OUTCOME OF ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY AT KURDISTAN CENTER FOR GASTROENTEROLOGY AND HEPATOLOGY / IRAQ

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Submitted: 10/10/2014; Accepted: 19/3/2015; Published: 1/12/2015

ABSTRACT

Background

Endoscopic retrograde cholangiopancreatography (ERCP) has an increasing role in the management of pancreatico-biliary diseases. Local data regarding the use of ERCP are limited.

Objective

To review the indications, interventions and complications of endoscopic retrograde cholangiopancreatography.

Patients and methods

This retrospective case series was carried out in Kurdistan center for gastroenterology and hepatology in Sulaimani city – Iraq from January 2010 to December 2010. Records of 290 patients were retrospectively evaluated to collect demographic, clinical and procedure related data.

Results

The age range was 3-90 years (mean: 46.5 years), with a female to male ratio of 1.7:1. The most common indications for ERCP were choledocholithiasis (N=118, 40.7%) and pancreatico-biliary tumors (N=98, 33.8%). The mean duration of the ERCP procedure was 30 min (range: 15-45 min). Deep biliary cannulation was successful in 266 patients (91.7%). Endoscopic sphincterotomy was the most common intervention performed (N=224, 84.2%), followed by stenting (N=92, 34.6%). The most common complication was pancreatitis (N=9, 3.1%) followed by bleeding (N=7, 2.4%). No deaths were reported.

Conclusion

Despite its associated morbidity and risk of mortality, ERCP is an important method in managing pancreatico-biliary diseases. Our indications, interventions and complications rates are comparable to those reported in other countries.

Keywords: *ERCP,Sulaimani, endoscopic sphincterotomy, choledocholithiasis*

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https://doi.org/10.17656/jsmc.10072

INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) is a useful technique for the management of pancreaticobiliary diseases [1]. After the introduction of endoscopic sphincterotomy in 1974, therapeutic pancreatico-biliary endoscopy subsequently emerged and ERCP has evolved from a diagnostic procedure to an almost exclusively therapeutic procedure [2]. It is a technically demanding procedure and is associated with the highest rate of complications among all endoscopic procedures [3]. Despite all the progress in technique and technology, ERCP is still associated with several complications, including pancreatitis, hemorrhage, perforation, cholangitis, and sedation-related cardiopulmonary events, that occur in up to 10% of patients. ERCP has a mortality rate of up to 1% [4].

Although ERCP has been available in Iraq for more than two decades, the local data about this important endoscopic tool are scarce. This study was conducted to revise the outcomes of ERCP procedures performed at Kurdistan Center for Gastroenterology and Hepatology (KCGH).

PATIENTS AND METHODS

This is a retrospective case series study was conducted at KCGH in Sulaimani city–Iraq from January 2010 to December 2010. Records of 290 patients were retrospectively evaluated to collect demographic, clinical and procedure related data which included indication for ERCP, duration of the procedure, cannulation rate, therapeutic interventions performed and ERCP related morbidity and mortality.

Before the procedures, patients were interviewed and a written informed consent was obtained. A minimum fasting period of 6-8 hours was necessary. The procedures were performed under conscious sedation using intravenous midazolam and pethidine with doses escalated according to response. Pulse oximetry was used for intra-procedural monitoring. All the procedures were performed by experienced gastroenterologists.

After the ERCP, patients were observed in KCGH for 4-6 hours and then discharged with instructions to call or return back to the KCGH if any problem occurred. Those with suspected post-ERCP complications were admitted to the hospital for further management.

RESULTS

The mean age was 46.5 years (range 3-90 years). The female : male ratio was 1.7:1 with females constituting 184 (63.5%) while males constituted 106 (36.5%). The pediatric age group (less than 18 years) included 11 patients (3.8%) while almost one third of patients (N=90, 31%) aged 70 years or older. More than half of the patients (N=151, 52%) were referrals from Iraqi governorates other than Sulaimani governorate.

The most common indications for ERCP were choledocholithiasis (N=118, 40.7%), pancreatico-biliary tumors (N=98, 33.8%) and post-cholecystectomy complications (N=25, 8.6%) as shown in table 1.

The mean duration of the ERCP procedure was 30 min (range: 15-45 min). Deep cannulation was successful in 266 patients (91.7%). The cannulation was successful in the first trial of ERCP in 215 patients (80.8%), while 50 patients (18.8%; 29 females and 21 males) required repeat ERCP procedure and one male (0.4%) required a third procedure to achieve successful cannulation. The causes of failed cannulation were duodenal stenosis or deformity (N=11), a papillary lesion (N=10), or duodenal diverticulae (N=3).

In cases who had successful cannulation (N=266, 91.7%), a cholangiogram and / or pancreatogram was obtained which showed bile duct dilatation as the most common finding followed by filling defects. The findings of cholangiopancreatography are shown in table 2

The therapeutic endoscopic interventions applied during ERCP after successful cannulation (N=266) are presented in table 3. Endoscopic sphincterotomy was performed in 224 patients (84.2%), followed by stenting in 92 (34.6%) and stone extraction in 76 (28.6%). In 5 cases, parasites were extracted including ruptured hydatid cyst membrane (N=3) and *Fasciola hepatica* (N=2).

The most common complications reported in this study were pancreatitis (N=9, 3.1%) followed by bleeding (N=7, 2.4%). No deaths were reported in this study (Table 4).

Table 1. Indications of ERCP, (N=290).

Indications	Number	Percentage
Choledocholithiasis	118	40.7
Biliary malignancy	68	23.4
Pancreatic tumor	30	10.4
Post-cholecystectomy complications	25	8.6
Blocked biliary stent	14	4.8
Extrinsic biliary compression	12	4.1
Chronic pancreatitis	8	2.8
Sclerosing cholangitis	8	2.8
Biliary parasites	5	1.7
Bile duct cysts	2	0.7
Total	**290**	**100**

Table 2. Findings of cholangiopancreatography, (N=266).

Findings	Number	%
Bile duct dilatation	180	67.7
Filling defects	84	31.6
Bile duct strictures	45	16.9
Bile duct leaks	9	3.4
Pancreatic duct dilatation or stone	6	2.25
Mirrizi syndrome	4	1.5
Ruptured hydatid cyst	3	1.1
Bile duct cyst	2	0.8
Normal ERCP	6	2.25

Table 3: Therapeutic endoscopic interventions applied during ERCP, (N=266).

Intervention	Number	Percentage
Endoscopic sphincterotomy	224	84.2
Biliary or pancreatic duct stenting	92	34.6
Stone extraction	76	28.6
Dilatation of bile duct stricture	26	9.8
Parasite extraction	5	1.9

Table 4: Complications of ERCP, (N=290).

Complications	Number	Percentage
Pancreatitis	9	3.1
Bleeding	7	2.4
Perforation	2	0.7
Hypoxia	2	0.7
Cholangitis	1	0.34
Death	0	0
Total	**21**	**7.24**

DISCUSSION

Endoscopic retrograde cholangiopancreatography is now widely available and has become a very valuable tool for the management of biliary and pancreatic diseases [3]. It can provide direct visualization and clear images of the pancreatico-biliary ductal systems [1,4]. The ERCP outcomes reported from developed and developing countries are variable, mainly depending on the complexity of the procedure, the underlying diagnosis and patient comorbidities. Consequently studies are required from each population to determine the success rate and outcome of ERCP [5].

The most common indications for ERCP in our study were choledocholithiasis, pancreatico-biliary tumors and post-cholecystectomy complications. This is comparable to the indications reported from other studies [5,6]. Although the rates of ERCP for post-cholecystectomy complications in our study might be higher than those in other studies which might be attributed to that our center serves as a referral center for cases from other parts of Iraq where the training for laparoscopic cholecystectomy is still below the standards. We had 5 cases of biliary parasites in the form of intrabiliary rupture of hydatid cyst (N=3) and *Fasciola hepatica* (N=2). Both of these conditions are increasingly diagnosed during ERCP in our area in addition to being treated successfully by ERCP which is followed by using the appropriate anti-parasitic agents [7,8].

The mean duration of ERCP procedure was 30 minutes which is longer than that reported by other studies [4,6] and is likely attributed to the complexity of the cases referred to our center. Successful deep cannulation represents the most significant step of the diagnostic and therapeutic ERCP procedure [9]. Deep cannulation was successful in 91.7% in our study. Cannulation procedure is reported to achieve a success rate of 80-95% when performed by experienced endoscopists [9]. Deep cannulation failed in those with duodenal deformities, papillary pathologies or duodenal diverticulae. Deep cannulation is more likely to fail in those with anatomic variation or obstructive processes that preclude access to the duodenum, major papilla or the duct of interest [9].

The most common finding on ERCP was dilated bile duct. In most cases, this was associated with filling defects, strictures or leaks. The less invasive diagnostic modalities like trans-abdominal ultrasound and magnetic resonance cholangiopancreatography (MRCP) tended to perform less accurately in our study which could be due to the lack of adequate experience with the use of these tools in our area. Trans-abdominal ultrasound detected bile duct dilatation in only 69 cases while it suggested presence of bile duct stone in 116 cases i.e. it resulted in under-diagnosis of bile duct dilatation and over diagnosis of bile duct stones. It is important for the assessing clinician to remember the limitation of these non-invasive diagnostic tools and to go for ERCP based on the whole clinical scenario rather than the result of imaging studies alone.

The major endoscopic intervention applied during ERCP in our study was endoscopic sphincterotomy which is one of the most important interventions that aids in the management of choledocholithiasis, papillary stenosis, sphincter of Oddi dysfunction,

ampullary carcinoma in poor surgical candidates, bile duct injuries or choledochocele. Also it facilitates biliary stent placement and access to pancreatic duct [10]. The rate of endoscopic sphincterotomy in our study was 84.2% which is comparable to that stated in the British Society of Gastroenterology (BSG) audit [11] (84%) but below the rate reported in a study done by Mitra *et al* [6] (94%).

Endoscopic retrograde cholangiopancreatography is the most likely primary treatment for choledocholithiasis [1]. It has been shown to be highly effective in detecting and removing bile duct stones before laparoscopic cholecystectomy [12,13]. It also helps to diagnose, and when combined with endoscopic sphincterotomy and/ or biliary stenting to manage post-cholecystectomy residual bile duct stones and postoperative biliary complications such as bile duct injuries with bile leakage or stricture [14-17]. Biliary stenting was successfully used in preoperative drainage or palliative treatment of pancreatico-biliary malignancies as well as when complete bile duct clearance was not ensured. It was also used in patients with large bile duct stones that could not be removed in a single session [18].

Because most of the ERCP complications become evident during the first 4-6 h, outpatient ERCP with follow up is thought to be a feasible and safe approach [19]. This approach is used in our center. Patients who have persistent symptoms after 4-6 hours were admitted to the hospital for further evaluation. Complications associated with ERCP have been reported in up to 10% with a mean of 4.0% [1, 4, 19-21]. In our study, the complication rate was 7.24%. Many factors affect the complication rates of ERCP such as experience of endoscopist in addition to patient comorbidities such as severe and incapacitating systemic diseases, obesity, pancreatic manometry, and complex procedures [20].

Acute pancreatitis is the most common complication after ERCP, with reported frequencies that range from 0.9% to 4.4% [1, 4, 20]. In our study, the rate of post-ERCP pancreatitis was 3.1%. Predictors of acute pancreatitis include the presence of pancreatic duct catheterization, roentgenography, sphincterotomy, or suspected sphincter of Oddi dysfunction [1, 4, 20]. Every effort was made to reduce the rate of post-ERCP pancreatitis such as avoiding pancreatography and deploying pancreatic stent when inadverant pancreatic duct cannulation occurred in high risk patients.

The risk of post-sphincterotomy bleeding is 0.3-1.3%, which is higher in those on anticoagulant therapy [1, 4, 20,22]. In our study, bleeding was reported in 2.4% cases but it was minor bleeding that responded to local measures in the form of balloon compression, adrenaline spray and thermal therapy. No cases of severe bleeding necessitating blood transfusion or long hospital admission were reported. The risk of perforation during ERCP is also 0.3-1.3%, and, like the risk of bleeding, it is higher with sphincterotomy, stenting, and biliary or gastric Roux-en-Y diversion [1, 4, 20, 21]. Both of the two cases of post-ERCP perforation were retro-duodenal perforations that were managed conservatively without requiring surgical intervention.

Acute cholangitis is seen in 0.4-1.8% of ERCP patients, and this rate is even higher in patients with incomplete biliary obstruction [1, 4, 19, 20]. The rate of cholangitis in our study was 0.34%. Plastic biliary stents were deployed when there was no good bile and contrast drainage as judged by the operating endoscopist. Sedation related problems, such as hypoxia, arrhythmias, and respiratory or cardiac arrest, may develop in 0.5-1% of cases [4]. This was reported in 0.7% in our study. The mortality rate from ERCP has been reported at up to 1.0% with a mean of 0.4% [1, 19]. No deaths were reported in our study. None of the uncommon or rare complications of ERCP were reported in our study which could include systemic air embolism, portal vein or hepatic artery cannulation or contrast allergy [3].

In conclusion, despite its associated morbidity and risk of mortality, ERCP is an important method in managing pancreatico-biliary diseases. Our indications, interventions and complications rates are comparable to those reported in other countries

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