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Research Article

Pharmacy practice for good health promotion

Management Patterns of Various Hepato-Pancreatic Diseases in Gastroenterology Department at a Tertiary Care Hospital.

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Abstract: Hepato-pancreatic diseases are the leading cause of deaths in adults globally. Proper disease management with various approaches can reduce the risk of mortality and providing more efficacious therapies for the patients is one of the most urgent needs hence, the present study is intended to observe and analyze the management patterns of hepato- pancreatic diseases in patients with and without complications and the impact of invasive procedures in management of hepato-pancreatic diseases. A prospective observational study was conducted for a period of 6 months from September 2018- February 2019 after obtaining permission from the Institutional Ethical committee of CMR College of Pharmacy. A total of 3 hepatic and 2 pancreatic diseases were taken this study out of which 36 were Alcoholic liver disease cases(ALD), 15 were Chronic liver disease cases(CLD), 8 were Liver abscess cases(LA), 36 were Chronic pancreatitis(CP) cases and 25 were acute pancreatitis(AP) cases. These cases were observed predominance of males can be seen in our study which can be correlated with the fact that, alcohol consumption is the major cause for hepato-pancreatic diseases and its complications as alcohol consumption causes epigenetic changes that contribute to alcohol induced liver and pancreatic damage. The data were collected according to the inclusion criteria and the final analysis was done based on various parameters. Data analysis showed that pharmacological management was applied in most of the cases (97%) and it was found to be effective instead of invasive procedures that were employed only in 3% of cases along with pharmacological management thereby reducing the burden of hospital on patients.

Keyword:.Hepato-pancreatic, diseases, Management, Invasive, Non invasive

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1. INTRODUCTION

The leading cause of deaths in adults globally can be contributed to hepato-pancreatic diseases. Alcoholic liver disease (ALD) being the most prevalent cause of advanced liver disease is also the leading cause of mortality in adults with excessive alcohol consumption. Alcoholic hepatitis (AH), is the most severe form of ALD, carries short term mortality of (30-50% at 3 months). Chronic alcohol consumption may also lead to cirrhosis. The spectrum of ALD comprises simple steatosis, alcoholic steatohepatitis, progressive fibrosis and cirrhosis. Providing efficacious treatment management of AH patients involves general and specific measures. Alcohol abstinence is the hallmark therapy for alcoholic liver disease and nutrition therapy first line therapeutic intervention; empiric antibiotics may be included if there is a high suspicion of infection. Prednisolone (corticosteroid) 40mg/day for one month is the first line therapy for AH with a significant impact on survival in complete and partial responders.[1] the mortality from alcoholic cirrhosis is higher than that of nonalcoholic cirrhosis. Despite significant advances in the understanding of pathogenesis of alcohol related liver injury, ALD remains the major cause of liver related mortality worldwide. Addressing the underlying addiction to alcohol is the paramount step in managing ALD. Patients with ALD are nearly all malnourished. In addition, complications of ALD (infections, ascites, variceal bleeding etc) have been shown to be strongly associated with protein-calorie malnutrition where nutritional support becomes necessary.[2] Liver abscess is a suppurative cavity in the liver resulting from the invasion and multiplication of microorganisms. About 60% of abcesses are solitary and mainly located in the right lobe. Both amebic and pyogenic liver abscess, continue to be an important cause of morbidity and mortality in tropical countries. Latest advances in interventional radiology, intensive care, progress in antibiotic therapy, the liberal use of sonography and computerized tomography scanning of abdomen have led to early diagnosis and treatment of patients with liver abscess, ultimately improving the patient outcome. In recent years, image-guided percutaneous drainage has been widely used to treat liver abscess with reported success rates ranging from 70-100%.[3] The pancreas and the liver developmentally closely related in a general sense and they share certain structural and functional similarities. It is well known that alcohol abuse can result in liver damage and lead to cirrhosis. Alcohol abuse has been reported to be the second most common factor associated with acute pancreatitis. Pancreatitis is a necro-inflammatory disease which is normally classified as either acute or chronic. Although pancreatitis may remain an acute disease, it appears that in many cases alcoholic acute pancreatitis progresses to alcoholic chronic pancreatitis. Alcoholic pancreatitis is one of the most painful and serious consequences of alcohol abuse.[4] CP is a fibro-inflammatory disease that promotes development of parenchymal fibrosis leading to loss of pancreatic endocrine and exocrine function. End stage of chronic pancreatitis is by multiple complications including pain, pancreatic insufficiency, pseudo cysts etc there are currently no treatments to revert or delay disease progression in CP, the management primarily focuses on screening and treating complications after they develop. Endocrine insufficiency results in diabetes mellitus where insulin therapy is often considered as first-line therapy. In mild cases, metformin is the drug of choice. Pancreatic enzyme replacement therapy (PERT) initiated with a dose of 25,000-50,000 units of lipase per meal with titration based on resolution of symptoms is generally recommended to treat exocrine insufficiency. The prevalence of pseudo cysts in patients with CP has been estimated to be approximately 20-40%. The technique of endoscopic cystogastrostomy can be used to treat symptomatic pancreatic pseudo cysts. [5] Acute pancreatitis (AP) can range from a mild, self-limiting disease that requires no more than supportive measures to severe disease with life-threatening complications (respiratory failure, cardiovascular and renal failure, acute peripancreatic fluid collections, pancreatic pseudocysts, necrotic collections, walled-off pancreatic necrosis). Supportive care, including resuscitation with isotonic intravenous fluids (e.g., Ringer's lactate solution), pain control and mobilization should be the mainstay of treatment of patients with mild acute pancreatitis. Aggressive, ongoing fluid resuscitation, enteral nutrition and close monitoring are necessary in patients with severe acute pancreatitis. [6] This study is intended to establish standard management approach for various hepato-pancreatic diseases and highlights the management in case of co-morbidities.

2. METHODOLOGY:

A prospective observational study entitled,"Management patterns of hepato pancreatic diseases", was carried out for a period of 6 months between September 2018 and February 2019 in the In-patient department of Gastroenterology of Gandhi hospital, Secunderabad, Telangana-500003. The study protocol was approved by the Institutional Ethical Committee, CMR College of Pharmacy, Hyderabad. Ethical approval number- CMRCP/IEC/2018-19/07 dated 07/01/2019 .Selected cases were collected and documented in a structured data collection form from the in-patient units of department of Gastroenterology on a daily basis according to study inclusion criteria which includes; patients admitted into gastroenterology and diagnosed with hepato-pancreatic diseases. Patients with severe illness and coexisting diseases, patients diagnosed with other gastro intestinal diseases were excluded from the study. Confirmed cases were followed upto discharge.

2.1 Study method

Study was conducted in the following sequential manner

1. Preparation of structured formats to document the study cases after complying with the inclusion criteria and the relevant data for further processing (such as various categorization & analysis).
2. Visit selected In-patient units on a daily basis to identify cases for the study and to record required data..
3. Up-date previous day case reports until discharge.
4. Statistical analysis and interpretation of data according to various categories and parameters to get the final result.
5. Discussion of result for conclusion.

In this study, A total of 160 cases were observed out of which, 120 cases were identified and included according to our inclusion criteria and analyzed for final outcome.

2.2 *Data collection*

Cases with confirmed diagnosis of hepato-pancreatic diseases were collected and categorized into hepatic as well as pancreatic diseases, further refined based on the complications and were reviewed for the pharmacological agents used and the type of invasive procedures employed, if any. Interpreted data was analyzed based on various parameters to establish a result.

3. RESULTS

A total of 160 cases were collected primarily out of which 120 cases were selected based on inclusion and exclusion criteria.

Figure 1 show that number of admissions of male patients is more in comparison to female patients.
Figure 2 shows the gender distribution in different diseases, where maximum numbers of cases recorded were males.
Figure 3 illustrates distribution of hepatic diseases and its complications in the collected cases.
Figure 4 demonstrates the distribution of pancreatic diseases and its complications cases included in our study.
Table 1 gives an overview on the management pattern of various diseases.
Table 2 Table highlights the management approach towards alcoholic liver diseases and its complications such as portal hypertension (P.HTN), cirrhosis of liver (COL) Alcoholic hepatitis (AH), Ascites.
Table 3 constitutes the treatment stratergy for managing chronic liver disease and its complications including P.HTN, COL, and ascites.

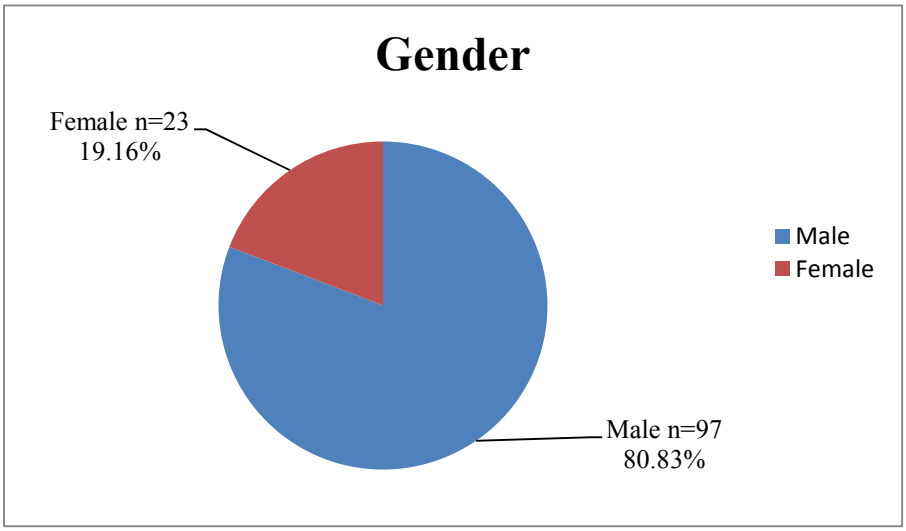

Fig 1: Distribution of patients according to gender (n=120)

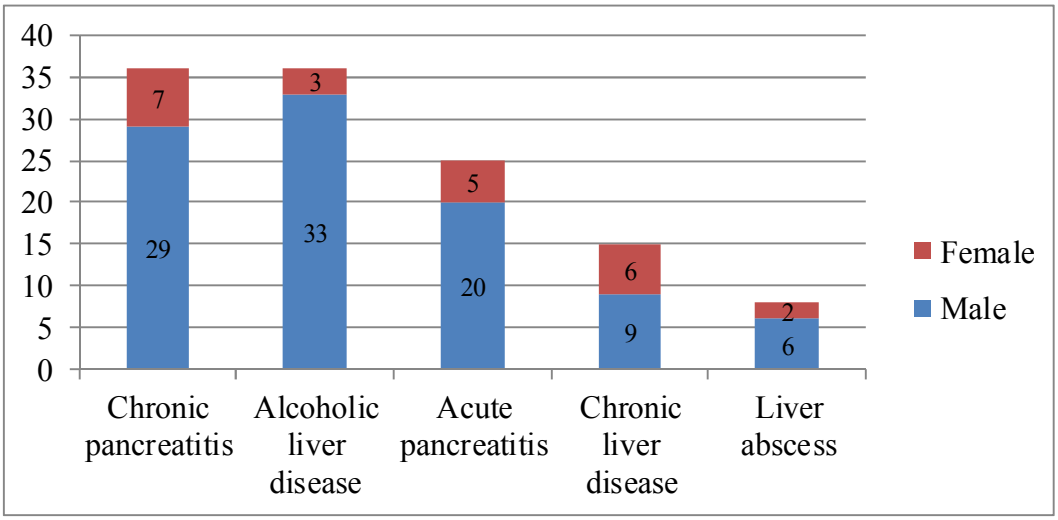

Fig 2: Gender distribution of various hepato-pancreatic diseases (n=120)

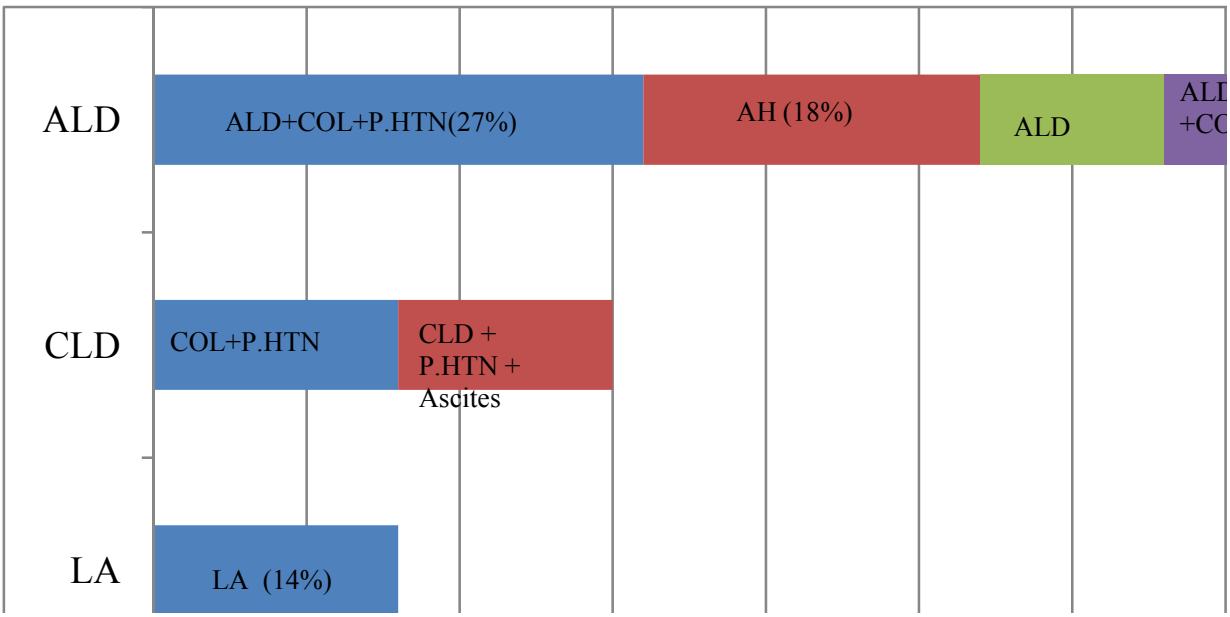

Fig 3: Hepatic diseases (n=59)

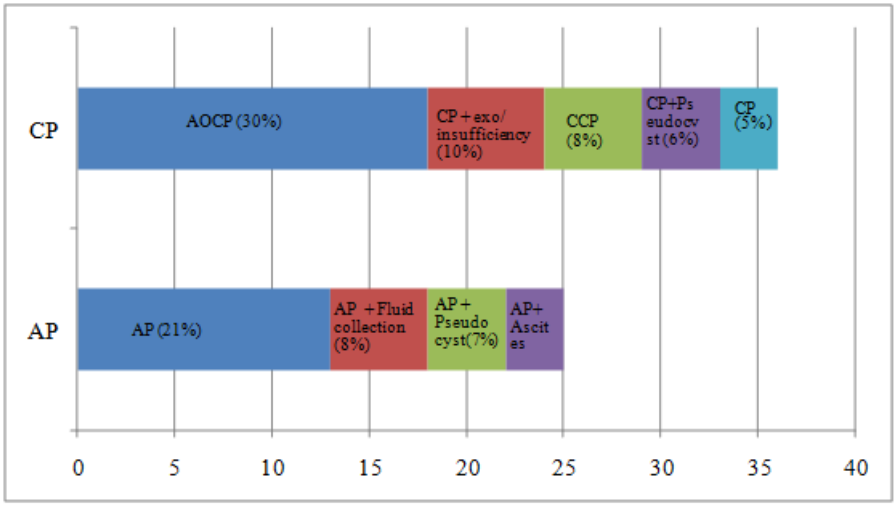

Fig 4: Pancreatic diseases (n=60)

Table 1: Overall management of hepato- pancreatic diseases (n=120)

Sl.no	Diseases	Management	
		Pharmacological	Invasive Procedure
1.	Alcoholic Liver Disease	36	-
2.	Chronic Liver Disease	15	-
3.	Liver Abscess	6	2
4.	Acute Pancreatitis	24	1
5.	Chronic Pancreatitis	35	1
		Total: 116 (97%)	**Total:** 4 (3%)

Table 2 Management patterns of various Hepatic diseases Management of alcoholic liver disease and its complications (n=36)

Management	Diseases			
	ALD(6)	ALD+COL+P.HTN(16)	AH(11)	ALD + COL+ Ascites(3)
Pharmacological	1. PPI-Pantoprazole 40 mg OD (100%) 2. Hepatoprotectant - Ursodeoxycholic acid 300mg BD/TID (100%) 3. Antibiotics -	1. PPI- Pantoprazole 40 mg OD (100%) 2. Antibiotics- Rifaximin 550mg TID (83.3%), Ceftriaxone 1gm BD (66%), Fluconazole 150 mg (16%) 3. Laxatives –Lactulose15-	1. PPI-Pantoprazole 40 mg OD (100%) 2. Antibiotics- Ceftriaxone 1gm BD (33.33%),Meropenam 1gm TID (33.33%), Metronidazole 500mg	1. PPI Pantoprazole 40 mg OD (100%) 2. Antibiotics - Rifaximin 550mg TID (66.66%)-Ceftriaxone 1gm BD (66.66%), Meropena-m 1gm TID

	Ceftriaxone 1gm BD (33.3%), Cefotaxime1gmBD (33.33%), Rifaximin 550mg TID (16%), Metronidazole 500mg TID(16%) 4. Laxatives-Lactulose 15-20ml BD/TID (33.33%)-Cremaffin 15-40ml OD (16%) 5. Plasma expanders - Human albumin 20% 100ml (33.33%) 6. Coagulants-Vitamin K 1amp (10mg) slow IV OD (33.3%) 7. Antiemetics - Ondansetron 4mg BD/SOS (33.3%) 8. Nutrients-Optineuron 1amp in IVF (16%), Meaxon (16%)	20ml BD/TID (83%) 4. Antiemetics -Ondansetron 4mg BD/SOS (25%) 5. Plasma expanders -Human albumin 20% 100 ml OD (50%) 6. Hepatoprotectants Hepamerz (33%) 150mgBD, Ursodeoxycholic acid 300mg BD/TID (45.5%), Hepamerz (29%) 7. Analgesics-Tramadol 100mg BD (22.75%) 8. IVF-(35.25%) 9. Diuretics -Furosemide (8%), Furosemide+Spironolactone 20/50mg BD (20.5%)	TID (33.33%), Piperacillin + Tazobactam 4.5gmTID(33.33%) 3. Hepatoprotectant-Ursodeoxycholic acid 300mg BD/TID (63.6%) 4. Plasma expanders - Human albumin 20% 100ml OD (42%) 5. Antiemetics - Ondansetron 4mg BD/SOS (27%) 6. IVF-(27%) 7. Diuretics Furosemide + Spironolactone 20/50mg BD (18%) 8. Analgesic-Tramadol 100mg BD (18%) 9. Antispasmodics - Hyoscine (9%)	(33.33%) 3. Laxative-Lactulose 15-20ml BD/TID (66.66%) 4. Diuretics-Aldactone 25mg OD (33.33%), Furosemide 20mg OD (33.33%) 5.Hepatoprotectant-Ursodeoxycholic acid 300mg BD/TID (66.66%), Hepamerz 150mg BD (33.33%) 6. IVF (33.33%) 7. Plasma expanders – Human albumin20% 100ml OD (33.33%)

Table 3 : Management of chronic liver disease and its complications (n=15)

Management	Diseases	
	CLD P.HTN + Ascites(7)	**COL+ P.HTN(8)**
Pharmacological	1. PPI-Pantoprazole 40 mg OD (100%) 2. Plasma expanders -Human albumin 20% 100ml (60%) 3. Laxatives -Lactulose 15-30 ml BD (60%) 4. Antibiotics -Ceftriaxone 1gm BD (60%), Rifaximin 550 mg TID (20%), Norfloxacin (20%) 5. Beta blockers -Propranolol 40 mg OD H/S (40%) 6. Analgesics -Tramadol 100mg BD (20%), Diclofenac 100mg BD (20%) 7. Diuretics -Furosemide 20mg OD (80%), Furosemide+Spironolactone 20/50 mg BD (20%) 8. Nutrients-Optineuron (20%) 9. Coagulant-Vitamin K 1amp (10mg) slow IV OD (20%)	1. PPI-Pantoprazole 40 mg OD (100%) 2. Antibiotics-Rifaximin 550mg TID (75%), Ceftriaxone 1 gm BD (75%), Metronidazole 500mg TID (25%) 3. Hepatoprotectant-Ursodeoxycholic acid 300mg BD/TID (62.5%) 4. Plasma expanders -Human albumin 20% 100ml OD (62.5%) 5. Coagulant -Vit K 1amp (10mg) slow IV OD (62.5%) 6. Laxatives-Lactulose 15-30ml BD/TID (50%) 7. Beta blockers -Propranolol 40 mg OD HS (50%) 8. Diuretics -Furosemide (25%) -Furosemide+Spironolactone 20/50mg BD (25%) 9. IVF (25%) 10. Analgesic -Tramadol 100mg BD (12.5%)

Table 4: Management of liver abscess (n=8)

Sl.no	Management	Diseases
		Liver abscess(8)
1.	**Pharmacological (75%)**	1) PPI- Pantoprazole 40 mg OD (100%) 2) Antibiotics-Metronidazole 500mg TID (87.5%) -Piperacillin + Tazobactam 4.5gm BD (75%) -Cefotaxime 1gm BD (12.5%) -Ceftriaxone 1gm BD (12.5%) 3)Analgesics -Tramadol 100mg BD 62.5% -Diclofenac 100mg BD (12.5%) 4) Laxatives -Syp. lactulose 15-30 ml BD (37.5%) 5) Hepatoprotectives- Ursodeoxycholic acid 300mg BD/TID (37.5%) 6) IVF (37.5%) 7) Vitamin supplements- Optineuron 1amp+IVF OD (25%) 8) Plasma expander-Human albumin 20% 100ml OD (25%) 9) Coagulant-Vitamin K 1amp (10mg) slow IV OD (12.5%)
2.	**Invasive procedure (25%)**	Abscess drainage

Table 5: Management patterns of Chronic pancreatitis (36) Management patterns of pancreatic diseases

	Diseases			
	CP(9)	CCP(5)	CP +Pseudo (4)	AOCP (18)
Pharmacological	1. PPI-Pantoprazole 40 mg OD (100%) 2. IVF-(66%) 3. PERT-Pancreatin 25000 U TID (66%) 4. Antibiotics-Ceftriaxone 1gm IVBD, Metronidazole 500mg TID (66.66%), Piperacillin+tazobactum 4.5gm TID (33.33%) 5. Antiemetic –Ondansetron 4mg BD (33.33%) 6. Hepatoprotectant-Ursodeoxycholic acid 300mg BD/TID (33.33%) 7. Antispasmodics-Buscopan (33.33%) 8. Laxative-Lactulose 15-20ml TID (33.33%) 9. Somatostatin analogue-Octreotide 200mcg SC TID (33.33%)	1. PPI-Pantoprazole 40 mg OD (100%) 2. Analgesic-Tramadol 100mg BD (60%), Diclofenac (20%), Ketorolac (20%) 3. Antibiotics-Cefotaxime 1gm BD (20%), Metronidazole 500mg TID (20%), Amikacin (20%), Meropenam (20%), Piptaz (20%) 4. Hepatoprotectant-Ursodeoxycholic acid 300mg BD/TID (33.3%) 5. Laxative-Lactulose 15-20ml BD/TID (20%) 6. Somatostatin analogue –Octreotide 200mcg TID (20%) 7. Coagulant-Vit K (60%)	1. PPI-Pantoprazole 40 mg OD (100%) 2. Analgesics – Tramadol 100mg BD (100%) 3. Somatostatin analogue-Octreotide 200 mcg TID (100%) 4.IVF-100% 5. Antibiotics-Ceftriaxone 1gm IV BD (75%), Meropenam 1gm TID (50%) 6. Coagulant-Vitamin K (75%) 7. PERT-Panlipase 25000 U (25%) 8. Vasopressin – Terlipressin (25%) 9.Optineuron 25%	1. PPI-Pantoprazole 40 mg OD (89.4%) 2. Analgesic –Tramadol 100mg BD (89.47%) 3. IVF-68.42%) 4. Antiemetic-Ondansetron 4mg SOS/BD (63.15%) 5. Somatostatin analogue-Octreotide 200mcg TID (68.42%) 6. Antibiotics-Ceftriaxone 1gm BD (57.89%), Meropenam 1gm TID (21.05%), Piperacillin + Tazobactam 4.5gm TID (10.52%), Metronidazole 500mg TID (10.52%) 7. Nutrients-Optineuron 1amp (57.89%) 8. PERT-Panlipase 25K U (21.05%) 9. Antispasmodics (15.78%) 10. Coagulant-Vitamin K (5.26%)
Invasive Procedure	-	-	Percutaneous drainage (25%)	-

Table 6: Management of acute pancreatitis and its complications (n=25)

Management	Diseases			
	AP(13)	AP+Ascites(3)	AP+Fluid collections(5)	AP+Pseudocyst(4)
Pharmacological	1. PPI -pantoprazole 40 mg OD (100%) 2. Analgesics-Tramadol 100mg BD (84%) Diclofenac 100mg BD (16%) 3. Antibiotics -Ceftriaxone 1gm BD (74%)-Cefotaxime 1gm BD (7.6%)-Metronidazole500mg TID (15%)-Meropenem 1gm TID (7.6%) 4. Antiemetics -Ondansetron 4mg BD/SOS (69.2%) 5. Antispasmodics Hyoscine (7.6%) 6. Somatostatin analogue-Octreotide 200 mcg SC TID (15.38%) 7. Laxatives -Lactulose 15-30ml BD/TID (7.6%) -Cremaffin 15-45ml OD (7.6%) 8.IVF – 84.6% 9. Nutrition -Optineuron 1amp OD	1. PPI-Pantoprazole 40 mg OD (100%) 2. Nutrients Optineuron 1amp OD (100%), MVI 1amp OD (66.66%) 3. Plasma expanders -Human albumin 20% 100ml OD (100%) 4. Somatostatin analogues -Octreotide 200 mcg SC TID (100%) 5. Analgesics Tramadol 100mg BD (66.66%) 6. Antibiotics Cefotaxime 1gm BD (66.66%)-Metronidazole 500mg TID (33.33%),Ceftriaxone 1gm BD (33.33%) 7.DiureticsFurosemide+Spironolactone 20/50mg OD (33.33%) 8. Antiemetic –Ondansetron 4mg BD/SOS (33.33%) 9.Antispasmodic -Hyoscine (33.33%)	1. PPI-Pantoprazole 40 mg OD (100%) 2. Analgesics-Tramadol 100mg BD (100%) 3. Antiemetics-Ondansetron 4mg BD/SOS (100%) 4. IVF (40%) 5. Antibiotics -Cefotaxime 1gm BD (40%), Meropenam 1gm TID (20%) 6. Nutrients-Optineuron 1amp OD (40%), Thiamine 1amp OD (20%), Meaxon (20%) 7. Antispasmodics -Hyoscine (20%) 8. Laxatives -Lactulose 15-20 ml BD (20%)	1. PPI-Pantoprazole 40 mg OD (75%) 2.Analgesics -Tramadol 100mg BD (75%) 3. Somatostatin analogue -Octreotide 200mcg TID (75%) 4. Plasma expanders -Human albumin 20% 100 ml OD (50%) 5. Antiemittics -Ondansetron 4mg BD/SOS (50%) 6. IVF (50%) 7. Nutrients -Celemin 250ml OD (25%)-Celepid 500ml OD (25%)-Optineuron 1amp OD (25%) 8. Antibiotics-Ceftriaxone 1gm BD (50%) ,Rifaximin 550mg TID (25%), Metronidazole 500mg TID(25%) 9. Hepatoproctectant

	+ IVF (23%)-Meaxon(1.4%)			Ursodeoxycholic acid 300mg TID (25%)
Invasive	-	-	Percutaneous drainage	-

Table 7: Management of Chronic pancreatitis and its complications (n=36)

	Diseases			
	CP(9)	CCP(5)	CP +Pseudo (4)	AOCP (18)
Pharmacological	1. PPI-Pantoprazole 40 mg OD (100%) 2. IVF-(66%) 3. PERT-Pancreatin 25000 U TID (66%) 4. Antibiotics-Ceftriaxone 1gm IVBD, Metronidazole 500mg TID (66.66%), Piperacillin + tazobactam 4.5gm TID (33.33%) 5. Antiemetic – Ondansetron 4mg BD (33.33%) 6. Hepatoprotectant-Ursodeoxycholic acid 300mg BD/TID (33.33%) 7. Antispasmodics-Buscopan (33.33%) 8. Laxative-Lactulose 15-20ml TID (33.33%) 9. Somatostatin analogue-Octreotide 200mcg SC TID (33.33%)	1. PPI-Pantoprazole 40 mg OD (100%) 2. Analgesic-Tramadol 100mg BD (60%), Diclofenac (20%), Ketorolac (20%) 3. Antibiotics-Cefotaxime 1gm BD (20%), Metronidazole 500mg TID (20%), Amikacin (20%), Meropenam (20%), Piptaz (20%) 4. Hepatoprotectant-Ursodeoxycholic acid 300mg BD/TID (33.3%) 5. Laxative-Lactulose 15-20ml BD/TID (20%) 6. Somatostatin analogue – Octreotide 200mcg TID (20%) 7. Coagulant-Vit K (60%)	1. PPI-Pantoprazole 40 mg OD (100%) 2. Analgesics – Tramadol 100mg BD (100%) 3. Somatostatin analogue-Octreotide 200 mcg TID (100%) 4.IVF-100% 5. Antibiotics-Ceftriaxone 1gm IV BD (75%), Meropenam 1gm TID (50%) 6. Coagulant-Vitamin K (75%) 7. PERT-Panlipase 25000 U (25%) 8. Vasopressin – Terlipressin (25%) 9.Optineuron 25%	1. PPI-Pantoprazole 40 mg OD (89.4%) 2. Analgesic –Tramadol 100mg BD (89.47%) 3. IVF-68.42%) 4. Antiemetic-Ondansetron 4mg SOS/BD (63.15%) 5. Somatostatin analogue-Octreotide 200mcg TID (68.42%) 6. Antibiotics-Ceftriaxone 1gm BD (57.89%), Meropenam 1gm TID (21.05%), Piperacillin + Tazobactam 4.5gm TID (10.52%), Metronidazole 500mg TID (10.52%) 7. Nutrients-Optineuron 1amp (57.89%) 8. PERT-Panlipase 25K U (21.05%) 9. Antispasmodics (15.78%) 10. Coagulant-Vitamin K (5.26%)
Invasive	-	-	-	-

4. DISCUSSION

A total of 120 cases were identified, included and analyzed for the study from the in-patient department of Gastroenterology, Gandhi Hospital, secunderabad. Out of which 97 cases were male and 23 cases were female. The predominance of males can be explained by the fact that alcohol consumption was the major cause for hepato-pancreatic diseases and its complications and analyzed in order to establish management patterns of the above mentioned diseases with and without complications. Among these 120 cases analyzed, it was found that 97% cases were managed only pharmacologically and only for 3% of the cases invasive procedures were employed along with pharmacological management. Alcohol consumption causes epigenetic changes that contribute to alcohol induced liver damage. Exposure to ethanol or its metabolite acetate promotes disease progression as reported by Kendrick SF (2010)7. Out of 36 Alcoholic liver disease cases, it was found that pharmacological agents used in the management were Antisecretory agents:-Pantoprazole 40mg OD, Hepatoprotectants-Ursodeoxycholic acid 300mg TID, Antibiotics:-Ceftriaxone 1gm BD, Rifaximin 550mg TID, Metronidazole 500mg TID, Laxatives-Lactulose 15-20ml BD, Liquid paraffin 15-40ml OD, Plasma expanders-Human albumin 20% 100ml OD, Coagulant-Vitamin K 1amp:10mg OD, Antiemetics- Ondansetron 4mg SOS/BD, Nutrients-Optineuron 1amp+IVF, Meaxon and were commonly used agents even in the management of the complications of ALD such as cirrhosis of liver, alcoholic hepatitis, ascites. In our study management of alcoholic hepatitis include Anti spasmodic-Hyoscine 10mg ALD with COL and ascites was managed using the same agents that are used in the management of ALD alone. Apart from the above commonly used pharmacological agents additional drugs used in management of cirrhosis of liver were -IVF, Analgesics-Tramadol-100mg BD, Diuretics-Furosemide 20mg OD, Furosemide+Spironolactone 20/50mg BD, Beta blockers-Propranolol 40mg OD H/S which is in accordance with the study conducted by Groszmann RJ (2005).[8] Chronic liver disease and its complications were managed with pharmacological agents alone since based on severity of the individual patient pharmacological agents were enough for their treatment.. Chronic liver disease + Portal hypertension with ascites was managed with-Antisecretory agents-Pantoprazole 40mg OD, Plasma expanders-Human albumin 20% 100ml OD, Laxatives-Lactulose 15-30ml BD, Antibiotics-Ceftriaxone 1gm BD, Rifaximin 550mg TID, Norfloxacin 400mg BD, Beta blockers-Propranolol 40mg OD H/S, Analgesics-Tramadol 100mg BD, Diclofenac 100mg BD, Diuretics-Furosemide 20mg OD, Furosemide+Spironolactone 20/50mg BD, Nutrients-Optineuron OD, Coagulants-Vitamin K 1amp 10mg OD. Use of propranolol to treat portal hypertension is in accordance with the report given by Schwabl P(2017). [9] that, the established therapy with beta blockers is effective in reducing portal hypertension. Cirrhosis of liver with portal hypertension was managed with the same pharmacological

agents and Hepatoprotectant-Ursodeoxycholic acid 300mg BD/TID was additionally used. Out of 8 liver abscess cases 75% were managed pharmacologically and 25% cases were managed by employing invasive procedure i.e. Abscess drainage. Pharmacological agents used were- PPI-Pantoprazole 40 mg OD, Antibiotics-Metronidazole 500mg TID, Piperacillin + Tazobactam 4.5gm BD, Cefotaxime 1gm BD, Ceftriaxone 1gm BD, Analgesics -Tramadol 100mg BD, Diclofenac 100mg BD, Laxatives -Syp. Lactulose 15-30 ml BD, Hepatoprotectives - Ursodeoxycholic acid 300mg BD/TID, IVF, Nutrients- Optineuron 1amp+IVF OD, Plasma expander-Human albumin 20% 100ml OD, Coagulant-Vitamin K 1amp (10mg) slow IV OD. (Table 4) The use of appropriate antimicrobials and minimally invasive drainage technique (Liver abscess) in managing liver abscess is in accordance with the study reported by S.S.Gupta (2011).[10] Out of 36 Chronic pancreatitis cases 97% cases were managed pharmacologically using the agents -PPI-Pantoprazole 40mg OD, IVF-PERT-Panlipase 25000U TID, Antibiotics-Ceftriaxone 1gm IV BD, Metronidazole 500mg TID, Piperacillin + tazobactam 4.5gm TID (33.33%), Antiemetic–Ondansetron 4mg BD, Hepatoprotectant-Ursodeoxycholic acid 300mg BD/TID, Antispasmodics-Buscopan, Laxative-Lactulose 15-20ml TID, Somatostatin analogue-Octreotide 200mcg SC TID. Only 3% of the cases were treated by employing invasive procedure i.e. percutaneous drainage. (Table 5) The complications were treated using the same pharmacological additionally Vasopressin analogue-Terlipressin 1mg TID was used in treatment of chronic pancreatitis with pseudocyst along with percutaneous drainage. (Table 7) Treatment of Chronic pancreatitis using the above pharmacological agents especially PERT is in accordance with the study reported by Maarten R (2017). [11] Out of 25 acute pancreatitis cases 96% cases were managed with pharmacological agents. AP and its complications were treated using medical therapy- PPI -pantoprazole 40mg OD, Analgesics-Tramadol 100mg BD, Diclofenac 100mg BD, Antibiotics -Ceftriaxone 1gm BD, Cefotaxime 1gm BD, Metronidazole 500mg TID, Meropenem 1gm TID, Antiemetics–Ondansetron 4mg BD/SOS, Antispasmodics - Hyoscine, Somatostatin analogue-Octreotide 200 mcg SC TID, Laxatives -Lactulose 15-30ml BD/TID, Cremaffin 15-45ml OD, IVF , Nutrition -Optineuron 1amp OD + IVF, Meaxon. (Table 6) Only 4% of cases were managed using additional surgical intervention i.e. percutaneous drainage in the management of AP with pseudocyst which is in accordance with the study reported by Tenner S (2013). [12]

Abbreviations:

CMRCP	CMR college of Pharmacy
ALD	Alcoholic liver disease
AH	Alcoholic hepatitis
CP	Chronic pancreatitis
PERT	Pancreatic enzyme replacement therapy
AP	Acute pancreatitis
COL	Cirrhosis of liver
CLD	Chronic liver disease
LA	Liver abscess
AOCP	Acute on chronic pancreatitis
CCP	Chronic calcific pancreatitis
OD	Omne in die
BD	Bis in die
TID	Ter in die
P.HTN	Portal hypertension
Mg	Milligram
PPI	Proton pump inhibitor
IVF	Intravenous fluid
IV	Intravenous
SC	Subcutaneous
Ml	Milliliter
H/S	Hora somni
SOS	Si opus sit

5. CONCLUSION

Our study concludes that pharmacological management is the main stay approach for the treatment of various hepato-pancreatic diseases whereas; invasive procedures along with pharmacological approach are employed only in severe complicated cases. Our study highlights the employment of appropriate pharmacological agents in improving patient condition in cases with and without complications.

6. AUTHOR CONTRIBUTION STATEMENT:

Dr.Sattu Srinivas is the principal investigator for this study, along with Ms.Shreya Varanasi Prasanna, has developed the idea and Outlined the protocol preparation. Ms.Shreya Varanasi Prasanna, Ms.Vageeshwari Devuni, Ms.Mallika Kaza carried out the study as co-investigators have visited the department of gastroenterology for collecting cases and evaluated study data to establish the outcome and draft the manuscript. Finally all the members have worked in co-ordination to make sure that the work is accomplished in due time.

7. CONFLICTS OF INTEREST

Conflict of interest declared none.

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