Original Article

# GALL STONES ASSOCIATED ACUTE PANCREATITIS: A REVIEW OF 50 PATIENTS

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**ABSTRACT:**

**INTRODUCTION:** Incidence of Pancreatitis is increasing day by day in our country and gallstone disease is a major cause of this disease.

**OBJECTIVE:** To assess the treatment and outcome of these patients and compare it to other similar studies done at national and international level.

**MATERIALS AND METHODS:** It is a case series conducted in surgical department of Madina Teaching Hospital Faisalabad having acute pancreatitis due to gall stone disease during the period of Jan 2015 to Jun 2016.

**RESULTS:** Out of 50 patients in our study, 32(64%) patients were female. Patient ages were in range of 17 to 67 years, most in the fourth decade (34%). Out of these, 37(74%) patients were having mild attack according to ranson's criteria, whereas 10(20%) had moderate and 3(6%) patients had severe attack of pancreatitis.4 (8%) patients had CBD stones at presentation. 6(12%) patients underwent laparotomy due to unclear diagnosis and worsening clinical condition. 3(6%) patients expired in our study, two after laparotomy and one patient expired having worsening of pancreatitis after ERCP.

**CONCLUSION:** Gallstones are a major factor in etiology of acute pancreatitis here in Pakistan so symptomatic gallstone surgery should not be delayed unnecessarily. Early diagnosis based on clinical assessment, lab tests and CT scan is very important for appropriate treatment and to avoid undue laparotomies.

**KEY WORDS:** Pancreatitis, Gall stone disease, ERCP, Laparotomy

## INTRODUCTION:

The people of subcontinent are prone to develop gall stone disease (GSD). The major contributory factors in this regard are fat rich diet and a sedentary life style leading to obesity[1]. The norm of "fat, female, fertile and forty" is no longer applicable to our patients. Numerous studies demonstrate the incidence of GSD in younger age groups [2-3]. Incidence of GSD in male population is also a common occurrence after the age of 50, the female to male ratio changing from 2.7:1.9 to 6.2:5.1[1]. The only factor that seems to have remained constant is obesity [1].

GSD itself may not be very distressing for the patient, the usual symptoms being dull pain in

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right upper abdomen along with indigestion and nausea[3]. However, the related complications, especially in diabetic patients may be quite grave and even life threatening[4]. Common complications include cholecystitis, mucocele and empyema of gall bladder[3,4]. GSD is also considered to be among a major cause of acute pancreatitis (AP) being the etiological factor in 40-45% cases, alcoholism is the second leading cause[5]. The incidence of AP has a variable geographical distribution, being highest in Scandanavia and USA (35-73 cases/ 100,000) and least in Norway and UK (10-24 cases/100,000)[6]. GSD is the major cause in population of UK, while alcohol abuse is the predominant etiological factor in USA[6].

There is an acute shortage of data in our country regarding the incidence and prognosis of GSD leading to pancreatitis. Different hospitals may be collecting data individually but there is no national body to compile it. Also, the data hence collected is often incomplete and unreliable. Furthermore, the treatment of gall stone pancreatitis is yet to be standardized.

We are presenting data of patients diagnosed as AP that were admitted and treated in surgical ward of Madina Teaching Hospital Faisalabad.

## Objective:

To assess the treatment and outcome of patients suffering from acute pancreatitis secondary to gall stone disease and compare it to other similar studies done at national and international level.

## MATERIALS AND METHODS:

The data was collected from patients admitted and treated in surgical department of Madina Teaching Hospital Faisalabad having acute pancreatitis due to GSD during the period of Jan 2015 to Jun 2016.

Patients of both genders and all ages having AP and concomitant GSD were included in our study. Informed consent, relevant bio-data and contact details were taken from these patients. Other patients in which cause of AP was thought to be other than GSD were excluded.

Most common presenting complaint among our patients was pain in upper abdomen radiating to back of short duration, usually 1-2 weeks. The pain was associated with nausea and occasional episodes of vomiting. Examination findings of upper abdominal distension, mild to moderate tenderness were common. Some cases presenting late or with complications had signs and symptoms of generalized peritonitis. The confirmation of GSD was done by ultrasonography. Serum Amylase levels raised three times the reference range was considered confirmatory for diagnosis of AP. Other baseline investigations performed on all patients were Complete blood count, Renal function tests, Liver function tests, Hepatitis B & C status, Serum electrolytes, Prothrombin time, activated partial thromboplastin time, X-ray chest and ECG. In doubtful cases CT abdomen with intravenous contrast was also used to confirm presence of pancreatic inflammation and look for any other intra-abdominal problem.

Ranson's criteria was used at the time of admission to assess the severity of attack[7] and based on that scoring, patients were categorized as having mild, moderate or severe attack of AP as depicted in table 1.1.

Table 1.1: Categorization of Acute Pancreatitis based on Ranson's score

| Present on admission | Developing during 48 hours |
|---|---|
| Age > 55years<br>WBC count > 16000/µL<br>Blood Glucose > 200 mg/dl<br>Serum LDH > 350 IU/L<br>SGOT (AST) > 250 IU/L | Hematocrit fall >10%<br>BUN increase >8mg/dl<br>Serum Calcium <8mg/dl<br>Arterial oxygen saturation < 60 mm Hg<br>Base deficit > 4mEq/L<br>Estimated fluid sequestration> 6 L |
| Ranson's score 1-3: Mild pancreatitis<br>Ranson's score 4-6: Moderate pancreatitis<br>Ranson's Score 7 or more: Severe pancreatitis | |

After admission, patients with moderate and severe pancreatitis were kept nil by mouth. However, patients having mild attack were allowed oral fluids. Patients kept NPO were

given intravenous fluids (maintenance and replacement) calculated on the basis of body weight. Prophylactic broad spectrum antibiotic was given to all patients along with a proton pump inhibitor and intravenous analgesic in the form of ketorolac(InjToradol). Other occasionally used medicines were metoclopramide (InjMaxolon) and drotaverine (InjNospa).

Patients diagnosed as having dilated common bile duct (CBD) with or without stones were consulted with Gastroentrologist. Endoscpic Retrograde Cholangiopancreatography (ERCP) was performed on patients having CBD stones. Any complication of AP diagnosed clinically or on investigations was dealt with as the condition required (Conservatively/Surgically).

All patients were kept on monthly follow up visits for six months. Most of the patients had no active complains during this period. 9 patients complaint of mild epigastric and retrosternal burning pain associated with meals. They were prescribed proton pump inhibitors and the symptoms resolved. Episodic abdominal pain of moderate intensity radiating to back was seen in 2 patients. They were prescribed analgesics and pancreatic enzyme supplements. They were kept under follow up for up to one year to rule out chronic pancreatitis

Patient's biodata and other relevant information were collected using a questionnaire which was designed keeping in view the objectives of this study. Statistical tools like chi square and p-value were used to validate the data thus collected.

## RESULTS:

**Disease Distribution:** Among the study population of 50 patients, 32 (64%) were female and 18 (35%) were male, female to male ratio being 1.78:1. The patients ranged in ages from 17 to 67 years, mean age being a little over 40 years. (Fig 1).

Ultrasound demonstrated gall stones in all these patients. 6 patients were found to have CBD diameter more than 1 cm, 4 with CBD stones and 2 without.

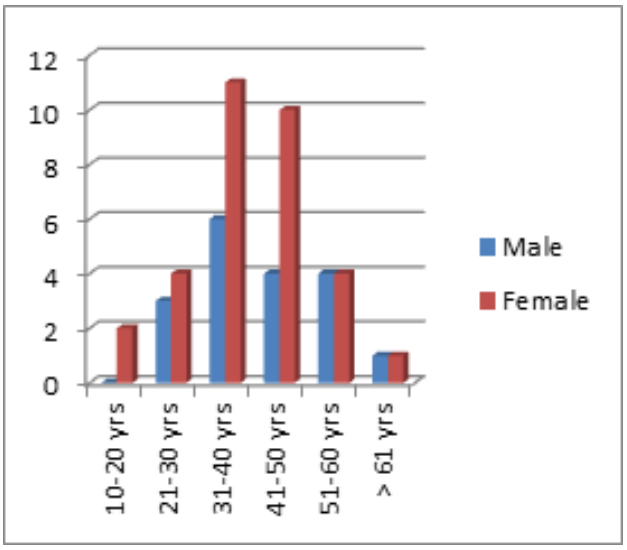



**Fig 1:**
**Age and Gender related distribution of Acute Pancreatitis**

**Disease Severity:** Ranson's scoring system was used to assess severity at time of admission. 74% of study population (37) had mild attack of acute pancreatitis. 20% of the remaining patients were categorized as moderate attack and the rest had severe attack of AP. The severity of disease in our study population according to gender is given in table 1.2 (P-value 0.4782, Chi Square value is 1.498).

**Complications of Disease:** CT abdomen was performed on all patients for confirmation of acute pancreatitis. Ultrasonographic findings of gall stones in all cases and CBD stones in 4 patients were confirmed. Additionally, pancreatic edema was found in all cases. As shown in table 1.3 the other complications were fewer (P-value = 0.9508, Chi Square value is 0.704). 2 patients showed necrotic pancreas, phlegmon formation was appreciated in 3 patients, pancreatic abscess and collection in 4 patients and ascites was found in 7 patients. No patient in our study developed chronic pancreatitis during the follow-up period.

Out of the 4 patients who were diagnosed as having CBD stones, 3 were referred to gastroenterologist for early ERCP, i.e within 1 week of diagnosis. Out of these, 2 patients improved. However, 1 patient developed severe acute pancreatitis and died after staying in our

care for 16 days due to complications related to pulmonary system. The fourth case of CBD stones underwent delayed ERCP after resolution of symptoms of acute pancreatitis and he improved uneventfully.

During our period of study, 6 patients underwent exploratory laparotomy (12%). The cause in 3 cases was an uncertain diagnosis. And the other 3 patients were operated due to severe non-improving pancreatitis with complications like intraperitoneal fluid and pus collection or pancreatic necrosis. Out of these, 4 patients improved. 2 patients, both explored due to severe complicated pancreatitis died after surgical exploration. The third patient of severe pancreatitis who underwent debridement of necrotic pancreatic tissue developed pancreatic fistula from drain site in post-operative period. She was managed conservatively with fluids, antibiotics and nutritional support. Her fistula healed spontaneously over the next one month and she recovered.

The patients in our study were offered laparoscopic cholecystectomy(LC) for the treatment of GSD. 35 patients underwent an uneventful LC after improvement of symptoms in the same hospital stay. 8 patients were discharged and called after 2 weeks for delayed cholecystectomy. All these procedures also went uneventful. 4 patients had already had their gall bladder removed during exploratory laparotomy. Out of our study group, 3 patients expired due to complications related to pancreatitis.

The most common complication of pancratitis that we encountered in post-operative period was pancreatic pseudocyst which we diagnosed with the help of ultrasound and CT abdomen in 8 patients during follow up visits. These patients were admitted for observation and further management. Conservative management succeeded in 2 of these patients owing to small size of the pseudocyst. Intervention was planned for the remaining 6 patients. 4 patients underwent open cystogastrostomy. Availability of facilities made it possible for us to offer endoscopic cystogastrostomy to 2 of our patients. All these patients recovered normally with no further problems. The patients who underwent endoscopic procedure did have an appreciably faster recovery and shorter hospital stay post operatively.

Out of a total of 50 patients in our study group, we had 3 deaths, all in early stages of diagnosis and treatment. The remaining 47 patients recovered and no late death up to 1 year after treatment was registered.

**Table 1.2:**
**Severity of Acute pancreatitis in our study population**

| Gender | Mild | Moderate | Severe | Total |
|---|---|---|---|---|
| **Female** | 25 | 6 | 1 | 32 |
| **Male** | 12 | 4 | 2 | 18 |
| **Total** | 37 | 10 | 3 | 50 |

**Table 2.3:**
**Complications of Acute Pancreatitis**

| | Ascites | CBD stones | Pancreatic Abscess | Pancreatic Necrosis | Phelgmon Formation | Total |
|---|---|---|---|---|---|---|
| **Female** | 4 | 3 | 2 | 1 | 2 | 12 |
| **Male** | 3 | 1 | 2 | 1 | 1 | 8 |
| **Total** | 7 | 4 | 4 | 2 | 3 | 20 |

## DISCUSSION:

Our study found a predominance of female patients, male to female ratio being 1:1.78. This may be attributable to large number of patients of GSD being female. Most International studies agree with this finding[8]. As shown by Malik et al [9] the predominance of acute pancreatitis is more in females, however the incidence in male population is at a rise and male patients are more prone to present with complicated AP. The smaller number and less complicated male patients in our study may be justifiable by considering that the incidence of alcoholic pancreatitis in our society is far less than internationally observed standards.

In our study, we used serum amylase levels to confirm the diagnosis of acute pancreatitis. Ultrasound abdomen was the most commonly used imaging modality and was repeated at appropriate intervals. Other than ultrasound, we used CT abdomen to assess the severity of disease and to rule out any pancreatitis related complications. No percutaneous intervention was carried out using USG or CT. These procedures are the same as Hajjar et al[10].

The severity of AP was judged in our study using Ranson's criteria which is same as used by other researchers[11]. This is thought to be the easiest and most commonly used predictor of intensity of acute attack. Second most common scoring system is APACHE-II[12] but that is generally reserved for ICU settings and was therefore not used in our study.The incidence of severe acute pancreatitis in our study was 6% which is less than described by Shah et al[11] who documented severe attacks in 14% patients. However, the mortality rate in their study was 2% which was less than what we experienced i.e. 6%.

The incidence of CBD stones among patients of GSD is internationally documented to be between 7% to 20%[13]. The diagnosis is suggested by presence of symptoms like obstructive jaundice or signs and symptoms of acute cholangitis. Further investigations used to confirm CBD stones in our study were liver function tests and ultrasound. These are the same as used in international studies. MRCP is also recommended if doubt exists. However, in our study no patient underwent MRCP. Diagnostic ERCP was not recommended to any patient in our patients contrary to discussed by Ghazal et al[13]. Only a small number of patients in our study were subjected to ERCP and the percentage is not adequate to recommend use of early or late ERCP. Detailed study with a larger number of patients is required for that purpose.

The percentage of patients who underwent exploratory laparotomy in our study was 12%, out of which, half were due to unconfirmed diagnosis and half due to complicated AP presenting with peritonitis. This ratio is far less than described by Camara et al [14]who described operation rate of 66.20%. However, in their study, operative treatment was done for all patients having CBD stones (50.70% of study population). ERCP was not performed for any patient in that study. A complication rate of 12.77% seen by Camara et al is also more than seen in our study. Results of our study are more closely comparable to the work of Singh et al [15] who performed exploration in 10.26% study population. One major difference that we saw was number of deaths. We lost 3 patients during the study interval. Other studies used for comparison did not have any recorded deaths.

The favorable outcomes of early LC in cases of gall stones associated AP as seen in our study is same as seen by local and international researchers[16,17]. We conducted uneventful early LC in 70% and delayed LC in 16% of our study population as compared to 67.5% and 32.5% respectively by Li et al[16]. In our study another 8% had open cholecystectomy during exploration.

The major complication seen in our study was pancreatic pseudocyst which is consistent with the findings of other researchers[18]. The treatment options that we offered to our patients, namely conservative management, open cystogastrostomy and endoscopic cystogastrostomy were the same as seen in many other national and international studies. However, the number of patients was too small to deduce any statistically significant results[19].

The other complications seen in our patients were not clinically significant except for the 6% who developed new onset diabetes mellitus. This was less then seen in other similar studies[20].

The mortalities in our patients were attributed to pulmonary complications of AP. This finding is supported by Tumer et al[21] who concluded that the most common extra-peritoneal life threatening complication of acute pancreatitis is related to pulmonary system.

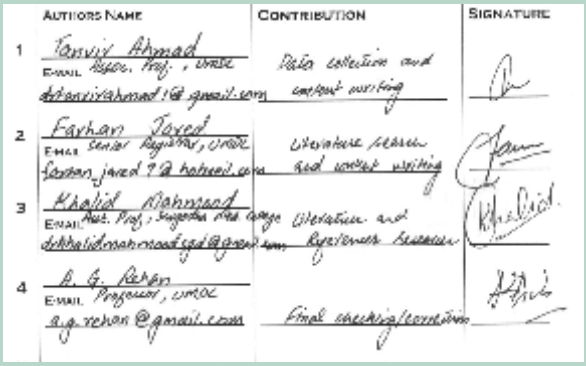
## CONCLUSION:

Pancreatitis can be a life threatening condition. As gallstone is major factor in etiology of AP here in Pakistan, so symptomatic gallstone surgery should not be delayed unnecessarily. Early diagnosis with laboratory tests, ultrasound and CT scan is very important to avoid undue laparotomies. LC should be done after improvement of pancreatitis attack in same admission to prevent further attacks that can be life threatening.

## REFERENCES:


1. Kim SB, Kim KH, Kim TN, Heo J, Jung MK, Cho CM, et al. Sex differences in prevalence and risk factors of asymptomatic cholelithiasis in Korean health screening examinee: A retrospective analysis of a multicenter study. Medicine. 2017;96(13):e6477.
2. Volzke H, Baumeister SE, Alte D, Hoffmann W, Schwahn C, Simon P, et al. Independent risk factors for gallstone formation in a region with high cholelithiasis prevalence. Digestion. 2005;71(2):97-105.
3. Tuna Kirsaclioglu C, Cuhaci Cakir B, Bayram G, Akbiyik F, Isik P, Tunc B. Risk factors, complications and outcome of cholelithiasis in children: A retrospective, single-centre review. Journal of paediatrics and child health. 2016;52(10):944-9.
4. Cho JY, Han HS, Yoon YS, Ahn KS. Risk factors for acute cholecystitis and a complicated clinical course in patients with symptomatic cholelithiasis. Archives of surgery. 2010;145(4):329-33; discussion 33.
5. Majidi S, Golembioski A, Wilson SL, Thompson EC. Acute Pancreatitis: Etiology, Pathology, Diagnosis, and Treatment. Southern medical journal. 2017;110(11):727-32.
6. Bogdan J, Elsaftawy A, Kaczmarzyk J, Jablecki J. Epidemiological characteristic of acute pancreatitis in Trzebnica district. Polski przeglad chirurgiczny. 2012;84(2):70-5.
7. Kim YJ, Kim DB, Chung WC, Lee JM, Youn GJ, Jung YD, et al. Analysis of factors influencing survival in patients with severe acute pancreatitis. Scandinavian journal of gastroenterology. 2017;52(8):904-8.
8. Hussain M, Nagral S. Biliary pancreatitis secondary to stones from a gall bladder remnant. Tropical gastroenterology : official journal of the Digestive Diseases Foundation. 2010;31(3):230-3.
9. Malik AM. Acute pancreatitis. A more common and severe complication of gallstones in males. International journal of health sciences. 2015;9(2):141-5.
10. Hajjar NA, Iancu C, Bodea R. Modern therapeutic approach of acute severe forms of pancratitis. A review of the literature and experience of Surgical Department No III Cluj. Chirurgia. 2012;107(5):605-10.
11. Shah A, ul Haq F, Ullah A, Ur Rehman R. Role of simplified admission criteria for predicting severe complications of gall stone pancreatitis. Journal of Ayub Medical College, Abbottabad : JAMC. 2010;22(3):165-9.
12. Fischer AJ, Andreottola F, Lenz P, Lebiedz P. [Acute pancreatitis in intensive care medicine : Which risk score is useful?]. Medizinische Klinik, Intensivmedizin und Notfallmedizin. 2017.
13. Ghazal AH, Sorour MA, El-Riwini M, El-Bahrawy H. Single-step treatment of gall bladder and bile duct stones: a combined endoscopic-laparoscopic technique. International journal of surgery. 2009;7(4):338-46.
14. Camara SN, Ramdany S, Zhao G, Gou SM, Xiong JX, Yang ZY, et al. Etiology, pathology, management and prognosis of chronic pancreatitis in Chinese population: A retrospective study. Journal of Huazhong University of Science and Technology Medical sciences = Hua zhong ke ji da xue xue bao Yi xue Ying De wen ban = Huazhong keji daxue xuebao Yixue Yingdewen ban. 2015;35(3):384-9.

15. Singh DR, Mehta A, Dangol UM. Controversies in the management of acute pancreatits. Kathmandu University medical journal. 2004;2(3):203-7.
16. Li A, Qin HJ, Ke LW, Chen G, Lu HM, Zhang ZD. Early or delayed cholecystectomy (LC) for acute gallstone pancreatitis? An experience and review. Hepato-gastroenterology. 2012;59(119):2327-9.
17. Sangrasi AK, Syed B, Memon AI, Laghari AA, Talpur KA, Qureshi JN. Laparoscopic cholecystectomy in acute gallstone pancreatitis in index hospital admission: feasibility and safety. Pakistan journal of medical sciences. 2014;30(3):601-5.
18. Zerem E, Hauser G, Loga-Zec S, Kunosic S, Jovanovic P, Crnkic D. Minimally invasive treatment of pancreatic pseudocysts. World journal of gastroenterology. 2015;21(22):6850-60.
19. Bolia R, Srivastava A, Yachha SK, Poddar U, Kumar S. Prevalence, Natural History, and Outcome of Acute Fluid Collection and Pseudocyst in Children With Acute Pancreatitis. Journal of pediatric gastroenterology and nutrition. 2015; 61(4):451-5.
20. Ermolov AS, Blagovestnov DA, Rogal ML, Omel'yanovich DA. [Long-term results of severe acute pancreatitis management]. Khirurgiia. 2016(10):11-5.
21. Tumer AR, Dener C. Diagnostic dilemma of sudden deaths due to acute hemorrhagic pancreatitis. Journal of forensic sciences. 2007;52(1):180-2.

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Value of a man depends upon his courage; his veracity depends upon his self-respect and his chastity depends upon his sense of honor.

***Hazrat Ali (Karmulha Wajhay)***