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POST- ERCP ACUTE PANCREATITIS AND RISK FACTORS IN TERTIARY CARE CENTRE.

Gastroenterology

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ABSTRACT

Endoscopic Retrograde Cholangio Pancreatography (ERCP) is an important modality in the management of diseases involving the pancreatobilliary tract. It carries significant risk to the patient due to invasive nature of the procedure. Acute pancreatitis being most common complication, reported to occur in 2–10% of patients overall. Aim of the Study is to study incidence of post ERCP Pancreatitis and its risk factors. It is a prospective observational study which includes 297 patients undergoing ERCP in our hospital from Jan 2019 to December 2019. Complication of ERCP in our study includes post ERCP acute pancreatitis (2.4%), septic complication (1%), papillary bleeding (1%), cardiopulmonary (0.6%). In our study Malignant Billiary obstruction, difficult CBD cannulation, pancreatic duct cannulation and female sex were most common risk factors associated with post ERCP-AP. These factors are identifiable before and during procedure and hence can be used to select patients who need strict monitoring before, during and after procedure.

KEYWORDS

ERCP, Acute Pancreatitis, Risk factors.

INTRODUCTION

ERCP was used initially as diagnostic as well as therapeutic procedure. But has become an almost exclusively therapeutic endoscopic procedure. ERCP carries the highest rate of complications among all endoscopic procedures.

Complications of ERCP reported by various studies include (acute pancreatitis, papillary bleeding, retroperitoneal duodenal perforation and biliary septic complications like acute cholecystitis and cholangitis).

A review published by Andriulli [1] in 2007, analyzing 21 studies enrolling 16855 patients, for a period of 7 years, gives 6.9% rate of specific complications, with death rate of 0.33%.

The incidence of such complications varies in prospective studies. In 1998, Loperfido [**2**] reports a rate of 0.74% for pERCPAP after diagnostic procedures and 1.4% after therapeutic. Latest studies published by Wang [**3**] in 2009, mention an incidence of 4.3%.

In the consensus classification published in 1991 by Cotton et al. [**4**] pERCP-AP is defined as the clinical syndrome suggestive to acute pancreatitis (intense abdominal pain) accompanied by amylasemia over 3 times the normal range for at least 24 hours and requesting more than an overnight hospitalization.

Table 1- Consensus Classification Of Post-ERCP Acute Pancreatitis

Post ERCP Pancreatitis	Mild	Moderate	Severe
	Clinical picture of pancreatitis · Persistent (over 24h) amylasemia – over 3 times the normal range · Requires hospitalization for at least 2-3 days	· Requires hospitalization for 4-10 days	· Requires admission in ICU · Hospitalization for more than 10 days · Pseudocyst · The need for invasive treatment (percutaneous drainage or open surgery)

In the 2012 revised Atlanta Classification of acute pancreatitis, an international consensus statement, in which the diagnosis of acute pancreatitis requires two of three features: (i) abdominal pain consistent with acute pancreatitis, (ii) serum lipase or amylase greater than three times the upper limit of normal and (iii) characteristic findings of acute pancreatitis on contrast-enhanced computerized tomography (CT) scan, magnetic resonance imaging (MRI), or trans abdominal ultrasound [5]. Mildly severe acute pancreatitis is characterized by absence of accompanying organ failure, local complications, or systemic complications. Moderate acute pancreatitis includes transient organ failure (<48 hours) or local or systemic complications without persistent organ failure (e.g. fever, leukocytosis, exacerbation of chronic lung disease). Severe acute pancreatitis is characterized by persistent organ failure (>48 hours) or the presence of a systemic inflammatory response syndrome (SIRS).

Etiopathogenesis Of pERCP-AP Includes,

1. Mechanical obstruction of the pancreatic duct (e.g. mechanical injury of the pancreatic sphincter or pancreatic duct, sphincter edema and prolonged spasm).

2. Hydrostatic hyper-pressure in pancreatic ductal system.(e.g. excessive injection of contrast, manometry without distal aspiration, extrinsic compression of the pancreatic duct).

3. Pancreatic bacterial contamination. (By duodenal contents, lack of antiseptic measures)

Risk Factors For Post ERCP Acute Pancreatitis

These can be classified into patient-related, provider-related and procedure related factors.

Table 2- Risk Factors For Post-ERCP Pancreatitis

PATIENT RELATED	PROCEDURE RELATED	OPERATOR RELATED
Young Age	PD Cannulation	Experience
Female Sex	PD Injection	
Prior post ERCP AP	Precut sphinctrotomy	
Normal Bilirubin Level	No. of Cannulation attempted	
Recurrent Pancreatitis	Difficult Cannulation	
Suspected SOD	Ampullectomy	

SOD – Sphincter of Oddi Dysfunction, PD- Pancreatic Duct

PATIENT-RELATED RISK FACTORS

In most of the recent prospective studies, characteristics that were statistically significant by multivariate analysis included younger age, female gender, suspected or proven sphincter of Oddi dysfunction, prior post-ERCP pancreatitis, a normal serum bilirubin, and recurrent pancreatitis [6, 7, 8].

It is unclear why patients with these characteristics—some of whom

may not have a definitive indication for ERCP to begin with—are paradoxically at the highest risk for a complication.

The wide range of reported incidence of post-ERCP pancreatitis over risk groups in observational studies prompted a 2014 systematic review including 108 RCTs that covered 13 296 patients [9]. The overall incidence of post-ERCP pancreatitis was 9.7%, of which 8.6% of cases were mildly severe, 3.9% were moderate, and 0.8% were severe. The incidence of all-severity post-ERCP pancreatitis in high-risk patients was 14.7%.

PROVIDER-RELATED RISK FACTORS

In Italy in 2007, a large prospective study comparing the experience of endoscopy centers and providers found no difference, between high- and low volume centers, in the incidence of post-ERCP pancreatitis after 3635 procedures. This study also did not find a statistically significant difference in the rates of post-ERCP pancreatitis between expert and non-expert endoscopists [10]. Another large, prospective, multicenter trial also found that the number of ERCPs performed by an endoscopist did not affect the rate of perceived pancreatitis after biliary sphincterotomy, although endoscopists who performed fewer than one sphincterotomy per week identified a significantly higher rate of overall complications [11].

PROCEDURE-RELATED RISK FACTORS

Several technical factors are known to increase the risk of post-procedure pancreatitis in multivariate prospective studies or meta-analyses. Difficult cannulation (characterized by a greater number of attempts or longer time needed to successfully cannulate the bile duct) can result in trauma to the ampulla and increases the risk of subsequent pancreatitis independent of other factors. The risk increases with a greater number of cannulation attempts, with one study which included all types of intra-ERCP procedures describing a 3.3% pancreatitis rate in patients requiring less than five attempts at cannulation, 9% for 6–20 required attempts, and 14.9% if more than 20 attempts were necessary [6]. Spending more than 10minutes attempting cannulation also increases the risk, although a recent prospective study demonstrated that even a duration exceeding 5minutes may increase the risk of post-ERCP pancreatitis when compared with shorter-duration attempts [12]. Pancreatic duct cannulation, more than one passage of a pancreatic guide wire, pancreatic duct injection/pancreatogram, pre-cut sphincterotomy (a last-resort technique to gain access to the bile duct after other cannulation methods have failed), pancreatic sphincterotomy, and ampullectomy have also repeatedly been identified as independent risk factors for post-ERCP pancreatitis [13,14,15].

METHODS

An observational prospective study was conducted in our department from January 2019 to December 2019.

Inclusion Criteria

All patients undergoing ERCP during study period in our centre were included in study.

Exclusion Criteria

Patient with Acute billiary pancreatitis undergoing ERCP were excluded from study.

Total 310 patients underwent ERCP in our centre from January 2019 to December 2019. Out of which 13 patients with acute billiary pancreatitis were excluded from study. Remaining 297 patients were enrolled in study.

It was prospective observational study analysing the patients' demographics, indication of the procedure, the peculiarities of intervention and post-operative evolution, paying special attention to post-ERCP complications. We aimed to identify the risk factors that could be implied in pERCP-AP and their degree of involvement.

RESULTS AND DISCUSSION

Average age was 52 years with age ranging from 17 years to 78 years. Out of 297 54.5% (162) were male and 45.5 % (135)were females.

Indication for ERCP includes choledocholithiasis(57%), malignanat CBD obstruction(32%), stricture of CBD(10%) and, post operative biliary leak(1%).

Table-3 Indications For ERCP

Indication	No of Cases (%)
Choledocholithiasis	169 (56.9%)
Malignant CBD obstruction	94 (31.6%)
Stricture of CBD	31 (10.4%)
Post operative leak	3 (1%)

Complication of ERCP includes post ERCP acute pancreatitis in 7 patients, papillary bleeding in 3 patients, septic complication in 3 patients and cardiopulmonary complications in 2 patients. pERCP-AP was the most common complication, having an incidence of 2.3%. The data obtained are consistent with those in literature, where the incidence varies between 1% and 7%.[2,4,11]

Table-4 Complication Of ERCP

Complication	No of Cases (%)
Acute Pancreatitis	7 (2.4%)
Papillary Bleeding	3 (1%)
Septic Complication	3 (1%)
Cardiopulmonary complication	2 (0.6%)

RISK FACTORS FOR POST ERCP PANCREATITIS

In our study Malignant Billiary obstruction (7 out of 7), difficult CBD cannulation (7 out of 7), Pancreatic duct cannulation (6 out of 7) and female sex(5 out of 7) were most common risk factors associated with post ERCP acute pancreatitis.

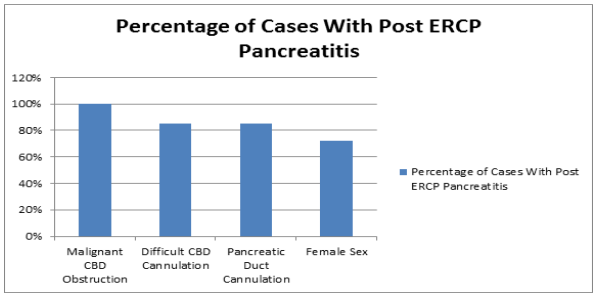

Chart-1. Risk Factors For Post ERCP Pancreatitis

In our study only 4 factors were found to be significantly associated with pERCP –AP, as compared to other studies [4, 7, 8]. This may be due to less number of cases in our study and more number of patients with malignant CBD obstruction.

CONCLUSION

ERCP is a relatively safe, invasive procedure, but it has risks of complications (5%).

The most common post ERCP complications are acute pancreatitis (most frequent), haemorrhage, biliary septic complications (cholangitis and acute cholecystitis) and perforation.

Most common risk factors were Malignant Billiary obstruction and female sex which were preoperatively identifiable. Difficult CBD cannulation as well as pancreatic duct cannulation were also significant risk factor which can be identified during procedure and hence such patients should be monitored closely for post ERCP acute pancreatitis.

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