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SCIENTIFIC LETTERS

Subcapsular hepatic haematoma after endoscopic retrograde cholangiopancreatography. A rare complication with high morbidity and mortality☆

Hematoma subcapsular hepático tras colangiopancreatografía retrógrada endoscópica. Una complicación rara y con elevada morbimortalidad

Endoscopic retrograde cholangiopancreatography (ERCP) is an essential technique in the treatment of biliary and pancreatic disease. The overall complication rate of ERCP is approximately 6.9%.[1] The development of a subcapsular hepatic haematoma is an uncommon event, although it is probably underdiagnosed. In most cases the outcome is favourable, but vascular embolisation and/or surgical intervention can be necessary.[2]

We first present the case of a 35-year-old woman referred with acute cholangitis secondary to choledocholithiasis. The patient had normal coagulation (platelets 181,000/μl and INR 0.95). ERCP was performed with selective channelling of the bile duct using a hydrophilic guidewire (Hydra Jagwire™, Boston Scientific, USA). The cholangiogram showed an extrahepatic bile duct measuring 15 mm with multiple filling defects. After performing a biliary sphincterotomy and sphincteroplasty with balloon dilation using a CRE™ balloon (Boston Scientific, USA) of 15 mm diameter for 1 min, all stones were extracted with a Fogarty balloon (Extractor™ Pro, Boston Scientific, USA). Four hours later, the patient developed hypotension, decreased level of consciousness and anaemia, with haemoglobin of 6.9 g/dl. Abdominal CT with intravenous contrast (IVC) identified a subcapsular haematoma measuring 140 × 45 mm in the right lobe of the liver (RLL). The patient made a good recovery with conservative treatment, including antibiotic therapy, and was discharged after 18 days. A follow-up CT scan at four months showed a decrease in the size of the haematoma (49 × 22 mm).

Next, we present the case of a 54-year-old woman with previous cholecystectomy admitted for choledocholithiasis with dilation of the bile duct. The patient had normal coagulation (platelets 233,000/μl and INR 0.94). An ERCP was performed where a papilla was visualised with previous sphincterotomy, the bile duct was selectively cannulated with sphincterotome, and multiple biliary casts were extracted. Two hours later, the patient developed abdominal pain, hypotension and anaemia with haemoglobin of 5.6 g/dl with Fogarty balloon. Abdominal CT with IVC showed a subcapsular haematoma in the RLL (170 × 40 × 150 mm) and a leak of contrast at that location, suggestive of active bleeding. As the bleeding was not confirmed by selective arteriogram, conservative treatment was maintained (transfusion, IV fluids and broad-spectrum antibiotic therapy). At 72 h, the patient had a recurrence of the bleeding and abdominal CT with IVC showed that the haematoma had grown in size (100 × 120 × 190 mm), with findings (Fig. 1) suggestive of active bleeding in segment V. In a repeat angiographic study, multifocal active punctate arterial bleeding was confirmed on the surface of the RLL (in relation to rupture of (Fig. 1) small vessels between the liver surface and the capsule after primary distension due to the initial haematoma) associated with severe vasospasm of the right hepatic artery, which was resolved with glyceryl trinitrate and embolisation with Spongostan® particles. As with the first case, she made a good recovery.

The most common haemorrhagic complication after an ERCP is post-sphincterotomy bleeding (1.3%).[1] One complication within this subgroup which is underdiagnosed is intrahepatic bleeding, leading to the formation of a subcapsular hepatic haematoma, predominantly in the RLL.

The aetiopathogenic mechanism is not fully understood. The main theory suggests the presence of a mechanical component associated with the use of the guidewire, which would seem to cause trauma in the biliary tree and adjacent small intrahepatic vessels.[3] In some cases, it seems to be associated with the traction caused by the endoscope itself or by the Fogarty balloon.4 In terms of the distribution of the haematoma, it is suggested that this is determined by the filtering of blood through the hepatic parenchyma in a centrifugal direction, and the pathophysiology is completed by the presence of a solid hepatic capsule containing the haematoma.[5]

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Table 1 Reported cases of subcapsular hepatic haematoma after ERCP.

Author	Age	Gender	Indication	Guidewire	ERCP	Start	Signs and symptoms	Clotting	Size (mm)	Haematoma infection	Antibiotic	Treatment	Death
Ortega-Deballon et al.,[6] 2000	81	M	Lithiasis	NA	Sphincterotomy, extractor balloon	NA	Pain	NA	NA	Yes	Yes	PD	No
Chi et al.,[7] 2004	43	F	Pancreatic cancer	Yes	Sphincterotomy, metal prosthesis	5 h	Pain, anaemia	Normal	80 × 150	No	Yes	Embolisation	No
Horn et al.,[3] 2004	88	F	Pancreatic cyst	Yes	Sphincterotomy, plastic prosthesis, cytology	48 h	Pain, anaemia	Normal	NA	No	Yes	Conservative	No
Ertugrul et al.,[8] 2006	41	M	CholangioCa	Yes	Plastic prosthesis	48 h	Pain, pyrexia	Normal	78 × 41	No	Yes	Conservative	No
Priego et al.,[9] 2007	30	F	Obstructive jaundice	Yes	Sphincterotomy	NA	Pain, LBP	Normal	47 × 100 × 110	Yes	Yes	Surgery	No
Bhati et al.,[10] 2007	51	F	Lithiasis	Yes	Sphincterotomy, extractor balloon	NA	Pain, LBP	Normal	100 × 130	No	NA	PD	No
Petit-Laurent et al.,[11] 2007	98	M	Lithiasis	Yes	Sphincterotomy, extractor balloon	48 h	NA	Normal	NA	No	NA	PD	No
Del-Rossi et al.,[12] 2007	28	F	Lithiasis	Yes	Sphincterotomy, prosthesis	48 h	Pain, LBP, anaemia	Normal	120 × 160	No	Yes	Conservative	No
Papachristou et al.,[13] 2007	69	M	CholangioCa	Yes	Sphincteroplasty, plastic prosthesis, cytology, biopsy	48 h	Pain, anaemia	Normal	169 × 150 × 70	No	NA	Conservative	NA
McArthur et al.,[14] 2008	71	M	Lithiasis	Yes	Sphincterotomy, extractor balloon, plastic prosthesis	12 h	Pain, leucocytosis	NA	50 × 30	No	Yes	Conservative	No
De la Serna-Higuera et al.,[15] 2008	71	F	Lithiasis	Yes	Sphincterotomy, extractor balloon	48 h	Pain, leucocytosis	Normal	140 × 80 × 50	No	Yes	Conservative	No
Cárdenas et al.,[16] 2008	54	M	Bile leak post OLT	Yes	Sphincterotomy, plastic prosthesis	24 h	Pain, anaemia	Abnormal	90 × 20	No	Yes	Conservative	No
De Mayo et al.,[17] 2008	96	M	Ampullary carcinoma	NA	Sphincteroplasty	4 h	Pain	NA	170 × 130 × 50	No	Yes	Conservative	No
Yrribery-Ureña et al.,[18] 2009	46	F	Lithiasis	Yes	Sphincterotomy, extractor balloon	48 h	Pain, anaemia	NA	NA	NA	NA	Surgery	NA
Nari et al.,[19] 2009	15	F	Pancreatitis	NA	NA	NA	Pain, pyrexia	NA	135 × 49 × 35	No	Yes	Conservative	No
Saa et al.,[20] 2010	92	NA	Lithiasis	NA	Sphincterotomy	24 h	Anaemia	NA	NA	Yes	NA	PD + surgery	Yes
Revuelto Rey et al.,[21] 2010	41	M	Lithiasis	NA	Sphincterotomy	6 h	Pain, anaemia	NA	130 × 90 × 110	NA	Yes	Conservative	No
Baudet et al.,[4] 2011	69	F	Lithiasis	Yes	Sphincterotomy, extractor balloon	4 h	Pain, anaemia, pyrexia, LBP	NA	160 × 65 × 21	Yes	Yes	Embolisation + surgery	No
Pérez-Legaz et al.,[22] 2011	72	F	Lithiasis	NA	Sphincterotomy	2 h	Pain, anaemia, LBP	NA	80	NA	NA	Surgery	No
Del Pozo et al.,[23] 2011	76	F	Lithiasis	Yes	Sphincterotomy, extractor balloon	5 d	Pain	Abnormal	NA	NA	Yes	Conservative	No
Orellana et al.,[24] 2012	96	M	Periampullary tumour	Yes	Plastic prosthesis, biopsies	4 h	Pain	NA	170 × 130 × 50	NA	Yes	Conservative	No
Orellana et al.,[24] 2012	49	M	Occlusion of biliary prosthesis	Yes	Plastic prosthesis	2 h	Pain, LBP	NA	50% of liver volume	NA	NA	Embolisation + PD	No

Table 1 (*Continued*)

Author	Age	Gender	Indication	Guidewire	ERCP	Start	Signs and symptoms	Clotting	Size (mm)	Haematoma infection	Antibiotic	Treatment	Death
Orellana et al.,[24] 2012	55	F	Dysfunction of bile duct prosthesis	Yes	Plastic prosthesis	NA	Pain	NA	30% of liver volume	NA	NA	Conservative	No
Bartolo-Rangel et al.,[25] 2012	62	F	Cholangitis	Yes	Sphincterotomy, extractor balloon	NA	LBP, anaemia	Normal	NA	NA	NA	Surgery	Yes
Patil et al.,[26] 2013	50	M	Cholangitis	Yes	Sphincterotomy, extractor balloon	48 h	Pain	NA	50 × 30	No	Yes	PD	No
Oliveira-Ferreira et al.,[27] 2013	84	M	Lithiasis	Yes	Extractor balloon	10 d	Pain, anaemia	Abnormal	90 × 100	Yes	Yes	PD	Yes
Fei et al.,[28] 2013	56	M	Lithiasis	Yes	Sphincterotomy, basket	2 h	Pyrexia	NA	130 × 60	NA	Yes	PD	No
Carrica et al.,[29] 2014	37	F	Lithiasis	Yes	Sphincterotomy	72 h	Pain, anaemia, pyrexia	NA	124 × 93	Yes	Yes	PD	No
Yoshii et al.,[30] 2014	86	F	Lithiasis	NA	Lithotripsy and extraction in 4 sessions	30 h	Pain	NA	NA	NA	Yes	Conservative	No
González-López et al.,[2] 2015	30	F	Benign choledochal stenosis	Yes	Sphincterotomy, choledochal dilation, biliary prosthesis	NA	Pain, anaemia, LBP	NA	NA	NA	NA	Surgery	Yes
Klìmovà et al.,[31] 2014	54	M	Pancreatic lithiasis	Yes	Biliary and pancreatic sphincterotomy	6 h	Pain, anaemia, LBP	NA	190 × 178 × 69	Yes	Yes	Embolisation + surgery + PD	No
Solmaz et al.,[32] 2016	55	M	Lithiasis	Yes	Sphincterotomy, extractor balloon	6 h	Pain	Normal	140 × 67	No	Yes	Conservative	No
Servide et al.,[33] 2016	83	M	Cholangitis	NA	NA	15 d	Pain	NA	NA	NA	NA	Conservative	No
Zizzo et al.,[5] 2015	52	F	Lithiasis	Yes	Sphincterotomy, nasobiliary drainage	24 h	Pain, anaemia, LBP	Normal	150 × 110	NA	NA	Embolisation	No
Zappa et al.,[34] 2016	58	F	Lithiasis	Yes	Sphincterotomy	12 h	Pain, anaemia, LBP	NA	140 × 60 × 190	NA	NA	Embolisation	No
Kilic et al.,[35] 2016	69	F	Lithiasis	NA	Sphincterotomy, extractor balloon, basket	12 h	Pain, LBP	Normal	40 × 20	Yes	Yes	Surgery + PD	No
Curvale et al.,[36] 2016	78	M	Choledochal adenoma	Yes	Sphincterotomy, extractor balloon, basket, polypectomy	1 h	Pain, anaemia, LBP	Normal	NA	NA	NA	Surgery	No
Fiorini et al.,[37] 2016	47	F	Lithiasis	Yes	Sphincterotomy, extractor balloon	8 h	Pain, pyrexia	NA	45 × 45	Yes	Yes	PD	No
Areopaja Escobar et al.,[38] 2016	47	NA	Lithiasis	Yes	Sphincterotomy + prosthesis	10 d	Pain	NA	NA	NA	Yes	PD	No
Tamez et al.,[39] 2016	25	F	Lithiasis	Yes	Sphincterotomy, extractor balloon	12 h	Pain, anaemia, LBP	Normal	152 × 104 × 36	NA	NA	Surgery	No
Present case 1	35	F	Lithiasis	Yes	Sphincterotomy, sphincteroplasty, extractor balloon	<12 h	Anaemia, LBP, drowsiness	Normal	140 × 45	No	Yes	Conservative	No
Present case 2	54	F	Lithiasis	Yes	Extractor balloon (sphincterotomy previously)	2 h	Pain, anaemia, LBP	Normal	100 × 120 × 190	No	Yes	Embolisation	No

CholangioCa: cholangiocarcinoma; ERCP: endoscopic retrograde cholangiopancreatography; d: days; h: hours; PD: percutaneous drainage; F: female; M: male; LBP: low blood pressure (hypotension); OLT: orthotopic liver transplant; NA: not available in the article.

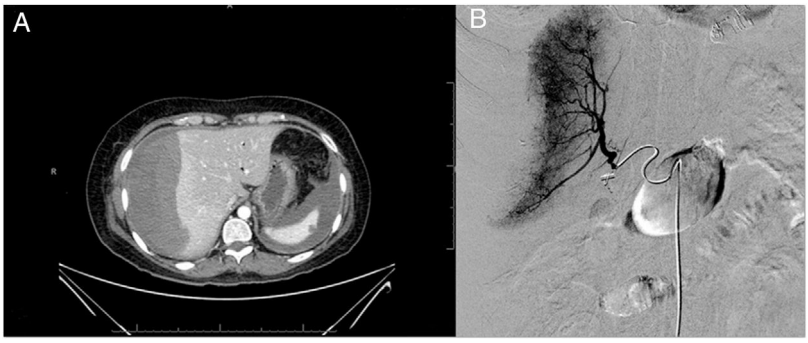

Figure 1 (A) CT: image showing subcapsular hepatic haematoma measuring 100 × 120 × 190 mm. (B) Arteriogram: treatment by vascular embolisation.

Up to 2016, 42 cases had been documented in the literature (Table 1). There are no significant differences in terms of gender or age, and choledocholithiasis is the most common indication. In most cases, the onset of symptoms occurs in the first 48 h and abdominal pain is the predominant manifestation. Management is usually conservative, with surgery required in less than 30% of cases. Morbidity and mortality rates may be overestimated given that the documented cases are probably more serious and many cases are paucisymptomatic.

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