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Idiopathic Acute Pancreatitis (IAP): The Value of Endoscopic Ultrasound

Bimal Chandra Shil¹, Madhusudan Saha², Md. Royes Uddin³, ANM Saifullah⁴, Imteaz Mahbub⁵, Md. Mamun Ur-Rashid⁶

¹ Associate Professor, Department of Gastroenterology, Sir Salimullah Medical College, Dhaka, Bangladesh.
Email: bimalcshil@gmail.com

² Professor, Department of Gastroenterology, North East Medical College, Sylhet, Bangladesh.

³ Assistant Professor, Department of Gastroenterology, Sir Salimullah Medical College, Dhaka, Bangladesh.

⁴ Assistant Professor, Department of Gastroenterology, Sir Salimullah Medical College, Dhaka, Bangladesh.

⁵ MD Resident (Phase-B), Department of Gastroenterology, Sir Salimullah Medical College, Dhaka, Bangladesh.

⁶ MD Resident (Phase-B), Department of Gastroenterology, Sir Salimullah Medical College, Dhaka, Bangladesh.

Corresponding author: Dr. Bimal Chandra Shil, Associate Professor, Department of Gastroenterology, Sir Salimullah Medical College, Dhaka, Bangladesh. Mobile: +8801720038611.
Email: bimalcshil@yahoo.com; drbimalshil@gmail.com.

Abstract

Introduction: Acute pancreatitis with unknown etiology comprises about 10-30% of all cases of acute pancreatitis. Endoscopic ultrasound is an important tool for revealing etiologies of the unknown causes of acute pancreatitis. The aim of this study was to evaluate the role of endoscopic ultrasound in sorting out the cause of idiopathic acute pancreatitis. **Materials & Methods:** It was a cross-sectional study which was carried out in the department of gastroenterology of Sir Salimullah medical college & Mitford hospital from January 2013 to December 2017. A total of 109 patients suffering from acute idiopathic pancreatitis were enrolled in this study. Underlying etiologies could not be detected after thorough history, physical examinations, blood tests, ultrasonography, CT, and/or MRI. These patients underwent endoscopic ultrasound under proper sedation after taking informed consent. **Results:** Among the 109 patients, 67 were male and 42 were female (P=0.03). Number of patients below 40yrs of age were 67 and above 40 years of age were 42 (P=0.01). Moreover, 81 patients had their gall bladder in situ and 28 had previous history of cholecystectomy (P=0.001). Microlithiasis 20 (24.6%), common bile duct stone or sludge 20 (24.6%), ampullary neoplasm 20 (24.67%), early stage of chronic pancreatitis 12 (14.8%), biliary ascariasis 08 (9.8%), small pancreatic head tumor 02 (2.5%) and pancreatic divisum 02 (2.5%) were found out as the underlying etiologies of idiopathic acute pancreatitis patients who had intact gall bladder. In patients who underwent cholecystectomy; endoscopic ultrasound revealed chronic pancreatitis 04 (14.3%), common bile duct stone or sludge 20 (24.6%), biliary ascariasis 06 (21.4%) and ampullary neoplasm 01 (3.5%) as the hidden causes of idiopathic acute pancreatitis. **Conclusion:** Gastroenterologists face difficulties to diagnose the actual etiology of idiopathic acute pancreatitis. As endoscopic ultrasound shows high efficacy and accuracy to detect etiologies in such cases; it can be included as a first line investigation in idiopathic acute pancreatitis.

Keywords: Endoscopic Ultrasound, Idiopathic Acute Pancreatitis, Microlithiasis, Common Bile Duct Stone, Gall Bladder Stone.

Introduction

Inflammation of pancreas without any previous morphological changes on imaging studies is termed as acute pancreatitis (Bradley, 1993). Biliary stones, alcohol, hypercalcemia, hypertriglyceridemia, drugs and trauma are the common causes of acute pancreatitis (Al Haddad & Wallace, 2008). The etiology of acute pancreatitis remains idiopathic in about 10-30% of patients even after thorough history, examination and noninvasive imaging studies (Villa, 2010). So, idiopathic acute pancreatitis is a diagnostic and therapeutic challenge for gastroenterologists (Al Haddad & Wallace, 2008). It is more prone to develop recurrence and also related to disease-specific morbidity and mortality (Saleem et al, 2015). In this context, endoscopic ultrasound may help to identify the exact underlying etiology (Villa et al, 2010; Frossard et al, 2000; Tandon & Topazian, 2001; Coyle et al, 2002; Liu et al, 2000; Yousoff, Raymond & Sahai, 2004). It is a minimally invasive test which can provide high-resolution visualization of the pancreas (Sivak & Kaufmann, 1986; Hisanga et al, 1980).

It is found that microlithiasis is a major cause of idiopathic acute pancreatitis with gall bladder in situ. On the other hand, chronic pancreatitis is the common cause in patients' previously undergone cholecystectomy (Ros et al, 1991). Previously, microscopic examination of bile (Ros et al, 1991; Neoptolemos et al, 1988), endoscopic retrograde cholangiopancreatography (ERCP) (Neoptolemos et al, 1988; Gregor, Ponich & Detsky, 1996) and magnetic resonance cholangiopancreatography (MRCP) (Testoni et al, 2008) have been used to find out the actual etiology of idiopathic cases. But ERCP has more complications than endoscopic ultrasound (Petrov & Savides, 2009). In case of MRCP, it has lower diagnostic yield than endoscopic ultrasound in idiopathic pancreatitis patients (Ortega et al, 2011). Moreover, EUS has several other advantages such as detection of small stones (<5mm), small tumors (Al Haddad & Wallace, 2008) and chronic pancreatitis (Irisawa et al, 2007). But data regarding the value of endoscopic ultrasound for diagnosing idiopathic acute pancreatitis is limited. The aim of our study was to evaluate the role of EUS in detecting etiologies in idiopathic acute pancreatitis.

Materials & Methods

It was a cross-sectional study with study period of 3 years lasting from January 2014 to December 2017. Total of 109 patients who were referred to the department of gastroenterology of Sir Salimullah Medical College as diagnosed case of acute pancreatitis of unknown etiology after thorough history, examination, investigations especially imaging studies like USG, CT/MRI; were enrolled in this study. Alcoholics, patient suffering from recent infections, history of recent abdominal trauma or surgery and persons taking drugs which may cause pancreatitis were excluded from the study.

All the 109 patients gave informed consent. Their age, sex and demographic features were noted down with interest. Routine blood examination, liver function tests, ultrasonography reports and CT/MRI reports of these patients were collected. Afterwards, all patients underwent endoscopic ultrasound examination in an interventional suite. Endoscopic ultrasound was done under sedation. It was carried out by Fujinon echoendoscope (Model EG-530 UR₂ for radial array and E-530 UT₂ for linear array). The findings of endoscopic ultrasound were written and compared with their respective trans abdominal ultrasound and CT/MRI reports.

The statistical analysis was done by SPSS 20.0 software (SPSS, Inc. USA). Statistical significance was calculated by Pearson Chi square test. Differences in age of the patients were compared by Students't test. Statistical significances of the study was set at <0.05.

Results

Total of 109 patients took part in the study. Of them, 69 were male and 40 were female with good statistical significance (P=0.03). Total 67 patients were below 40 years of age while 42 patients were above 40 years of age (P=0.01). Among the patients, 81 patients had gall bladder in situ and 28 patients had history of cholecystectomy. Table below shows the results of the study.

Fig 1: Distribution of sex in idiopathic acute pancreatitis

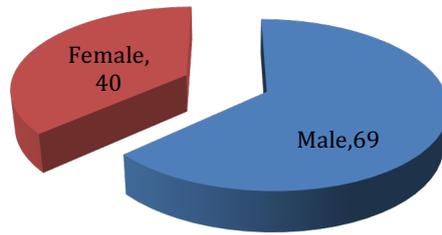
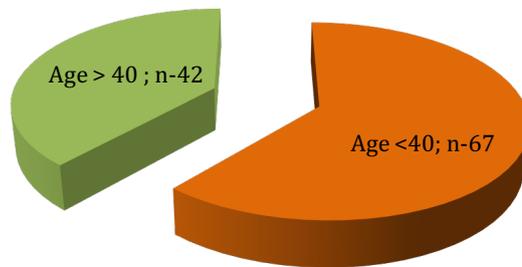


Fig 2: Distribution of age in idiopathic acute pancreatitis



Among the patients, 81 patients had gall bladder in situ and 28 patients had history of cholecystectomy. Table below shows the results of the study.

Parameter	Intact gall bladder group	Cholecystectomy group	Total	P Value
Number of patients	81 (74.3%)	28(25.7%)	109(100%)	0.001
Microlithiasis or GB sludge	20 (24.6%)			
Chronic Pancreatitis	12 (14.8%)	04 (14.3%)	16(14.67%)	0.853
CBD stone or sludge	20 (24.6%)	20 (24.6%)	40(36.7%)	0.001
Biliary ascariasis	08 (9.8%)	06 (21.4%)	14(12.84%)	0.028
Ampullary neoplasm	20 (24.6%)	01 (3.5%)	21(19.27%)	0.001
Small pancreatic head tumor	02 (2.5%)			
Pancreatic divisum	02 (2.5%)			

Table 1: Comparison between two groups of patients with intact gall bladder and removed gall bladder with endoscopic ultrasound diagnosis (GB- gall bladder, CBD- common bile duct).

Endoscopic ultrasound revealed etiologies in 46 (56.79%) patients previously diagnosed as idiopathic acute pancreatitis having gall bladder in situ. Of the 28 patients suffering from idiopathic acute pancreatitis with cholecystectomy, endoscopic ultrasound revealed etiologies in 13 patients.

Discussion

When the etiology could not be identified on initial evaluation of patients suffering from acute pancreatitis or recurrent acute pancreatitis, it can be defined as idiopathic acute pancreatitis (Levy & Geenen, 2001; Somani & Navaneethan, 2016; Lee, Nicholls & Park, 1992). Indication of endoscopic ultrasound in these patients is to find out the etiology to prevent further attacks. The common causes of idiopathic recurrent acute pancreatitis are bile duct stones, gall bladder sludge, microlithiasis, pancreatic cancer and early chronic pancreatitis. Endoscopic ultrasound plays pivotal role to diagnose these conditions (Ortega et al, 2011; Prat et al, 1996; Sahai et al, 1998; Catalano et al, 1998; Dill et al, 1995; Dahan et al, 1996; Baillie, 2001)

Total of 109 patients of acute pancreatitis with unknown etiology were enrolled in the study. Of them 69 were male and 40 were female ($P=0.03$) showing higher prevalence in male which is consistent with previous studies conducted in Bangladesh (Ahmed et al, 2016; Ahad, 2016) and Frossard et al in Europe (Frossard, Steer & Pastor, 2008). Moreover, 67 patients were below 40 years of age while 42 patients were above 40 years of age with good significance ($P=0.01$). It shows idiopathic acute pancreatitis is more common in young age which is consistent with previous studies (Elzouki et al, 2019). In foregone studies, among the patients of idiopathic acute pancreatitis about 20-50% presented with microlithiasis (Liu et al, 2000; Ros et al, 1991; Dill & Dill, 2002; Lee & Nicholls, 1986; Levy, 2002), 15% with chronic pancreatitis (Wilcox & Kilgore, 2009), 25% with common bile duct stone (Choudhary et al, 2016) and about 3.2% with pancreatic cancer (Tandon & Topazian, 2001). Our study almost resembled those previously found data. In fact, patients having their gall bladder in situ with idiopathic acute pancreatitis showed microlithiasis (24.6%), chronic pancreatitis (14.8%), common bile duct stone (24.6%) and small pancreatic tumor (2.5%) as the main causes. Patients with operated gall bladder showed common bile duct stone (24.6%) and biliary ascariasis (21.4%) as the leading causes in our study. But Choudhary NS et al showed early chronic pancreatitis (38.6%) as the main cause of idiopathic acute pancreatitis

in patients who underwent cholecystectomy (Choudhary et al, 2016). Khuroo MS and associates showed that biliary ascariasis is found in 23% of acute pancreatitis patients in South East Asia which is 21.4% in our study (Khuroo et al, 2016).

There were some limitations in our study especially the findings of endoscopic ultrasound were not compared with ERCP or MRCP findings in all cases. Still this study goes a long way to make the physicians aware of the causes and value of endoscopic ultrasound in diagnosing idiopathic acute pancreatitis.

Conclusion

About one-third patients of acute pancreatitis are idiopathic. Diagnosis of exact etiology of these patients, are a challenge for clinicians. Endoscopic ultrasound is a useful means which has a high accuracy to diagnose such cases. So, it should be considered as the first line investigation for the diagnosis and management of patients of acute pancreatitis with uncertain etiology.

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