Case Report

Pneumoperitoneum, Pneumoretroperitoneum and Bilateral Pneumothorax caused by ERCP

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Abstract

Endoscopic retrograde cholangiopancreatography (ERCP) is one of the mainstay procedure treatment of hepatobiliary and pancreatic diseases. Life-threatening complications such as pneumoperitoneum, pneumoretroperitoneum, pneumomediastinum, subcutaneous emphysema and pneumothorax related to this procedure rarely occur and only a few cases are reported in English literature. Herein, we report a patient who developed acute abdominal symptoms with subcutaneous emphysema and bilateral pneumothorax due to duodenal perforation, accompaniment of ERCP that was successfuly treated.

Introduction

Minimal invasive endoscopic procedures, which are increasingly being used, may bring along some complications along with many benefits. Endoscopic retrograde cholangiopancreatography (ERCP) is widely used for the treatment of diseases located in the biliary-pancreatic canal and the periampullary region.[1,2] The current study reports a case with life-threatening complications secondary to duodenal perforation after ERCP.

Case Presentation

A 62-year-old woman was referred to our hospital's emergency department with a sudden onset of dyspnoea and abdominal pain. She had a history of having undergone endoscopic retrograde cholangiopancreatography (ERCP) for obstructive jaundice in a medical center approximately ten hours ago. In the epicrisis report, it had been stated that a klatskin tumour had been observed and stenting had been performed of hepatic-biliary ducts by ERCP. On physical examination, she was found to be icteric with blood pressure and heart rate of 80/50mm Hg and 132 beats/min, respectively. Subcutaneous crepitations were palpable in cervical region, prestrenal area and on the back. On pulmonary auscultation, breath sounds were found to be decreased bilaterally and inspiratory crackles could be heard in the lung bases. Abdominal examination was significant, however, revealed sensation of discomfort. Whole blood count revealed hyperleucocytosis (14000/mm^3). Findings of the abdominal ultrasonography and abdominal x-ray were unremarkable. On a chest x-ray, bilateral pneumothorax in combination with diffuse subcutaneous emphysema was observed. Thoracic computerized tomography findings confirmed the diagnosis of bilateral pneumothorax in addition to mediastinal and subcutaneous emphysema (Figure 1). Abdominal computed tomography scan demonstrated pneumoperitoneum and

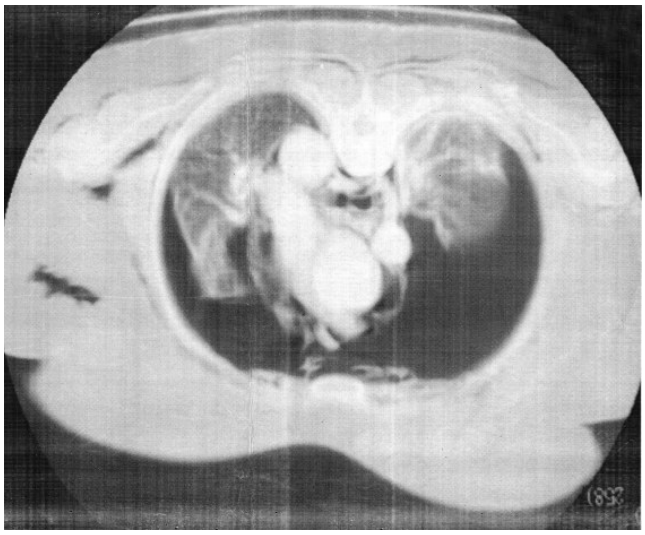

Figure-1: Thoracic computerized tomography revealing bilateral pneumothorax, in addition to mediastinal and subcutaneous emphysema.

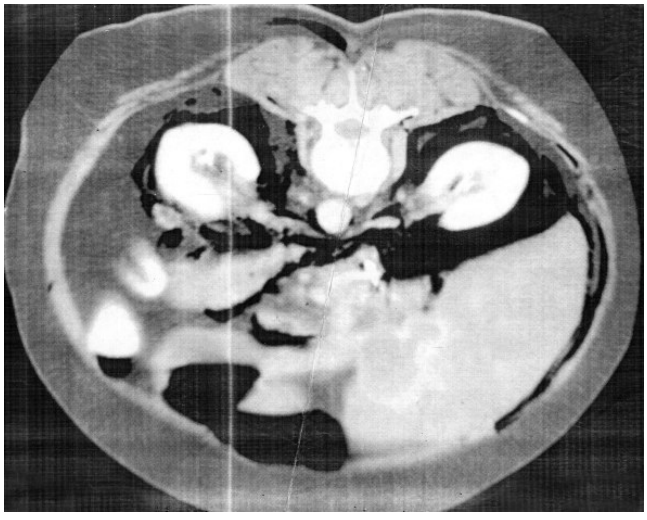

Figure-2: Abdominal computed tomography scan demonstrating pneumoperitoneum.

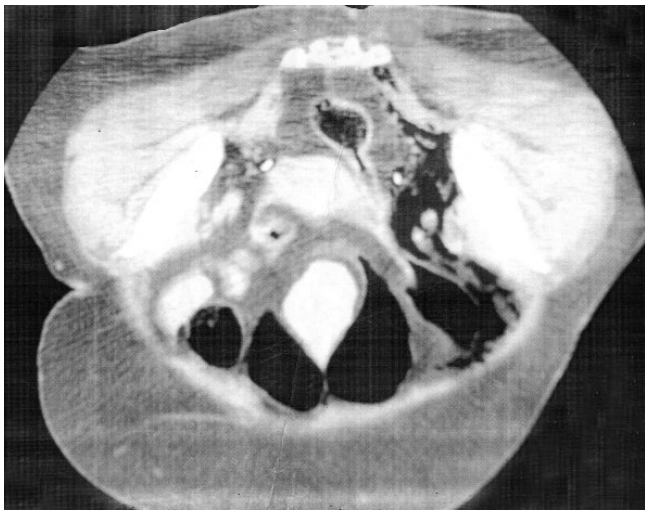

Figure-3: Abdominal computed tomography scan demonstrating pneumoretroperitoneum.

pneumoretroperitoneum (Figure 2 and 3).

The patient was admitted, bilateral thoracic tubes were inserted and tube drainage was performed. Endoscopy was performed in order to exclude a possible oesophageal perforation. The mucosal integrity of eosephageal mucosa was intact; a blood clot was observed in the stomach and the procedure was hence terminated. A decision of surgical exploration was made with the suspicion of ERCP related gastroduodenal tract perforation. Intraperitoneal and retroperitoneal air was observed during exploration. The duodenum was mobilized employing the Kocher's maneuvre. Two perforations were observed in the periampullary region, which were repaired and tube duodenostomy was performed. Pancreas was normal except for the tumour mass. The surgical procedure was terminated without any intervention to the inoperable Klatskin tumour. Postoperatively patient remained well and recovered smoothly.

Discussion

Pneumothorax, pneumomediastinum, pneumoperitoneum, pneumoretroperitoneum and subcutaneous emphysema after ERCP are rare complications.[3] Perforated viscus is a well-known complication of endoscopic sphincterotomy and is usually located in the retroperitoneal portion of the duodenum. Often the site of perforation is not identified with subcutaneous emphysema developing after diagnostic endoscopy.[4]

Air was observed both retroperitoneally and intraperitoneally following the perforation of duodenum in our patient. Retroperitoneal air may in turn, lead to subcutaneous emphysema and pneumothorax. Furthermore, intraperitoneal perforation may, although rare, also lead to pneumothorax.[3,4] Therefore, it is difficult to determine whether pneumothorax in our patient occurred as a result of retroperitoneal or intraperitoneal air.

The incidence of duodenal perforation following endoscopic procedures is reported to be 1-2%, while the mortality rate of this complication is estimated to be approximately 16-18 %.[1,2,5] Management of these patients may differ according to the medical priorities of patient. Patient may require urgent drainage with a thoracic tube depending on the presence and degree of pneumothorax. Subcutaneous emphysema is expected to improve with a thoracic tube. If the subcutaneous emphysema deteriorates despite a tube insertion, urgent intervention prior to surgical repair of the perforation may be required. Pretracheal faciotomy, a procedure performed for mediastinal and subcutaneous emphysema, may be considered. There was no increase in subcutaneous emphysema in our patient following insertion of a thoracic tube and she underwent laparotomy in a relatively stable condition.[3,4,6] The decision for a laparotomy is made according to abdominal signs and radiological findings consistent with perforation. Repair of perforation is carried out subsequently. Management of our patient was carried out in accordance with this traditional sequence. There are reports of cases which have been successfully managed non-surgically.[7,8]

Conclusions

Subcutaneous emphysema and bilateral pneumothorax are rare and life threatening complications of ERCP with unidentified mechanism and require an algorhythmic and systematic management. Therefore, in order to achieve the accurate diagnosis and provide the most appropriate therapy, a multi-disciplinary approach and collaboration of multiple departments are of great importance in the management of these patients.

References

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