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Buyyakari Shirisa, Paramasivam Suresh Kumar, Rakesh Das
 Department of Pharmacy Practice,
 Browns College of Pharmacy,
 Khammam, Telangana

Correspondence

Dr. Rakesh Das
 Associate Professor
 Department of Pharmacy Practice,
 Browns College of Pharmacy,
 Khammam, Telangana

Email: rdas.jupharmtech@gmail.com

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Incidence Rate and Etiological Factors of Pancreatitis in Alcoholic and Non-alcoholic Patients

Buyyakari Shirisa, Paramasivam Suresh Kumar, Rakesh Das

ABSTRACT

To study the incidence and etiological factors of pancreatitis in both alcoholics and non alcoholic patients. serum amylase and lipase levels were compared in alcoholics and non alcoholics. This is a prospective observational study conducted in district head Quarter hospital, Khammam. Total 100 in-patients are included in this study according to inclusion and exclusion criteria. Detailed history of patients were considered along with physical and laboratory examination, ultra sound examination for the conformation of etiological factor of pancreatitis in patients has been made. In our study, out of all, 116 patients have conformed that alcohol is the main etiological factor and remaining 26 of patients were from nonalcoholic history. The patients with alcoholic etiology were 93 patients. Out of 142 patients, 96 patients have acute pancreatitis and remaining 26 patients have chronic pancreatitis. The patients with nonalcoholic etiology were 26 patients. Out of 26 patients, 20 patients have gall stones, 2 patients have hypercalcemia and 2 patients have triglyceredemia. The study concludes that alcohol is the major cause of pancreatitis in patients. Serum amylase and lipase levels are high in alcoholics than the non- alcoholic and the gall stone is the main cause in non-alcoholic patients for pancreatitis.

Key words: Incidence, pancreatitis, alcohol, gall stones, serum amylase and lipase.

1. INTRODUCTION

Acute pancreatitis, an inflammatory disease of the pancreas, is mild and resolves itself without serious complications in 80% of patients, but it has complications and a substantial mortality in up to 20% of patients. There are many causes of acute pancreatitis, which can be easily identified in 75-85 % of patients. In developed countries, obstruction of the common bile duct by stones (38%) and alcohol abuse (36%) are the most frequent causes of acute pancreatitis. Gall stone induced pancreatitis is caused by duct obstruction by gallstone migration. Obstruction is localized in the bile duct and pancreatic duct, or both. Duct obstruction promotes pancreatitis by increasing duct pressure and subsequent unregulated activation of digestive enzymes. Alcohol abuse is the second most frequent cause of acute pancreatitis, but the correlation between alcohol and pancreatitis is not completely understood. As the development of pancreatitis might be affected by both genetic and environmental factors, failure to inhibit trypsin activity or to wash active trypsin into pancreatic ducts might promote alcoholic pancreatitis. Endoscopic retrograde cholangiopancreatography (ERCP) is a potential cause of acute pancreatitis. Prevention of post-ERCP pancreatitis in high-risk patients might be achieved by placing a temporary pancreatic stent. Hypercalcaemia is another rare and inconsistent cause of acute pancreatitis.

The important theories about the pathogenesis of acute pancreatitis include bile-pancreatic duct common pathway theory, pancreatic auto digestion theory, gallstone migration theory, enzyme activation theory, kinin and complement system activation theory, microcirculation disturbance theory, leukocyte excessive activation theory, pancreatic acinar cell apoptosis and necrosis theory, all of which are still controversial. They can only explain the

the pathogenesis of some specific pancreatitis cases, or specific aspects of pathogenetic process of some forms of acute pancreatitis. Although acinar hyper stimulation has often been implicated in acute pancreatitis pathogenesis, there is no evidence that supports it.¹⁻⁹

2. ASSESSMENT OF ACUTE PANCREATITIS

Since the morbidity and mortality of AP differ markedly between mild and severe disease (mild < 5% Vs. severe 20–25%), it is very important to assess severity as early as possible. Multiple clinical criteria, biochemical parameters and imaging criteria have been used for this purpose.

A very simple clinical severity assessment tool has appeared recently; it is called BISAP after the following five criteria used:

1. Blood urea nitrogen (BUN) > 25 mg/dL
2. Impaired mental status (Glasgow coma scale score < 15)
3. Systemic inflammatory response syndrome (SIRS) score \geq 2
4. Age > 60 years and
5. Pleural effusion.

3. PATHOPHYSIOLOGY

Chronic pancreatitis is a multifactorial disorder that is probably started by two distinct events. The first event is attributable to functional or mechanical causes of decreased bicarbonate secretion. Functional impairment may be caused by genetic factors such as cystic fibrosis transmembrane conductance regulator and serine protease inhibitor kazal type 1 gene mutations and mechanical obstruction by tumor, strictures, and sphincter of Oddi dysfunction. The second event involves the premature activation of pancreatic exocrine enzymes within the pancreatic gland leading to interstitial fat necrosis and hemorrhage. This, in turn, starts a sequence of perilobular fibrosis, duct distortion, and changed pancreatic secretion. Various genetic abnormalities have also been sought to characterize the disorder. Chronic pancreatitis has been thought to be associated with over-expression of fibroblasts and growth factors, increased interleukin 8 expression, and disorders in cholecystokinin (CCK) homeostasis.

Changes in your pancreas can become quite advanced before you begin to feel unwell. When symptoms occur, they may include: pain in your upper abdomen, diarrhea, fatty stools, nausea and vomiting, unexplained weight loss, excessive thirst and fatigue.

4. LITERATURE SURVEY

The etiological factors of pancreatitis and to compare the serum amylase, lipase levels in alcoholic and non-alcoholic patients. This was a study conducted in Gandhi Medical College and Hospital, Secunderabad, on 75 patients (51 males & 24 females). Out of that 40 had significant history of alcohol consumption, while 35 were found to be non-alcoholics.¹ Incidence of pancreatitis did not differ significantly with age, probably because pancreatitis did not depend on duration of alcohol consumption and alcoholics were distributed equally in all age groups. They concluded that Lipase: amylase values were significantly higher among alcoholics than non alcoholics indicating the proportionately higher elevation of lipase in alcoholics Lipase: amylase ratio higher than 3 was seen only in alcoholics which may after further larger group studies be used to differentiate alcoholics from non-alcoholics². In a conducted study on the incidence of acute pancreatitis during 12-year study period, there were a total of 10589 separate attacks of acute pancreatitis, among 8607 different patients. 7356 of the patients (85.5%) were admitted once only during the study period, 848 (9.9%) were admitted twice, 242 (2.8%) three times and 161 (1.9%) four times or more. The overall incidence of acute pancreatitis, 10 589 cases, 3903 (36.9%) were of gallstone aetiology and 2327 (22.0%) were alcohol-induced³. In a study of 1,086 subjects, complete data on risk factors were available for 1,033 subjects. Idiopathic pancreatitis was the most common form of pancreatitis (n=622; 60.2%) and alcoholic chronic pancreatitis accounted for about a third of the cases (n=400; 38.7%); the rest (n=11; 1.1%) had rare risk factors⁴. Other, study has alcoholism ranks first as the etiological factor (56%) followed by biliary tract disease (26%). Among the males, alcoholism is the most common etiological factor, because addiction of it is more common in males, while biliary tract disease is the most common factor in females, because gall bladder stone is more common in fatty, fertile females of forty⁵. Antioxidants may be useful in treating patients with recurrent pain; in the case of intractable pain, an intrathecal narcotics pump may be offered. In those patients in whom medical therapy failed to obtain persistent pain relief, a surgical approach should be preferred over an endoscopic approach⁶. The results of the time series analysis indicates the presence of a statistically significant association between the two time series at zero lag for male ($r = 0.72$; S.E. = 0.13), and for female ($r = 0.36$; S.E. = 0.13). The results support the hypothesis that alcohol played a crucial role in pancreatitis mortality in Russia over the past decades. This study also indicates that substantial proportion of pancreatitis deaths in Russia is due to acute effect of binge drinking⁹. Results of one study had 964 admissions with the diagnosis acute pancreatitis, making an incidence of 5.64 per 100 000 inhabitants per year. Mean age of patients was 54.5 • } 16.93 years old. Among risk factors, alcohol consumption was found in 382 patients (39.6%), gallstone in 362 patients (37.6%), and others in 220 patients (22.8%). They concludes that the incidence of acute pancreatitis in

Albania ranges from 3.6 – 5.64 new cases per 100 000 inhabitants per year, with an increasing trend during the last years ¹⁰.

5. METHODOLOGY

5.1 Aim & Objective of study

To study the incidence of pancreatitis in Gandhi Medical College and Hospital, Secunderabad. The effort arise to scrutinize etiological factors, and investigations to detect the cause in patients with pancreatitis. Eventually, age and sex distribution of patients presenting with Pancreatitis of different etiologies. Finally, mean amylase, lipase and lipase: Amylase ratio in alcoholics and non-alcoholics were evaluated.

5.2 Study Design and Sample size

Hospital based prospective observational study.

100 cases of pancreatitis admitted in department of medicine who fulfilled the inclusion criteria were taken. Out of them, 6 patients died before all the investigations were done and 14 patients had mixed etiologies in whom cause of pancreatitis could not be made out and 5 patients left the hospital for different causes, so, they were excluded and the remaining 75 cases were included in statistical analysis.

5.3 Study Period

Dec. 2016- June 2017 (06 months)

5.4 Procedure

This was a prospective observational study conducted in Khammam district hospital, Khammam, Telangana. The following details of the patient admitted to medical wards will be collected and documented in patient data collection form.

- A) The patient demographic details such as age, and alcoholic history.
- B) Disease specific information like present complaints, gender, past medical history, past medication history, currently prescribed anti-hypertensive, Reason for indication.
- C) Diagnosis.

6. Result and Discussion

Present study mainly aimed to study the etiological factors of pancreatitis in alcoholic and non-alcoholic patients.

6.1 Age Distribution

In our study we are included total 142 cases who fulfilled the inclusion criteria. Out of 142 patients 60 (42.25%) patients were found between the age group of 40-50, 49 (34.51%) patients were found between the age group of 30-40, 23 (16.20%) patients were found between the age group of 50-60, 7 (4.93%) patients were found between the age of 20-30 and 3 (2.11%) patients were found between the age group of above 60years.

6.2 Based on etiological factors

Out of 142 patients 116 (81.69%) have alcohol has the main etiological factor, 20 (14.08%) patients have gall stones, 2(1.41%) patients have hypercalcemia, 2(1.41%) patients have increased bilirubin levels and 2(1.41%) patients have triglyceridemia.

6.3 Gender Distribution

Out of 142 patients 117 patients are males and 25 patients are females.

6.4 Based on Alcoholic history

In our study out of 142 patients 115 patients have the alcoholic history and 26 patients have non-alcoholic history.

Out of 142 patients total 96 patients have acute pancreatitis of 67.61% and 46 patients have chronic pancreatitis of 32.39%.

Though alcohol was thought to be the most common cause of pancreatitis. In our study we have 81.70% of cases from alcoholic history and only 18.30% of patients are from non alcoholic history. The patients who have alcoholic history they have poor social status also. This study still shows that alcohol is the most common cause of pancreatitis, in Khammam district head quatters hospital, Khammam.

In our study, out of 142 patients 96 patients have acute pancreatitis and 46 patients have chronic pancreatitis. 116 (81.6%) alcoholic pancreatitis patients and 26 (18.3%) non-alcoholic patients. Rest of 26 nonalcoholic patients 20 (14.08%) patients has gallstones related etiology of pancreatitis, 2 (1.40%) patient have etiology of hypercalcemia, 2 (1.40%) patients have triglyceridemia and rest of one 2 (1.40%) patient has etiology of jaundice (hyperbilirubinemia). All the cases in our study was confirmed by the ultra sound examination mainly, laboratory investigations and from patient history.

Table No. 1. The pancreatic disordered patients in age distribution range for % calculation

Age in years	Males	Females	Total	Percentage
20-30	5	2	7	4.93%
30-40	40	9	49	34.51%
40-50	52	8	60	42.25%
50-60	18	5	23	16.20%
>60	2	1	3	2.11%

Table No. 2. Distribution of % ratios for etiological factors

Etiological factors	No.of patients	Percentage
Alcohol	116	81.69%
Gallstones	20	14.08%
Hyper calcemia	2	1.41%
Increased bilirubin levels	2	1.41%
Triglycerides	2	1.41%

Table No. 3. Percentage of Gender distributions per its pancreatitis causing factors

Gender	No.of cases	Percentage
Male	117	82.40%
Female	25	17.60%
Total	142	100%

Table No. 4. Representation of Alcoholic and Non-alcoholic pancreatic patients

History	No. of patients	Percentage
Alcoholic	116	81.70%
Non alcoholic	26	18.30%
Total	142	100%

Table No. 5. Histogram trace of acute & chronic pancreatitis percentage distribution

Type of pancreatitis	No. of cases	Percentage
Acute pancreatitis	96	67.61%
Chronic pancreatitis	46	32.39%
Total	142	100%

Table No. 6. Sign & symptoms proportions to its reactions & percentage

Signs and symptoms	No. of reactions	Percentage
Severe abdominal pain	117	30.63%
Loss of appetite	49	12.83%
Epigastric pain	26	6.81%
Nausea and vomiting	90	23.56%
Weakness	52	13.60%
Fever	48	12.57%
Total	382	100%

Table No. 7. Follow-up periods of 5 days

Days	No.of patients	Percentage
1-5 days	51	35.91%
<5days	91	64.09
Total	142	100%

Table No. 8. No. of drugs responsible for pancreatitis

Drugs	No. of drugs	Percentage
Cefotaxim	99	10.94%
Ranitidine	135	14.92%
Hyoscine butyl bromide	123	13.59%
Dicyclomine	70	7.73%
Metranidazole	108	11.93%
Ondansetron	89	9.83%
Cifran	26	2.87%
Paracetamol	43	4.75%
Amikacin	17	1.88%
Octeotride	140	15.47%
Tramadol	13	1.44%
Monocef	20	2.21%
Ursodiol	22	2.44%
Total	905	100%

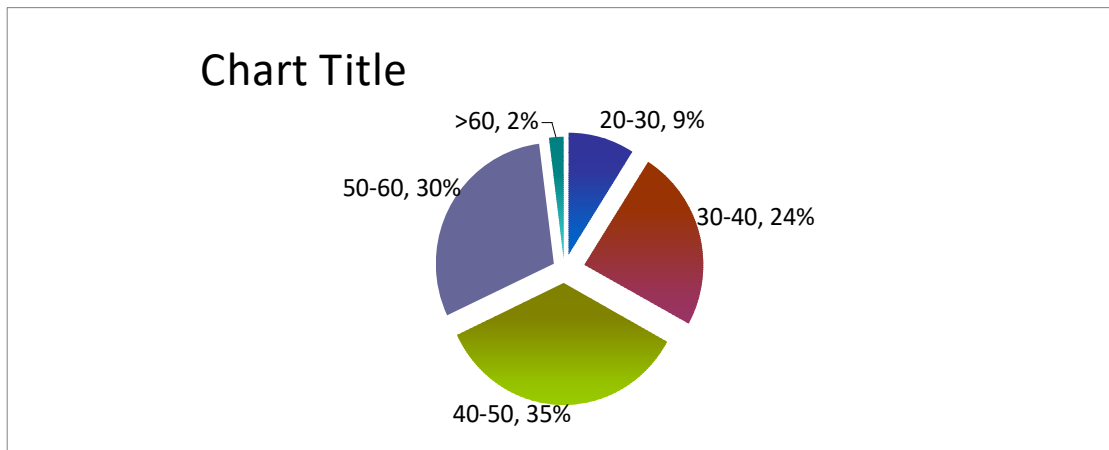


Fig. 1. Plotted pie age distribution percentage chart

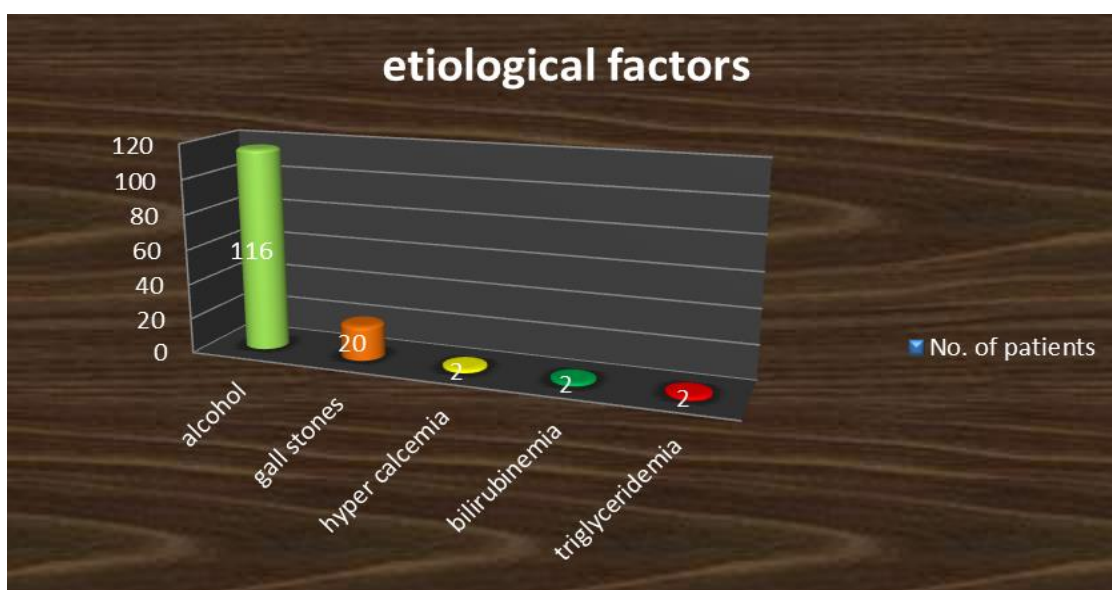


Fig. 2. Histogram of etiological factors comparing among alcohol consumption

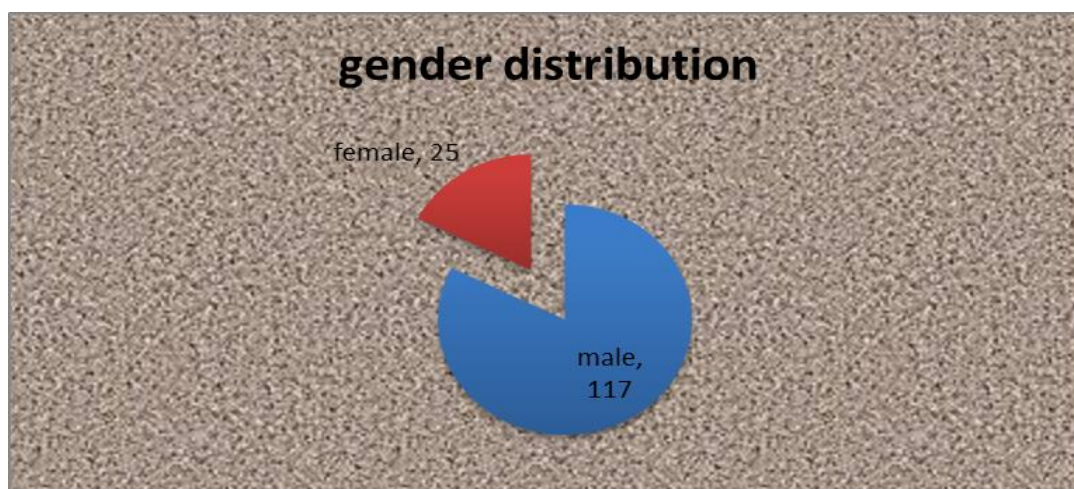


Fig 3. Pie gender distribution chart of pancreatitis

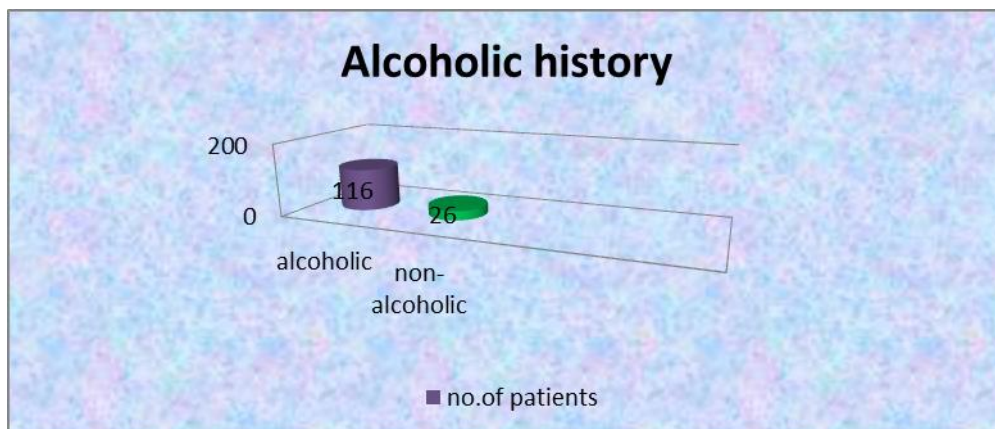


Fig 4. Alcoholic & Non-Alcoholic history of pancreatitis

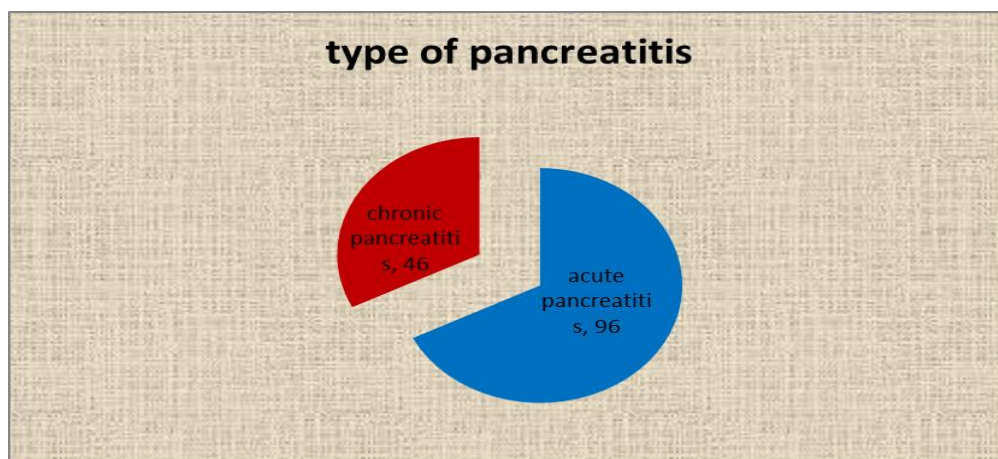


Fig 5. Histogram trace of Acute & chronic pancreatitis percentage distribution



Fig. 6. Histogram distribution of follow-up periods of 5 days

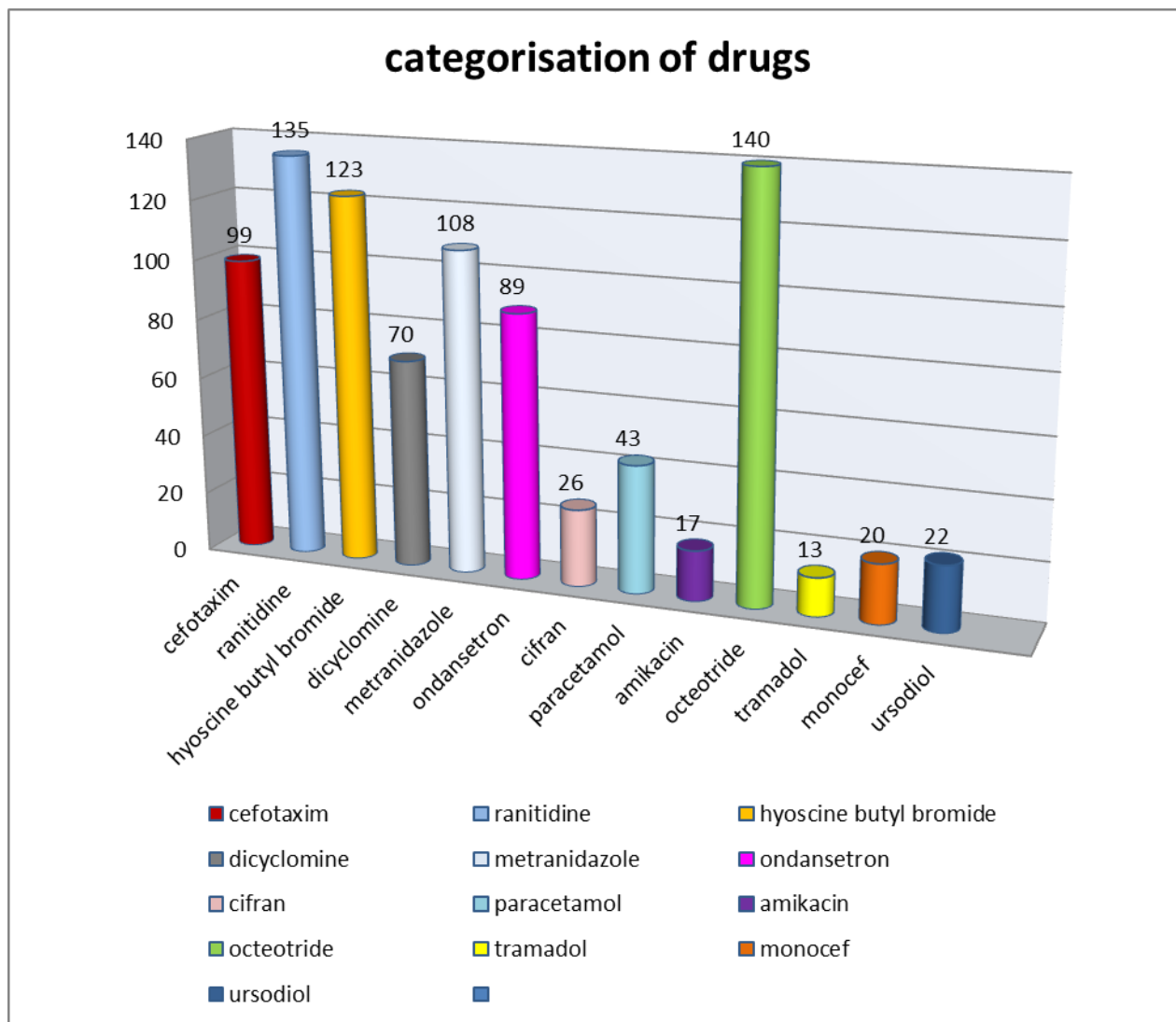


Fig 7. Histogram trace of number of drugs responsible for pancreatitis

We studied total 142 patients admitted in the hospital. Each patient was study in detailed with clinical history, examination, laboratory investigations, personal history of alcohol, past medical and medication history, ultra sound examination results and management of pancreatitis information was recorded and documented. Alcoholic acute and chronic pancreatitis was confirmed by patient history and laboratory results. The non-alcoholic acute and chronic pancreatitis was confirmed by laboratory investigations. We have followed up patient's day by day upto 7 to10 days or up to discharge. We have recorded all the sign and symptoms that patient experienced, laboratory investigations, ultra sound examinations, serum amylase and serum.

6.5 Based on type of Pancreatitis

Out of 142 patients total 96 patients have acute pancreatitis of 67.61% and 46 patients have chronic pancreatitis of 32.39%.

Acute pancreatitis is an inflammatory disease of the pancreas. The etiology and pathogenesis of pancreatitis have been extensively investigated worldwide. The etiological profile may be different in different parts of the world and it is therefore important that experiences from different geographical areas be discovered and studied. Numerous etiopathological factors predisposing to pancreatitis have been identified, yet there is a need to further evaluate this entity which has significant morbidity and mortality.

Although advances in pancreatic function testing and imaging procedures have broadened our knowledge of pancreatitis, the early diagnosis of acute, chronic or acute on chronic pancreatitis and its complication is still difficult.

In our study out of 142 patients 96 patients have acute pancreatitis and 46 patients have chronic pancreatitis. 116 (81.6%) alcoholic pancreatitis patients and 26 (18.3%) non alcoholic patients. Rest of 26 non alcoholic patients 20 (14.08%) patients has gallstones related etiology of pancreatitis, 2 (1.40%) patient have etiology of hyper calcemia, 2 (1.40%) patients have triglyceridemia and rest of one 2 (1.40%) patient has etiology of jaundice (hyperbilirubinemia). All the cases in our study was confirmed by the ultra sound examination mainly, laboratory investigations and from patient history.

6.6 Signs & Symptoms

In our study out of 142 patients 117 (30.63%) patients experienced severe abdominal pain has the most common symptom. 90 (23.56%) patients have nausea and vomiting, 52 (13.60%) patients have weakness, 49 (12.83%) patients have loss of appetite, 48 (12.57%) patients have fever and 26 (6.81%) experienced epigastric pain.

Most of patients admitted in the hospital with the signs and symptoms of severe abdominal pain, pain in epigastric region, weakness, and loss of appetite and burning sensation in the stomach. Some of the patients are admitted with the symptoms of jaundice but later they confirmed as pancreatitis. Out of 142 patients 117 (30.63%) patients have abdominal pain has the chief complaint, nausea and vomiting, 52 (13.60%) patients have weakness, 49(12.83%) patients have loss of appetite, 48(12.57%) patients have fever and 26(6.81%) patients experienced epigastric pain. Pain relief assessment difference was done at the beginning of the study and at the end of the study by the patient experience.

6.7 Based on follow-up periods

Out of 142 patients we have followed up 51 patients for upto 5 days and 91 patients followed up for above 5 days.

6.8 Serum Amylase level

In our study out of 142 patients they have prescribed a total of 905 drugs in government head quatters hospital, Khammam. The drugs are categorized according to their classification and mechanism of action. In our study octeotide (140 patients) was given for the maximum number of patients.

All the patients have increased serum amylase and lipase concentrations around 3 to 4 times increase of serum amylase and lipase was noted. The mean serum amylase was founded 1020 and mean lipase is 934. Serum amylase and lipase levels are very high in alcoholics than the non-alcoholics.

Our study was undertaken at Khammam district head quatters hospital, khammam, to study the etiological profile of pancreatitis, and compare alcoholic and non-alcoholic cases.

Recent studies have shown that lipase and amylase values in pancreatitis were higher in alcoholics than non-alcoholics. Our study has focused on this hypothesis, to support the previous studies and also focused on etiological factors of pancreatitis.

Smoking which is considered as an independent cause of pancreatitis in various studies, can be considered as an independent etiology, because in our study some patients have smoking history but we did not taken it has dependent etiology because it is not proved as one of etiological factor, confirmation of which would need further studies in larger groups.

In our study we followed up the cases for 7-10 days and also until they discharged for some cases. The day to day vitals, treatments and drugs which are stopped are noted. we also included discharge medication for some patients who are discharged during 7-10 days of followed up period.

7. CONCLUSION

The study concludes that most common cause of pancreatitis is alcohol consumption (81.6%). Other cause are gall stones (14.08%), hyper calcemia (1.40%) and hyper bilirubinemia(1.40%) , and triglyceridemia(1.40%). Mean serum amylase vale are high in alcoholic male patients than the non alcoholics but in females non alcoholics have high value than the alcoholic and mean serum lipase was high in alcoholics in both male and female patients than the non alcoholics.

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