Migrated Biliary Stent Predisposing to Fatal ERCP-Related Perforation of the Duodenum

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Abstract

ERCP may be associated with very serious and even fatal complications. Internal drainage with endoscopical prostheses has been used as a palliative treatment for malignant bile duct obstruction. We report a rare case of subcutaneous emphysema with a fatal outcome. The emphysema resulted from a perforation of a duodenal ulcer during ERCP due to a migrated biliary stent that had been previously endoscopically placed.

Key words
ERCP - biliary stent - duodenum perforation

Introduction

Endoscopic biliary stenting is the standard palliative treatment for patients with malignant bile duct obstruction (1). Endoscopic retrograde cholangiopancreatography (ERCP) is considered to be the most difficult, the most invasive and hazardous endoscopic procedure in gastrointestinal endoscopy, and is associated with potentially severe and sometimes life-threatening complications (2,3).

We present a rarely reported ERCP-related complication with a fatal outcome: subcutaneous emphysema resulting from the perforation of a duodenal ulcer during ERCP, due to a migrated biliary stent that had been previously endoscopically placed.

Case report

A 55 year old man, suffering from extensive cholangiocarcinoma with liver and lung metastases, underwent ERCP due to progressive obstructive jaundice. Despite the fact that a plastic stent was successfully placed through ERCP (Fig.1), jaundice persisted and prolonged hospitalization was necessary. The patient’s condition was stable and no clinical or laboratory evidence of peritonitis (i.e., no rebound tenderness, fever or leucocytosis) was detected or any other disorder requiring surgical intervention. Only mild abdominal distention and epigastric tenderness was noted. The X-ray control examination for the stent did not reveal free subdiaphragmatic or retroperitoneal air and excluded perforation. Due to persistent jaundice a second ERCP was requested. During the second ERCP, an active ulcer was observed in the duodenum with the stent stuck in it. Obviously, a stent migration had occurred. While endoscopic manipulations were being performed an abdominal distention was noted and subcutaneous emphysema rapidly developed. The patient became cyanosed, unconscious, and suffered respiratory arrest. He was intubated endotracheally and ventilated with 100% oxygen. Chest drainage was inserted immediately. X-ray examination confirmed subcutaneous emphysema (Fig.2). During the next few hours his condition deteriorated and he finally presented respiratory arrest and heart failure. He never recovered despite the multidisciplinary patient’s approach.
Discussion

ERCP even for diagnostic purposes maybe associated with very serious, even fatal complications (4).

Endoscopic biliary drainage through ERCP is a widely accepted therapeutic option in malignant biliary obstructions. However, the procedure is not free of complications. Perforation is one possible complication although it is rare (less than 1%), as well as pancreatitis (5.4%), or hemorrhage (2%) (5).

Perforation more commonly results from a sphincterotomy (a manipulation that was not performed in our case) and it is usually retroperitoneal (6). Subcutaneous emphysema and pneumomediastinum are uncommon but clinically impressive when present after retroduodenal perforation (7).

Morley et al presented a case of tension pneumothorax complicating a perforation of a duodenal ulcer during ERCP with sphincterotomy (8). Mergener et al reported a case of pneumoperitoneum complicating ERCP performed immediately after EUS-guided fine needle aspiration (FNA), resulting from insufflated air tracking through the FNA site (7).

In our case, perforation occurred at the site of the duodenal ulcer due to a stent migrating from the bile duct. Endoscopic manipulation and insufflated air might have moved the stent towards the ulcer resulting in rupture and perforation. No pre-cut sphincterotomy was performed. Air passed into the peritoneum and then into the thorax, leading to subcutaneous emphysema. At this point there is, always, the question whether if a metal stent had been placed during the first ERCP, probably, a second endoscopic procedure would have been avoided and all the aforemen-tioned consequences might have never taken place.

One report describes four cases of migrating stents, all of which necessitated surgical intervention. No emphysema was recorded and all patients recovered without problems (9).

One study reporting on ERCP related complications that occur during live endoscopy workshop demonstrations includes a case of a partial migration of a biliary stent without perforation (10).

Two cases of duodenal perforation due to an endoscopic biliary prosthesis were presented in one report, recently, but no subcutaneous emphysema was mentioned and laparotomy was performed on those patients afterwards (5). Other cases of subcutaneous emphysema have been reported complicating mainly laparoscopic cholecystectomies (11,12).

To the best of our knowledge this is the first report of a fatal outcome of an ERCP-related subcutaneous emphysema, as a result of perforation due to biliary stent migration.

Conclusion

Although some progress has been demonstrated in the area of biliary therapeutic endoscopy, ERCP related complications still may prove fatal and this is the message conveyed by this report. Prompt evaluation and awareness of potential complications should help capture potentially life-threatening sequelae of ERCP. It would be preferable to avoid repeated endoscopic manipulations especially, in multimorbid patients.

References

3. Freeman M. Adverse outcomes of ERCP. Gastrointest Endosc 2002;56: S273-282
8. Morley AP, Lau JY, Young RJ. Tension pneumothorax complicating a perforation of a duodenal ulcer during ERCP with endoscopic sphincterotomy. Endoscopy 1997; 29:332