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A Clinical Study on Pseudocyst of Pancreas

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Abstract:
Background*: Pancreatic pseudocyst is seen in acute and chronic pancreatitis as a complication. It has awell-defined wall which is not made of epithelium. After an acute attack of pancreatitis, pancreaticpseudocyst develops after 4-8 weeks. There is a increased incidence of pancreatitis and complications ofpancreatitis, despite of treatment and recent advances. So, I would like to study the clinical features,etiology,various treatment modalities andasses outcome ofthe patients.*
Methods*: The study is conducted in 50 patients in S.V.R.R.G.G.H hospital, Tirupati in department ofgeneralsurgery.Thoroughhistoryandclinicalexaminationhavebeenrecorded.Investigationsweredone which are basic and definitive. The study patients were managed with different modalities likeconservative, external catheter drainage, cysto-gastrostomy, cysto-jejunostomy, percutaneous drainage.Data regarding the age distribution, gender distribution, symptoms, signs, complications, treatment, postop complications, duration in the hospital, follow up were collected. The final outcome is observed interms of most common age group, most common gender affected, most common etiological factor,symptoms,signs,associatedcomplicationsandtreatment,postcomplicationsinS.V.R.R.G.G.HTirupati,in Department of general surgery.*
Results*: The study conducted in 50 patients shows that, the pancreatic pseudocyst is seen in the agegroup of 31-50 years(74%).The male patients were affected more when compared to females with 94%male and 3% female. Alcohol consumption is the common etiology. The most common presentation waspain abdomen in all study patients followed by nausea and vomiting in 84% of patients and abdominaldistension in 58% of patients.abdominal tenderness is seen in all study patients followed by massabdomenin60%ofpatients.Associatedcomplicationsincludeinfectionwhichisseenin12%ofpatients followed by ascites and ileus/obstruction in 2% of patients. USG and Computed Tomographydone in allpatients.Conservative treatment was effective in uncomplicatedpancreatic pseudocyst.Internal drainage procedure shows good results with 42% of patients with minimal complications. Themost common post operative complication includes abdominal pain in 16% followed by infection ofwoundin 6%of patients.*
Conclusion*:Themostcommoncomplicationofacutepancreatitisispancreaticpseudocyst.Earlydiagnosis with USG, CT and intervention with conservative treatment for uncomplicated cyst, internaldrainageformaturecyst,external drainage forcomplicatedcyst shows goodprognosis*

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I. Introduction

A pseudocyst of pancreas is a circumscribed collection which contains fluid only, it has a well-definedwall.it has been present for 4 or more weeks after disease onset. In Atlanta classification, a pseudocystwasdefinedasacollectionofpancreaticjuiceenclosedbyawalloffibroustissue.Pancreaticpseudocyst has a well-defined wall(capsule) without an epithelial lining. It can be differentiated from thecystic neoplasmsofpancreas,whicharecharacterizedbyanepitheliallining.itisnotanabsolutedistinctionbetweenthecysticneoplasmsandpancreaticpseudocyst.Theremaybeepithelialdiscontinuation within the cystic neoplasms, probably due to the pressure atrophy and within chronicpseudocyst partial epithelialization is seen.In<20% of cases, more than one pseudocyst is present.Acutepseudocystsarelocatedclose proximity tothepancreasespeciallyinlesser sac.[1]

PathogenesisAndClassification:

Thepancreaticpseudocystdevelopmentrequirespancreaticductdisruption.
Thispancreaticductdisruptionisseen in acutepancreatitisin10%-15%ofcases.Itisalsoseen

inpancreaticducttraumamostly to the pancreatic neck, in chronic pancreatitis where there will be a multiple pseudocysts due to ductobstruction. There will be a leakage of enzyme rich secretion which incites a marked inflammatory reaction inthe retroperitoneum, peritoneum and serosa of adjacent viscera. Due to this, the fluid is contained by adevelopinglayerofgranulationtissueandfibrosisthatmaturesovertime.Ifthereispersistentcommunication between pancreatic duct and the pancreatic pseudocyst the pancreatic pseudocyst willcontinueto enlarge.[2]

Thepancreaticpseudocystusuallyconsistsofrelativelyclear,wateryfluid. However with haemorrhage it may contain clot and become xanthochromic. If it contains pus thenthe pancreatic pseudocyst is infected. If a fluid collection develops in the context of pancreatic necrosis,it will contain solid tissue and should be termed as walled off necrosis. According to Jacobson (2005),pancreaticnecrosis(>25%)isariskfactorfor the developmentof infection inpseudocyst. According to Jacobson (2005), pancreatic necrosis (>25%) is a risk factor fordevelopment of pseudocyst in 5% to 15% ofpatients with acute pancreatitis and 40% of patients with chronic pancreatitis. Before demarcation inearly phase of acute necrotizing pancreatitis, there will be acute necrotic collections. Walled off necrosisoccur4 weeks after theonset of pancreatitiswith identifiable capsule.[3]

Pancreaticpseudocyst wereclassifiedbyDEgidio[4]

TYPE 1---Pancreatic pseudocyst occur after an episode of acute pancreatitis and associated with normalpancreaticduct anatomy andrarely communicatewith themain pancreaticduct.

TYPE2---Pancreatic pseudocyst occur after an episode of acute or chronic pancreatitis and havediseased but do not contain strictured pancreatic duct, there will be a communication between thepancreaticduct and thepseudocyst.

TYPE3: Pancreaticpseudocystoccurinchronicpancreatitisandarealwaysassociatedwithaductstrictureand acommunication between the duct and the pseudocyst.

II. Material And Methods

This study was conducted in the Department of General Surgery, SVRRGGH,Tirupati. The materials for the study were collected from patients presenting tosurgery outpatient department and emergency with the features of pseudocyst of Pancreas during the period of March 2020 to April 2021 were included inthe study.

Study Design: ItisinstitutionbasedProspective Study

Study Location: This was a tertiary care teaching hospital based study done in Department of General Surgery, at SVRRGG Hospital, Tirupati, Andhrapradesh.

Study Duration: March 2020 to April 2021.

Sample size: 50 patients.

Inclusion criteria:

1. Patientsdiagnosedwithpseudocystofpancreaswithultrasoundscan,Contrastenhancedcomputerizedtomography scan.
2. Patientsgivingvalidwrittenandinformed consent.

Exclusion criteria:

1. Patientslessthan18yearsofage,diagnosedwithpseudocystofpancreas
2. Patientsdiagnosedascysticneoplasmofpancreas.

III. Result(11 Bold)

Table no 1 Shows In our study of 50 patients, 8(16%) patients belongs to the age group of 18-30 years,20(40%) patients belongs to the age group of 31-40 years,17(34%) belongs to the age group of 41-50years,5(10%) patients belongs to theagegroup of >51years.

Table no 1

Agein Years	NoofPatients	Percentage
18-30	**8**	**16%**
31-40	**20**	**40%**
41-50	**17**	**34%**
>51	**5**	**10%**

Table no2 showsInthisstudywith50patients, 47(94%)weremale,3(6%) werefemale

Table no 2

Sex	NoofPatients	Percentage
Male	**47**	**94%**
Female	**3**	**6%**

Table no3showsPancreatic pseudocyst presents with pain abdomen in 50 (100%) patients I.e in allpatients,followedbynausea/vomitingin42(84%)patients,thenabdominaldistensionin29(58%)patients.

Table no 3

Symptoms	NoofPatients	Percentage
Painabdomen	**50**	**100%**
Abdominaldistension	**29**	**58%**
Nausea/ Vomiting	**42**	**84%**
Anorexia	**9**	**18%**
Fever	**5**	**10%**
Weightloss	**3**	**6%**
Jaundice	**1**	**2%**

Table no4 Shows Abdominaltendernessisthemostcommonsignwith100%(i.eallpatients),followedbymass abdomen seen in30 patients(60%).

Table no 4

Signs	NoofPatients	Percentage
Massabdomen	**30**	**60%**
Abdominaltenderness	**50**	**100%**
Ascitis	**1**	**2%**
Ileus/Intestinalobstruction	**1**	**2%**

Table no 5 Shows Thecommonetiologicalfactorisalcoholconsumptionwhichwaspresentin47(94%)patients,followed byidiopathicin 2(4%)patientsandBlunt trauma in1(2%) patient.

Table no 5

Etiology	NoofPatients	Percentage
Alcohol	**47**	**94%**
Idiopathic	**2**	**4%**
Blunttrauma	**1**	**2%**

Table no 6showsPancreaticpseudocystinfectionisseenin6(12%)patients,minimalascitesin1(2%)patients,ileus/obstructionin 1(2%)patients,but nonepresented withrupture andhaemorrhage.

Table no 6

Complications	Noofpatients	Percentage
Infection	**6**	**12%**
Ascitis	**1**	**2%**
Ileus/Obstruction	**1**	**2%**
Rupture	**-**	**-**
Haemorrhage	**-**	**-**

Table no 7 shows In pancreatic pseudocyst, increased serum amylase is seen in 46 (92%) patients, cystfluidamylasein 6(12%) patients, ultrasound andCT was donein all patients i.e50(100%).

Table no 7

Investigations	NoofPatients	Percentage
IncreasedSerumAmylase	**46**	**92%**
CystFluidAmylase	**6**	**12%**
Ultrasound	**50**	**100%**
Ctscan	**50**	**100%**

Table no 8 showsConservatively 23(46%) patients were treated, percutaneous drainage 3(6%) patientswere treated, open cystogastrostomy 16(32%) patients were treated, with open cystojejunostomy 5(10%)patientsweretreated andwith externalcatheter drainage3(6%)patientsweredrained

Table no 8

Treatment	NoofPatients	Percentage
Conservative	**23**	**46%**
PercutaneousDrainage	**3**	**6%**
OpenCysto Gastrostomy	**16**	**32%**
OpenCystiJejunostomy	**5**	**10%**
ExternalCatheterDrainage	**3**	**6%**

Table no 9 shows Postoperativelywoundinfectionisseenin3(6%)patients,painabdomenisseenin8(16%)patients.

Table no 9

Complications	NoofPatients	Percentage
WoundInfection	**3**	**6%**
PainAbdomen	**8**	**16%**

IV. Discussion

AgeDistribution:

The study contains 50 patients diagnosed as pseudocyst of pancreas. The most common age groupis31-50years(74%).Thestudyiscompared withastudygroup oftuulakiviluoto, etal(1989),V.Ustoff, et al (2000). The mean age group in our study is 40.5, while in tuulakiviluoto, et al (1989)is44 and in V.Ustoff et al is 39.31-50 years is the most common age group where alcohol consumption isseen so the results were due to alcohol consumption. In other study conducted by c.palanivelu et al themean age group is 44. The study conducted by Sridhar reddy et al the mean age is 40, which is 0.5 lessthan thecurrent study.[5]

SexIncidence:

The study contains 50 patients, out of which 47(94%) were male,3(6%) were female. In Tuulakiviluoto et al study group male were 79.41%, female were 20.58%. In V.Ustoff et al study group malewere 75% , female

were 25%.The study conducted byc.palanivelu et al shows male predominance with70.37% and female showing 29.63%.The study conducted by Sridhar reddy et al in 32 patients out ofwhich 26 were male and 6 belongs tofemale category. The percentage of male in Sridhar reddy et alstudy is 81.25% and female includes 18.75%. Overall the probable reason to explain male predominanceisalcohol consumption iscommon in male when compared to female.[5,7]

ClinicalFeatures:

The commonest symptom was pain abdomen which is seen in all patients (100%). In tuulakiviluoto, et al (1989) study group pain abdomen was seen in 67.67% patients and in V.Ustoff et al it is100%.In study conducted by c.palanivelu et al, the percentage of patients presented with pain abdomenare 54.63%. In study conducted by Sridhar reddy et al, the percentage of patients presented with painabdomenare100%. [5]

Etiology:

The common etiology in our study is alcohol in 47(94%). In study grouptuulakiviluoto, et al(1989) alcohol consumption is around 85% and in V.Ustoff et al it is 71.42%. the commonest etiology isalcohol consumption. The study conducted by c.palanivelu et al, patients with alcohol consumption are18.52%.In study conducted by Sridhar reddy et al, patients presents with alcohol consumption are65.62%.[5,8]

Complications:

Thecommonestcomplicationinourstudyisinfectionfollowedbyminimalascites.
Thisiscomparedwithv.ustoff.et.al(2000).ThestudyconductedbySridharreddyetal,
Thecommonestcomplicationincludeinhisstudywas infection(18.75%)followed byascites(3.12%).

Treatment:

The commonest treatment employed for uncomplicated cyst was conservative treatment (46%).When compared with external and internal drainage, internal drainage was done in 42% patients whileexternal drainage was done in 12%. This is compared with the tuulakiviluoto et al with internal drainage18%and external drainage38%,v.ustoffetal withinternal drainage3%andexternal drainage40%.

InastudyconductedbySridharreddyetal,thepatientswithpancreaticpseudocystwhounderwentinternaldrainagewere56.25%andpatientswhounderwentexternaldrainagewere18.75%.In c.palanivelu et al study, the patients with pancreatic pseudocyst who underwentinternal drainagewere92.6%and patientswho underwent external drainagewere7.4%.

Pancreatic pseudocysts are managed conservatively mostly, when symptoms are controlled well. 40% ofthe pancreatic pseudocysts are reabsorbed after pancreatitis resolves. It has been estimated in manystudiesthat thespontaneous resolution oftheacutecysticcollection can varyfrom 40%to85%.

According to Bradley (1979),The success rate ofconservative therapy is low (i.e between 3%and39%) when pancreaticpseudocysts arelargeenough to causesymptoms(6 cm orgreater).

Regardless of size and duration, half of the acute pancreatic pseudocysts remain asymptomaticseeninastudy demonstrated by vitas and sarr.

Pancreatic pseudocysts which are greater than 6 cm in diameter with abdominal pain, nausea andearlysatiety should be considered fortherapeuticintervention.

Percutaneous drainage is used for the treatment of immature and infected pseudocysts and it canbecomplicated by theformation of external pancreaticfistula.

Intra-cystichaemorrhageandpancreaticascitesarecontraindicationtothepercutaneousdrainage.

In a study conducted by Heider(1999) in 66 patients shows successful percutaneous drainage inonly43% ofpatients with 16%mortality rate and64%incidenceof complications.

Now a days endoscopic drainage has been preferred. The comparison of outcomes between theendoscopic and percutaneous drainage shows that the patients managed with endoscopic drainage hadfewer interventions which are less compared to percutaneous drainage, lower rates of residual collectionsandlower needs forsurgical intervention.

The most effective treatment of pseudocyst of pancreas involves internal drainage into the entericlumenwhetherperformedbylaparotomy,endoscopictransmural,endoscopictrans-papillary,laparoscopicpseudocystenterostomy.

The gold standard approach to the pancreatic pseudocyst is changing from the open techniqueconsideringless bythe most ofthe experts andshowing moreinteresttowards endoscopic method.

The additional advantage of the open technique are more definitive pathologic diagnosis viaintra-operative wedge resection of the cyst wall to rule out neoplasm, It provides access for retroperitonealand cystic contents debridement in the setting of pancreatic necrosis with or withoutconcomitantinfection.

Opentechniqueofpancreaticpseudocystshasbeensuccessfulwithalowmorbidityandmortality rate. Usatoff reported in 112 patients who are treated for pancreatic pseudocyst resulting fromthe pancreatitis, the overall morbidity was 28% with an operative mortality rate of 1%and cysticrecurrencerate of3%.

Similarmortalityrateapproaching1%seeninvitasandsarr(1992) andYeoetal.(1990).

From the perspective oftiming and operativeintervention analysed byShatney and Lillehe(1981) in 114 patients demonstrated that patients who are undergoing surgical therapy during the first 6weeks following pancreatic pseudocyst formation had higher morbidity, mortality and recurrence ratesthanthosetreated laterinthe courseofdisease.

Vitas and sarr (1992) shows nearly 50% of acute cystic collections remained asymptomaticregardless of size and duration. Debate is still exits regarding the management of asymptomatic cystsgreaterthan 6cm size.

The decision for intervention made by the clinicians in these patients need to made on a case -by-case basis with special attention given to the concomitant biliary andduodenal disease as well ascomplexityof medical comorbidities.

PostOperativeComplications:

Postoperativelythecommoncomplicationswaspainabdomen(16%)followedbywoundinfection (6%). Study is compared with tuulakiviluoto et al study with wound infection 2%, painabdomen 29% and v.ustoff et al study with wound infection 4%, pain abdomen 10%. In study conductedby Sridhar reddy et al, The most common post operative complication was pain abdomen (15.62%)followedby wound infection (12.5%).

Post operatively patients who are operated for pancreatic pseudocyst were followed for minimum 3-6months with 11 patients showing post operative complications of which 8(16%) had pain abdomen and3(6%) had wound infection. These 11 patients were treated conservatively. 2 patients were lost in followup.Recurrencewas foundin 3 patientsand treated conservativelyand werenowon follow up.

V. Conclusion

- Pancreaticpseudocystiscommon intheagegroupof31-50years withthe mean age about40.5.
- Thediseaseis common in males.
- Alcoholconsumptionisthemostcommonetiologicalfactorforacutepancreatitisandthemostcommoncomplicatio n was pseudocyst of pancreas.
- Thecommonsymptompatientpresentedwaspainabdomen,abdominaltenderness,nausea/vomitingfollowed by mass abdomen.
- Ultrasonography and CTscanweredoneinall50patients.
- 46%ofthepatientswithpancreaticpseudocystweretreatedconservatively,42%ofthepatientswithpancreaticpseud ocyst weretreated withinternal drainage.
- Infectedcystsweretreatedwithexternalandpercutaneousdrainage.
- Internaldrainageofthepancreaticpseudocystwasdoneeitherbycysto-gastrostomyorcysto-jejunostomywith good result.
- ThemostcommonPostoperativecomplication wasabdominalpainandinfectionofwound.
- Hospitalstaydurationrangefrom10-15days.
- 3-6monthsfollowupwasdone.3ofthepatientswhoaretreatedconservativelyhaveshownrecurrence and thosepatients arein follow up

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