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Research Article

**DETERMINATION OF PREDICTING THE ACUTE
CHOLECYSTITIS'S SEVERITY**¹Dr Muhammad Ilyas, ²Dr Rabia Babar, ³Dr. M. Zaheer Abbas¹Allama Iqbal Memorial Teaching Hospital Sialkot, ²Services Institute of Medical Sciences,
³Services Hospital Lahore.**Article Received:** August 2019**Accepted:** September 2019**Published:** October 2019**Abstract:**

Objective: The inflammation of gall-bladder is known as AC (Acute Cholecystitis). There is classification of the severity of this disease as mild, moderate, severe in accordance with the TGs (Tokyo Guidelines). The aim of this research work is to determine the parameters of laboratory findings for the prediction of the seriousness or extremity of the acute Cholecystitis in our hospital.

Methodology: We reviewed 90 patients suffering from acute cholecystitis retroactively. We treated these patients in the surgical department of Allama Iqbal Memorial Teaching Hospital Sialkot for a period of complete one year from June 2018 to May 2019. We divided all the patients into three groups depending upon the severity of the AC.

Results: Baseline average values for count of WBC (White Blood Cell), BUN (Blood Urea Nitrogen), and INR (International Normalized Ratio) creatinine were very high in group of severe patients at a level of significance in comparison with the patients of mild group. The level of the white blood cell was high in the patients of moderate group as compared to the patients of mild group. There was no parameter of laboratory which differentiated the patients of severe group from the patients of the moderate group.

Conclusion: Patients with AC with high levels of white blood cell, BUN, INR & creatinine at the time of admission should get referrals to the advanced health care centers for proper management of the complication.

Keywords: Tokyo Guidelines, Acute Cholecystitis, Surgery, Abdomen, Prediction, Severity, Seriousness.

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INTRODUCTION:

According to an estimation, in the countries of the West, the rate of the gall bladder's inflammation is from 8.0% to 13.0% and the occurrence of this complication increases with the increase of the age. Most of the patients were not symptomatic and about 18.0% patients who were symptomatic, appear with the AC. AC appears with the epigastrium; pain or RUQ (Right Upper Quadrant) pain in abdomen cavity in episodes. Occasionally, it is very hard to discriminate the acute cholecystitis from the biliary colic. The criteria for the diagnosis is present in the Tokyo Guidelines which were available in published form in 2007 better known as TG-07. In the year of 2013, updating of these guidelines carried out to enhance the precision of the diagnosis better known as TG-13 and reports showed that the rate of precision with the use of TG13 is higher than 90.0%. The very final version of these guidelines appeared in the year of 2017 better known as TG-18.

In accordance with the TG-13 & TG-18, there are three grades of AC as severe, mild or moderate depending upon the seriousness of the results. In the grades of moderate & severe, there is much prominence of the inflammation. The determination of the AC is possible after at least seventy-two hours of the hospitalization. The regulation of the intervention carried out in accordance with the severity of the complication. The diagnosis of the extremity of the problem at the time of admission in hospital is very supportive for the surgeon to decide about the proper treatment of the complication. The aim of this research work is to determine the parameters of laboratory findings for the prediction of the seriousness or extremity of the acute cholecystitis in our institute.

METHODOLOGY:

We collected the information of the patients suffering from acute cholecystitis and getting treatment in the surgical department of Allama Iqbal Memorial Teaching Hospital Sialkot from June 2018 to May 2019 and we reviewed these patients retroactively. We retrieved the information about age, gender & clinical co-morbidities as elaborated by ASA from every patient. We retroactively assessed the computer

records of the patients about past clinical history, physical outcome CT scan & images of ultrasounds as well as results of various tests of laboratory conducted in our institute. We used all the data to assess the extremity of the acute cholecystitis in accordance with the standard of TG-18. Depending upon the severity of the acute cholecystitis, we formed 3 groups of patients as mild, moderate & severe group. The patients who were undergoing surgery within seventy-two hours of the start of symptoms were the participants of this research work. We gathered descriptive data about surgery from surgical data forms of the patients. We also noted the total stay in hospital and related complications from the discharge books of hospital.

SPSS V.22 was in use for the statistical analysis of the collected information. We used numbers and percentages for the representation of the continuous variables. Chi square test was in use for the determination of the significance of the different variables. Multiple comparison carried out with the help of ANOVA. Bonferroni correction procedure was in use for the investigation of the groups which were present with high rate of disparities. Ethical committee of the hospital gave the permission to conduct this research work.

RESULTS:

A sum of total 90 patients with complete clinical records were the part of this research work. There were total 70 males and 20 female patients. The median age of the patients was 50 years. The grade of severity was Grade-1 (mild) in 60.68% patients, Grade-2 (moderate) in 21.58% patients & Grade-3 (severe) in 11.58% patients as mentioned in Table-1. We performed the LC (Laparoscopic Cholecystectomy) in 64.38% and OC (Open Cholecystectomy) for 31.58% patients. Laparoscopic cholecystectomy commenced for 76.18% patients in the group of Grade-1. Open cholecystectomy commenced on 91.28% patients in the group of Grade-3 & 19.68% patients in the group of Grade-1. In accordance with the reports of the final pathology, 2/13 patients suffering from severe acute cholecystitis were present with adenocarcinoma & remaining 11 patients were present with the necrotizing acute cholecystitis.

Table-I: Grading of AC Severity According to TG18

Grading of severity	No	Percent
Grade I (mild)	60	60.68
Grade II (moderate)	20	21.58
Grade III (severe)	10	11.58

Multiple ANOVA with single way comprising correction of Bonferroni showed that average values of the count of WBC, BUN, creatinine & INR were very high in the group of Grade-3 at the significant level in comparison with the group of the Grade-1. The level of the white blood cells was high in the group of

Grade-2 in comparison with the group of Grade-1. But, no parameter of the laboratory was able to discriminate the severe grade of AC from the group of Grade-2. The summary of the obtained finding is present in Table-2.

Table-II: Levels of WBC, BUN, Creatinine and INR According to AC Severity

Severity	Grade I (Mild)	Grade II (Moderate)	Grade III (Severe)
	Mean \pm SD	Mean \pm SD	Mean \pm SD
WBC (*109/L)	9.8 \pm 3.18	14.58 \pm 5.88	15.48 \pm 6.28
BUN (mg/mL)	27.48 \pm 11.68	37.28 \pm 17.8	45.28 \pm 28.04
Creatinine (mg/mL)	0.88 \pm 0.18	1.03 \pm 0.8	1.28 \pm 0.78
INR	1.10 \pm 0.8	1.21 \pm 0.8	2.02 \pm 0.78

WBC: White Blood Cell Count; BUN: Blood Urea Nitrogen; INR: International Normalized Ratio; AC: Acute Cholecystitis.

DISCUSSION:

TG-07, TG-13 & TG-18 give very simple standards that facilitate the process of diagnosis as well as allow the classification of the level of severity of acute Cholecystitis. The diagnosis of the severity at the time of admission in hospital is very helpful for the proper management of the patients suffering from AC. The research works of the past displayed that the need of the extreme care after surgical intervention was present in higher than 18.0% patients with extreme gallbladder's inflammation. In one other research work, Gurbulak confirmed that C-reactive protein is a very effective predictor of various grades of acute cholecystitis in accordance with TG-13 & therapy carried out according to the grade classification. In various research works performed utilizing TG-07, the amount of the patients suffering from severe acute Cholecystitis ranged from 1.18% to 6.0%.

A research work carried out by Yokoe stated the ratio of severe acute cholecystitis as 17.20% in accordance with the TG-13. In this current research work, severe acute Cholecystitis ratio was 11.58%. All of these findings showed that the occurrence of the severe acute cholecystitis is increasing gradually. TG-13 & TG-18 elaborates the severe type of acute cholecystitis as linked with dysfunctions in the system of organ that is in need of some intensive care. Gonzalez-Munoz carried out a regression analysis for the prediction of the prognosis for acute cholecystitis & discovered that TG-13 severity grades as predictor for the rate of mortality at the time of admission in hospital for patients. But Yokoe stated the mortality rate in acute cholecystitis as only 1.0%. Some other authors showed that multi-variate analysis discovered TG-13 & TG-18 grades as an independent forecasting factors for the total duration of stay in hospital & need for the OC.

Tornqvist discovered various complications with very high rate among the patients with more extreme type of the acute Cholecystitis. The patients who are suffering from the severe grade of AC, need percutaneous cholecystectomy. Ambe in his research work established the 8 different factors having association with the severity of the AC as sex, age of patient, BMI, scores of ASA, recurring colic, width of the wall of gallbladder, count of white blood cells & value of CRP. Borzellino found the following predictors for severity grades of AC as temperature, distension of gallbladder, edema of the wall of gall bladder & adverse incidences after surgical interventions.

CONCLUSION:

The findings of this research work showed that various parameters of laboratory have the ability to predict the seriousness of the admitted patient and endoscopic intervention is much necessary for the patients who are in critical situation. We suggested that it is necessary to perform OC in the patients that have very high danger of injury to bile duct of injury to various vessels of blood for the prevention of various complications.

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