

Gender based Outcome of Acute Cholecystitis

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ABSTRACT

Objective To find out whether or not male gender is associated with more severe gallbladder inflammation.

Study design Retrospective review of records.

Place & Duration of study Sheikh Khalifa Bin Zayed Al Nahyan (SKBZ) Hospital / CMH Muzaffarabad, from January 2012 to June 2015.

Methodology A retrospective data analysis of patients who underwent laparoscopic cholecystectomy for acute cholecystitis was done. Data for 740 patients with cholecystitis was retrieved. Out of these 220 patients who had laparoscopic cholecystectomy within 72 hours of admission, were included in the study. Gallbladder inflammation was confirmed on histopathology report.

Results There were 110 male and 110 female patients in this series. There was a significant number of male patients who had severe gallbladder inflammation in comparison with female patients ($p=0.002$). The male gender was confirmed in a multivariate analysis as an independent risk factor for severe cholecystitis ($p=0.018$).

Conclusions Male gender is a risk factor for severe gall bladder inflammation. Early surgical intervention is therefore warranted to prevent complications.

Key words Male gender, Acute cholecystitis, Risk factor.

INTRODUCTION:

Acute cholecystitis is the major complication of cholelithiasis.¹ Extent of gallbladder inflammation has a great influence on recovery of the patients

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undergoing laparoscopic cholecystectomy for acute cholecystitis.^{2,3} Male gender is considered a risk factor for empyema gallbladder and gangrenous acute cholecystitis.⁴ Patients with empyema gallbladder and gangrenous cholecystitis have high complication rate.^{5,6} Male gender has greater influence on the surgical outcome in patients undergoing laparoscopic cholecystectomy for acute cholecystitis.^{7,8} The aim of this study was to find out whether or not male gender is associated with more severe gallbladder inflammation and complication following cholecystectomy.

METHODOLOGY:

After taking approval from the ethics committee of the hospital, data analysis of the patients undergoing laparoscopic cholecystectomy for acute cholecystitis from January 2012 to June 2015 at Sheikh Khalifa Bin Zayed Al Nahyan Hospital / CMH Muzaffarabad was done. Data included sex, age, body mass index,

total leucocytes count, ultrasound abdomen findings and co morbid states as described by American society of Anesthesiologists (ASA).

Tokyo guidelines were used for the diagnosis of patients with acute cholecystitis.^{9,10} Patients who were treated and operated within 72 hours after admission were included. Four ports technique was used in all cases. Intraoperative blood loss, postoperative complications and the hospital stay were recorded. Histopathology reports were also analysed for the extent of gallbladder inflammation.

Statistical package for social sciences SPSS 17 was used to analyze the data. Results of male population were compared with that female patients. Absolute numbers and percentages were used to statistically describe the study. Median and interquartile ranges were used to explain central tendencies. Chi square test was used to find out statistical significance between male and female genders. Level of significance was kept at $p < 0.05$.

RESULTS:

During the study period 740 cholecystectomies were performed. Out of these 220 patients had acute cholecystitis. These patients underwent laparoscopic cholecystectomy within 72 hours of admission. This included 110 males and 110 female patients (table I).

No significant difference was found between two groups in WBC count (13.8/ul vs. 13.4/ul $p = 0.5$). Gangrenous to necrotizing inflammation was found more in male patients as compared to female patients. Extent of inflammation was statistically significant for male gender ($p = 0.002$). Male gender was an important independent risk factor for severe gallbladder inflammation as identified by the multivariate analysis Wilk's lambda = 0.92, $p = 0.016$, partial $\eta^2 p = 0.08$. In female patients the median length of anesthesia was 100 minutes while in males 110 minutes but the difference was not significant ($p = 0.23$). Same was in duration of surgery

(65 minutes for the female group and 70 minutes for male group $p = 0.16$).

Thirty six (16%) cases were converted from laparoscopic to open cholecystectomy ($p = 0.62$). This included 15 (14%) females and 21 (19 %) males. Complications noted in 43 patients. This included 20 (18 %) females where 2 patients had cystic duct leak, 6 had urinary tract infection, 8 wound infections and 4 developed pneumonia. In males 12 had wound infection, 7 urinary tract infections, 2 had pneumonia and one case each of cystic artery leak and sub hepatic abscess. Difference in gender with respect to complications was not statistically significant ($p = 0.82$). Postoperatively median length of hospital stay was 4 days in both the groups ($p = 0.3$). Mortality rate was 1% (2 cases) both were from female group who had ASA 4 risk category. It was not statistically significant ($p = 0.49$).

DISCUSSION:

In comparison with the uncomplicated cholecystitis, severe cholecystitis has higher mortality and morbidity.¹¹ Vascular compromise and cystic duct obstruction results in the gangrenous and necrotizing cholecystitis.¹² The severity of acute cholecystitis in patients undergoing laparoscopic cholecystectomy has a great influence on the postoperative outcome.^{13,14} Male gender is a risk factor for difficult laparoscopic cholecystectomy as reported in literature.^{15,16} But it is not known whether this risk is due to the management of the male patients with acute cholecystitis. Conversion rate of laparoscopic to open cholecystectomy was not found significant in this study but male gender had higher risk of conversion as reported in literature.¹⁷

In this study age and co morbidities had no role in the severity of gallbladder inflammation as both groups were comparable with respect to these parameters. Same was true for the operating time. Finally there was no selection bias because all the patients who underwent laparoscopic

Table I: Basic Features of Both the Groups

Features	Female Group	Male Group	p- value
Number of Cases (n)	110	110	
Median Age (year)	55.0	62.0	0.20
Median BMI (kg/m ²)	28.7	27.6	0.40
Interquartile Range	9.3	7.5	
ASA 1-2 n(%)	44 (63.8%)	36 (52.2%)	0.26
ASA 3-4 n(%)	25 (36.2%)	33 (47.8%)	

Table II: Severity Grades and the Extent of Gallbladder Inflammation On Histopathology			
Features	Female Group n (%)	Male Group n (%)	p- value
Severity Grade			0.91
- I	72 (65%)	64 (58%)	
- II	22 (20%)	24 (22%)	
- III	16 (15%)	22 (20%)	
Extent of Inflammation			0.002*
- Edematous	77 (70%)	41 (37%)	
- Gangrenous	24 (22%)	32 (29%)	
- Necrotizing	9 (8%)	37 (34%)	

cholecystectomy were included. Undiagnosed episodes of acute cholecystitis in male patients may lead to the more severe inflammation of gallbladder.

Gallbladder inflammation from gangrenous to necrotizing cholecystitis was present in most of the male patients than female patients. This makes the male gender an important risk factor of gallbladder inflammation as shown by our study. Early laparoscopic cholecystectomy in male patients may save them from the further complications. The study has limitations of being retrospective in design and from single centre. For more generalizable results, it should be done in prospective way with large sample size, at more than one place.

CONCLUSIONS:

Acute cholecystitis in a male patients should be viewed with more caution and be treated proactively and aggressively. Early surgical intervention in the male patients with cholecystitis may save them from more severe complications.

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Zubina Adnan : Data collection.
Misha Anis: Data collection and analysis.
Anam Altaf: Conception, data analysis, final approval and revision.
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