If the gallbladder is removed, the bile in the liver will directly enter the upper part of the intestine. As a result, BA circulate faster, thus exposing the enter ire hepatic system to a greater BA flux. Lipid and BA metabolisms are functionally interrelated.[6- 8] Hence; the present study was conducted for assessing the lipid profile in patients undergoing LC.

A total of 20 patients were enrolled. Mean age of the patients was 45.3 years. Majority of the patients were females. During the preoperative period, mean TC levels, HDL levels and TG levels was found to be 172.3 mg %, 46.5 mg % and 183.6 mg % respectively. Osman A et al examined the postoperative changes in the lipid profiles of patients who underwent cholecystectomy. These lipid profiles include levels of low-density lipoprotein (LDL), triglycerides (TG), high-density lipoprotein (HDL), total cholesterol (TC), and the Chol/HDL ratio. Biochemical parameters, which include LDL, TG, HDL, and TC levels, were collected using the hospital's recording system, in addition to the calculation of the Chol/HDL ratio. Statistically significant changes included a reduction in the mean LDL values in the two-, four-, and six-month postoperative periods (P = 0.029, 0.000, and 0.008, respectively), increased mean TG levels one-week postoperatively (P = 0.034), decreased mean TC levels at four (P = 0.049) and six months after cholecystectomy, and increased Chol/HDL ratio at two and 12 months postoperatively. They concluded that cholelithiasis is associated with abnormal lipid profiles and that undergoing cholecystectomy may improve them and reduce the future risk of developing coronary artery disease.[9]

In the present study, during the postoperative period, mean TC levels, HDL levels and TG levels was found to be 159.2 mg %, 44.8 mg % and 221.6 mg % respectively. While analysing statistically, significant alteration in the mean lipid profile of all the patients was seen postoperatively. Gill GS et al study the effect of cholecystectomy on lipid levels in patients with gallstones. The study was conducted on 50 patients with gallstones and 30 healthy volunteers for comparison of lipid levels. Subsequently, cholecystectomy was conducted on patients with gallstones and pre- and post-operative lipid levels were compared. There was a significant decrease in total cholesterol, and triglycerides levels and increase in high-density lipoprotein levels after 1 month of surgery, while low-density lipoprotein levels and very low-density lipoprotein were not statistically changed. Cholecystectomy can significantly improve lipid levels in patients with gallstones.[10]

CONCLUSION

Significant alterations in the serum lipid profile occur in patients undergoing laparoscopic cholecystectomy.

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