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Medical Team, Micro Labs Ltd

Estimation of the proportion of venous thromboembolism among inflammatory bowel disease patients along with the assessment of genetic risk factors

INTRODUCTION

Inflammatory bowel disease (IBD), which include Crohn's disease (CD) and ulcerative colitis (UC), is a chronic inflammation of the digestive tract. In the United States, its frequency was estimated to be 1.3% (3 million adults) in 2015, and it is predicted to rise worldwide.¹ Compared to normal people, people with inflammatory bowel disease (IBD) have a three-fold increased risk of venous thromboembolism (VTE), particularly during hospital stays and flare-ups.² Although venous thromboembolism (VTE) is a significant risk factor for people with inflammatory bowel disease (IBD), it is frequently overlooked and has few methods available for risk assessment.¹ The aim of this study was to determine the prevalence of VTE among IBD patients and to investigate genetic risk factors for VTE (monogenic and polygenic).



Inflammatory bowel disease

METHOD

A large population-based cohort study was conducted in 8465 IBD patients. In the United Kingdom biobank (UKB), IBD patients were followed for incidents of VTE. Comparatively, VTE events following a cancer diagnosis were also assessed for cancer patients in the UK Biobank (ICD-10: C00-C96). Cox hazards regression analysis was used to investigate the correlations of VTE with F5 factor V leiden (FVL) mutation, F2 G20210A prothrombin gene mutation (PGM) and polygenic score (PGS003332), while adjusting for age at IBD diagnosis, gender, and genetic background (top 10 principal components). The area under the receiver operating characteristic curve (AUC) was used to calculate how well genetic risk variables performed in terms of differentiating between VTE diagnoses.

RESULTS

The median age at diagnosis for CD only, UC only, and IBD unclassified (IBD-U) was 49.60, 51.34, and 44.09 years, respectively. After being diagnosed with IBD, 398 of these patients experienced VTE events; the overall incidence of VTE events was 4.70%. Among individuals with CD only (4.46%), UC only (4.49%), and IBD-U colitis (6.42%), the proportion of VTE varied statistically ($\chi^2 = 7.22$, degree of freedom = 2, $P=0.03$). Significantly, these IBD patients' overall incident VTE proportion was similar to that of 107520 cancer patients (4.66%) in the UKB, who were known to have a higher risk of VTE. In patients with IBD, VTE events happened regularly over the course of the follow-up period, whereas in cancer patients, the first few years saw a disproportionately greater number of VTE events. The incidence of VTE was considerably higher in carriers of the mutation than in carriers of F5/F2 without the mutation; the hazard ratio (HR) was 1.94 with a 95% confidence interval (CI) of 1.42-2.65. The HR was 2.06 (95%CI: 1.57-2.71) for individuals with the highest PGS decile, in

contrast to those with intermediate scores (middle 8 deciles), which indicated a significantly increased risk for VTE (Table 1). The AUC for F5/F2 mutation carriers, PGS, and combination was 0.64 (95%CI: 0.61-0.67), 0.68 (95%CI: 0.66-0.71), and 0.69 (95%CI: 0.66-0.71), respectively, for differentiating the diagnosis of VTE.

	IBD patients, <i>n</i> (%)	Incident VTE, <i>n</i> (%)	HR (95%CI) [†]	<i>P</i> value
<i>FVL/F2 carrier status</i>				
Non-carriers	7701/8210 (93.8)	332/7701 (4.31)	Ref.	
<i>FVL</i> carriers	351/8210 (4.28)	37/351 (10.54)	2.27 (1.61-3.21)	2.84E-06
<i>F2</i> carriers	163/8210 (1.99)	10/163 (6.13)	1.29 (0.69-2.43)	0.43
Any <i>FVL/F2</i> carriers	509/8210 (6.2)	46/509 (9.04)	1.94 (1.42-2.65)	3.27E-05
<i>PGS_{non-F5/F2} decile</i>				
Bottom	821/8210 (10)	13/821 (1.58)	0.36 (0.21-0.63)	3.12E-04
Intermediate	6568/8210 (80)	295/6568 (4.49)	Ref.	
Top	821/8210 (10)	70/821 (8.53)	1.98 (1.52-2.57)	3.26E-07

Table 1. Correlation between polygenic score and F5/F2 mutations with the risk of venous thromboembolism in the UK Biobank. IBD: Inflammatory bowel disease; VTE: Venous thromboembolism; 95% CI: 95% confidence interval; HR: Hazard ratio.

DISCUSSION

The current study showed that VTE was a prevalent complication in IBD patients, with a proportion comparable to conditions generally considered to be at high risk for VTE, such as cancer.¹ Similar to this, McCurdy JD et.al showed that in the post-discharge period, IBD patients are at a high risk of VTE.³ The current study correlated with Naito T et al. that used a polygenic risk score based on 265 known VTE risk associated SNPs, involving 792 IBD patients.⁴

CONCLUSION

The current study concluded that IBD patients frequently experience VTE complications, with a proportion similar to conditions known to be associated with an elevated risk of VTE. Additionally, study demonstrated that SNP-based PGS was more accurate and better than F5/F2 mutations in identifying IBD patients who are at a high risk of developing VTE. These findings might have an impact on the establishment of individualized anticoagulant therapy.

Single nucleotide polymorphisms (SNP)-based polygenic score (PGS) was more accurate and better than F5/F2 mutations in identifying IBD patients who are at a high risk of developing VTE.

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Assessment of common indications and upper gastrointestinal endoscopic findings of patients at a tertiary Hospital

INTRODUCTION

The most frequent problems that patients bring in for visits to primary care physicians are symptoms of digestive system illnesses. The cost burden of these symptoms on society and the health service is substantial, and they have a negative impact on quality of life. Gram-negative bacteria *Helicobacter pylori* is linked to several upper gastrointestinal conditions, such as gastric carcinoma, lymphoma, peptic ulcer disease, and chronic active gastritis. Patients with upper gastrointestinal (GI) diseases might also present with chronic anorexia, gastrointestinal haemorrhage, dysphagia, odynophagia, nausea/vomiting with or without weight loss, and dyspepsia. Different diagnostic methods have been explored for over 200 years in an effort to gain a better knowledge of these upper GI disorders. Esophagogastroduodenoscopy (EGD), also known as upper gastrointestinal endoscopy, is a procedure that allows the upper portion of the gastrointestinal tract to be examined.¹ Several diagnostic and therapeutic indications for upper gastrointestinal endoscopy include the detection and removal of foreign bodies, cases of upper gastrointestinal bleeding, dyspeptic symptoms, and certain cases of portal hypertension for varices screening.² To diagnose the upper gastrointestinal system, real-time endoscopic visualization is essential. There are few local data available about the frequent underlying diseases and the criteria for endoscopic assessment.¹ This study aimed to evaluate the indications and upper gastrointestinal endoscopic findings of patients presented at a tertiary care hospital to understand the difference in pattern of endoscopic findings, upper gastrointestinal pathologies over time and variations based on geographic location.

METHODS

This was a hospital- based descriptive cross-sectional study conducted among 5753 patients who underwent complete upper gastrointestinal tract endoscopic evaluation. Information on the patients age and gender, indications for upper gastrointestinal endoscopy (UGIE), and endoscopic results were obtained from endoscopy. A standardized checklist was employed to ensure that the records were comprehensive. The statistical package for the social sciences (SPSS) version 25 was used to analyse the data. The data were compiled into tables and

graphs using descriptive statistics such as frequencies, median, and percentages. Variables were compared using the chi-square test, with a $P < 0.05$ threshold for statistical significance.

RESULTS

Out of the 5753 patients, 2105 (36.6%) were female and 3648 (63.4%) were male. The patients ranged in age from 4 to 97 years old, with a median age of 37 years. Age groups 21–30 years old (28.8%) and 31–40 years old (22.9%) accounted for half of the population. The most prevalent reason for upper gastrointestinal endoscopy was dyspepsia, which accounted for 27.8% ($n = 1597$) cases. Upper GI bleeding was the next most common reason (17.1%, $n = 983$), while screening for varices was the most common reason (16.8%, $n = 968$) for patients with chronic liver disease (CLD) (Figure 1). The most common diseases found in patients with dyspepsia were duodenal ulcers (12.7%; $n = 203$), gastritis 34.9% ($n = 557$), and gastroesophageal reflux disease 27% ($n = 431$). Among dyspeptic patients, 18% ($n = 287$) had normal upper gastrointestinal endoscopies. Esophageal varices accounted for 51.8% ($n = 509$) of the patients with upper gastrointestinal bleeding, followed by duodenal ulcers (15.4%; $n = 151$), gastritis (11.2%; $n = 110$), gastric ulcers 6.0% ($n = 59$), gastric tumors 3.3% ($n = 32$), and Mallory Weiss tears 0.4% ($n = 4$). Of the patients, 6.7% ($n = 66$) had normal results. Additionally, 87.4% ($n = 692$) of the patients who had repeat UGIE with a follow-up reason had esophageal varices. Esophageal tumors (42.9%), achalasia (13.3%), and esophageal stricture (5.3%) were the most frequently found lesions in the 375 individuals with dysphagia. Esophageal varices were the most common findings on esophageal endoscopic evaluation (35.8%), followed by normal examination (34.9%), gastroesophageal reflux disease (14.7%), and hiatal hernia (9.2%). Gastritis (18.1%), portal hypertensive gastropathy (15.3), gastric ulcers (4.2%), and gastric tumors (4.1%) were the most commonly found abnormal endoscopic findings on the stomach. Duodenal cap deformities (2.9%), duodenitis (4.8%), and duodenal ulcers (10.6%) were the most often observed abnormal endoscopic findings on the duodenum. Patients in their third decade of life and men are more likely to suffer from common upper gastrointestinal diseases.

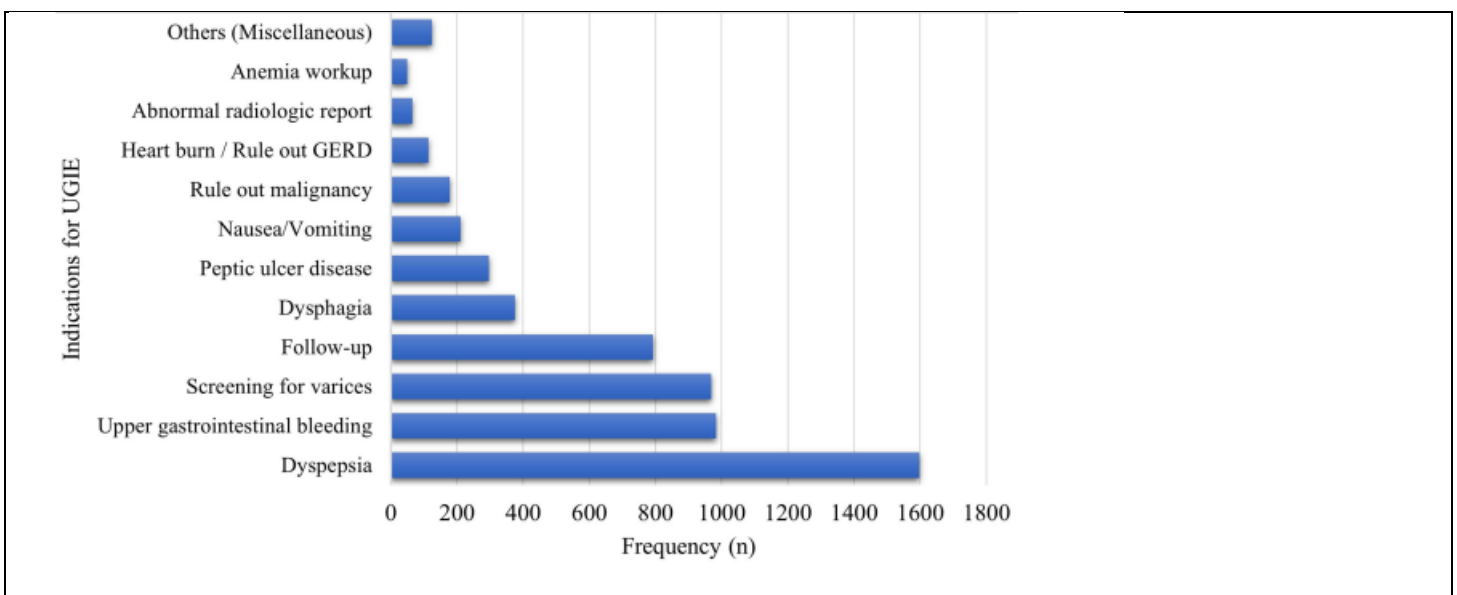


Figure 1. Indications for upper gastrointestinal endoscopy

DISCUSSION

This study showed that the most frequent indication for upper gastrointestinal tract endoscopic examination was dyspepsia.¹ Similar to this, Nkansah A et al. showed that the most common indication for upper gastrointestinal endoscopy in the individuals evaluated was dyspepsia, and the majority of these patients had gastritis on endoscopy.³ The current study showed that men were more likely to have upper GI diseases than women, which was similar with Chandail V et al. findings.⁴

CONCLUSION

The current study concluded that, the most frequent indication for upper gastrointestinal endoscopy was dyspepsia, which was followed by upper GI hemorrhage. Gastritis, GERD, and esophageal varices were the most prevalent abnormal findings. Benign lesions are more common than malignancies in terms of incidence. When treating patients with upper gastrointestinal disorders, healthcare providers should have easy access to EGD, which is still an essential technique for the accurate diagnosis and characterization of illnesses affecting the upper gastrointestinal tract. Consideration must be given to ensure that the resources required for timely treatment of patients with common diseases like varices are available.

Esophagogastroduodenoscopy is still an essential diagnostic technique for diseases of the upper gastrointestinal tract.

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Metal versus plastic stents for preoperative endoscopic biliary drainage in cases of resectable perihilar cholangiocarcinoma.

INTRODUCTION

Cholangiocarcinomas (CCAs) are a heterogeneous group of epithelial cell cancers that can arise anywhere throughout the biliary tract. These highly fatal cancers account for around 15% of all primary liver cancers, 3% of gastrointestinal cancers, and account for 2% of all cancer-related deaths globally. CCAs are classified into three subtypes based on their anatomic location along the biliary tree: intrahepatic CCA (iCCA), perihilar CCA (pCCA), and distal CCA (dCCA); pCCA accounts for 50-60% of CCAs.¹ Perihilar cholangiocarcinoma (pCCA) is the most prevalent bile duct cancer, frequently causing obstructive jaundice. Often, large surgical resection is the only therapeutic option with the goal of curing the condition. It is generally recommended that patients with resectable pCCA have adequate preoperative biliary drainage (PBD). Instead of using self-expanding metal stents (SEMS), the majority of expert centers employ endoscopic plastic stents (PS). However, the use of SEMS has demonstrated extended patency and higher survival in the palliative context.² So, this study aimed to compare the stent dysfunction of plastic stents with SEMS stents for PBD in patients with resectable pCCA.

METHODS

This was a multicenter, retrospective, international cohort study included 504 patients with a high suspicion of resectable pCCA who underwent initial PBD with ERCP. For these individuals, computed tomography (CT) and/or magnetic resonance imaging (MRI) were standard diagnostic procedures. The Helsinki Declaration's (MEC-2020-0500) criteria and the STROBE guidelines were followed in the conduct of this study. The primary outcome was stent failure following technically successful stent insertion. Endoscopic adverse events were the secondary outcomes. A composite outcome of cholangitis and/or re-intervention because of adverse events or insufficient PBD was referred to as stent failure. There were records of further adverse events, surgical results, and survival. Propensity score matching (PSM) was applied to a number of baseline characteristics.

RESULTS

This study results showed that successful stent placement was achieved in 474 patients, of whom 413 had plastic stents and 61 received SEMS. PSM (1:1) produced two 59-patient groups. Significantly less stent failures (31% vs. 64%, $p < 0.001$) happened in the SEMS group. Other PBD-related adverse events did not change, with the exception of a decrease in cholangitis (15% vs 31%, $p = 0.012$) following SEMS placement. Surgical resection performed in 27 of 59 (46%) patients undergoing surgical exploration with SEMS and 29 of 59 (49%) with PS (Table 1). The proportion of patients requiring surgical resection (46% vs. 49%, $p = 0.71$) did not differ statistically. All patients had effective, adverse-event-free complete intraoperative SEMS removal. The SEMS group had a median overall survival of 15.9 months [95% CI, 11.2 – 26.0] following initial stent insertion after matching, while the PS group had a median overall survival of 14.2 months [95% CI, 8.7 – 29.1] (log-rank $P = 0.81$). Following radical resection, patients with SEMS had a survival of 23 months [95% CI, 13.2 – 51.1] and PS had a survival of 36 months [95% CI, 24.8 – NA] (log-rank $P = 0.15$). The PS group's survival was noticeably longer in the unpaired analysis ($P = 0.044$).

	Matched		
	SEMS (n = 48)	PS (n = 53)	p
Time to surgery from first stent in days (median [IQR])	52.00 [34.00, 71.00]	47.00 [29.50, 81.75]	0.870
Time to laparotomy from first stent (median [IQR])	68.00 [54.00, 92.00]	59.00 [43.25, 84.00]	0.084
First surgical procedure (%)			0.003
- Radical resection	5 (10.4)	18 (34.0)	
- Staging laparoscopy	38 (79.2)	25 (47.2)	
- Explorative laparotomy	5 (10.4)	10 (18.9)	
Explorative laparotomy (%)	11 (22.9)	14 (26.4)	0.860
Staging laparoscopy (%)	39 (81.2)	25 (47.2)	<0.001
Radical resection (%)	27 (56.2)	29 (54.7)	1

Table 1. All patients who had at least one surgical procedure IQR = Inter Quartile Range

DISCUSSION

The current study showed that patients receiving SEMS (with or without PS) saw a substantial reduction in stent failures and cholangitis, as well as a decreased need for re-interventions, compared to those getting PS alone after propensity score matching.¹ Similar to this, Lyu Y et al. showed that the use of an MS was linked to decreased incidence of cholangitis, recurring biliary obstruction, delay of neoadjuvant therapy, and reintervention.³

CONCLUSION

This study concluded that when compared to plastic stents in patients with resectable pCCA, stent failure was less common in those with SEMS as PBD. Extraction during surgery was quite possible. The outcomes of the surgeries and survival were similar in both groups.

The use of SEMS in patient with resectable pCCA saw a substantial reduction in stent failure, cholangitis, and also decreased need for re-interventions.

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Foreign Object in the Biliary Tree and the Challenge of Hypereosinophilia: A rare case report

INTRODUCTION

The term "Hypereosinophilia" (HE) refers to a continuous high eosinophil count of more than $1.5 \times 10^9/L$. HE may be secondary or reactive to an underlying medical disease, or it may be one of the predominant symptoms of a Hematopoietic myeloid cell tumour. If the reason of HE and the related tissue/organ damage cannot be identified, the illness is known as idiopathic hypereosinophilic syndrome (HES).¹ Hypereosinophilia has not been recorded in any of the previous or published cases of foreign body migration or impaction in the biliary tree. The presence of foreign bodies in the biliary tree is uncommon, and the medical literature currently in publication does not provide sufficient evidence about how these bodies affect the immune system. On the other hand, this case presented a special situation in which the foreign body's presence was accompanied by a rise in eosinophils, suggested a possible connection between the foreign body and the immune system's reaction. Often associated with allergies and parasite infections, eosinophilia here emphasizes the immune system's adaptability.²

CASE PRESENTATION

A 47-year-old man was presented with a one-week history of persistent epigastric upper abdomen pain and jaundice, despite treatment. The patient underwent a two-year-old left lateral hepatectomy because of hepatic hydatidosis. Physical examination indicated abdominal pain, distension, and icteric skin and sclerae. The results of the laboratory examination revealed elevated levels of aspartate aminotransferase concentration (90 U/L normal range: up to 38 U/L); alanine aminotransferase concentration (86 U/L normal values up to 40U/dL); total bilirubin (9 mg/dL normal range: 0.3 to 1 mg/dL); and direct bilirubin (7 mg/dL normal range: 0.0 to 0.4 mg/dL), the concentration of alkaline phosphatase (321 U/L normal levels up to 115 U/L); concentration of gamma glutamyl transpeptidase (118 U/L normal values range upto 39 U/L); and white blood cell counts of $22,000/mm^3$ (normal range: 4500 to $11,000/mm^3$), in addition to higher neutrophil percentage (82% compared to typical range of 45 to 70%), accompanied with increased Eosinophils (11%; normal range: 2 to 4%). The extra-hepatic tree was shown to be dilated by the abdominal ultrasound (US). A suspected biliary fistula, cholangitis, and a recurrence of hepatic hydatidosis were the early clinical suspicions. Without interaction with the biliary system, contrast-enhanced magnetic resonance cholangiopancreatography (MRCP) revealed a possible recurrence of hepatic hydatidosis. A low signal filling defect was noted in the distal CBD, and the biliary tree appeared dilated. These results suggested that the patient's symptoms might have been caused by cholelithiasis. Following an Endoscopic Retrograde Cholangiopancreatography (ERCP), a foreign body impacted inside the CBD was discovered. It turned out to be a screw from the prior surgical retractor. The screw was able to be removed using a Fogarty balloon catheter following sphincterotomy because of its shape and size (Figure 1). After a trouble-free recovery, the patient went home in good health. After surgery, eosinophil counts decreased gradually and returned to normal after 7 days (eosinophils 3.8%, white blood cell counts $8,500/mm^3$).

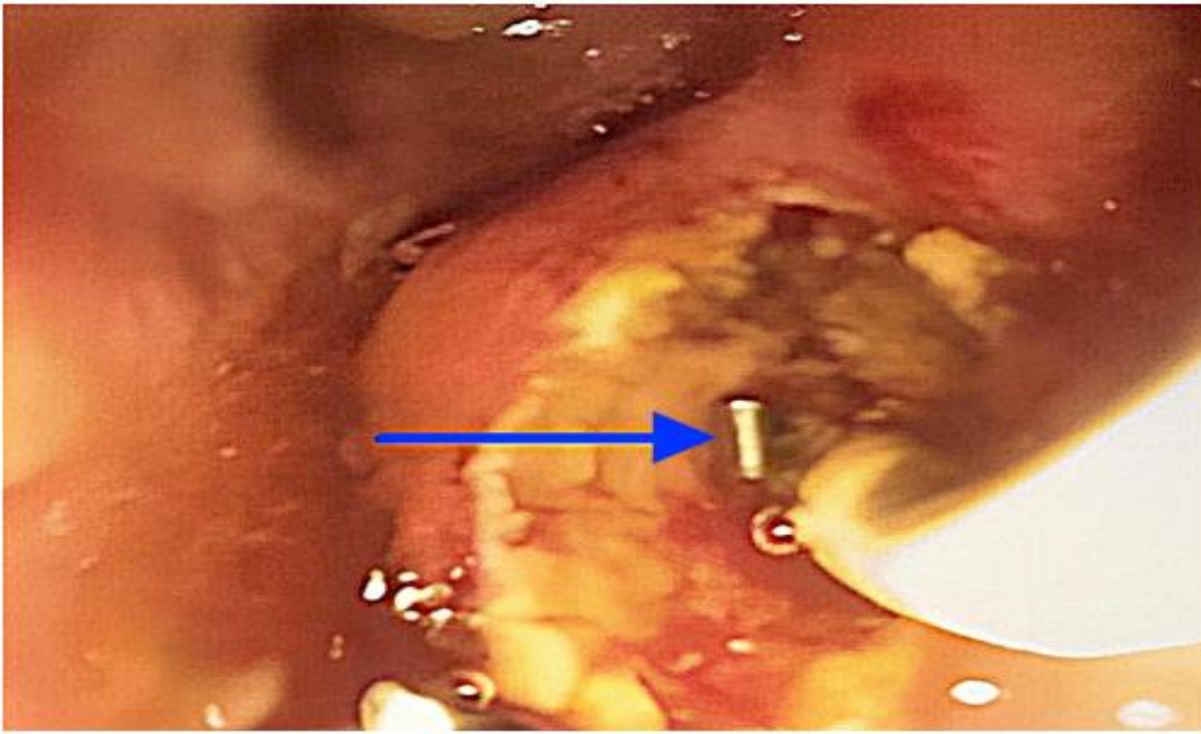


Figure 1. Using a balloon catheter, a surgical retractor screw (arrow), leftover from the prior hepatic surgery, was effectively removed from the common bile duct (CBD) during endoscopic retrograde cholangiopancreatography (ERCP).

DISCUSSION

The current study showed that a surgical retractor screw, leftover from the prior hepatic surgery, was effectively removed from the common bile duct (CBD) during ERCP using a balloon catheter.² Similar to this, Corral et al. showed that with the use of a biopsy forceps and an 8.5 mm balloon sweeping method, coils were effectively removed in two ERCP procedures.³

CONCLUSION

This study concluded that even in patients who have undergone abdominal surgery in past, it is important to take eosinophilia into account as a possible diagnostic factor, as demonstrated by this clinical case. It acts as a reminder that unexpected test finding might lead to the discovery of uncommon but clinically significant condition. It also highlights the increasing importance of endoscopy, especially ERCP, in hepatobiliary medicine, as it provides efficient and less invasive approaches to challenging clinical problems. When managing complications associated with the biliary tree, this comprehensive approach to diagnosis and therapy may enhance patient outcomes and overall quality of care.

In patients who have undergone abdominal surgery in past, it is important to take eosinophilia into account as a possible diagnostic factor.

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