Case Report

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The development of pneumobilia after blunt trauma

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ABSTRACT

Pneumobilia is the detection of gas within the biliary system. It usually develops after bilioenteric anastomosis, percutaneous or endoscopic biliary interventions, infections and abscesses. The treatment is surgical, especially in cases with no prior interventions to the biliary system. The development of pneumobilia is quite rare after blunt trauma. Therefore, both the diagnosis and management are challenging for surgeons. Herein, we present the diagnosis and conservative management of a patient with pneumobilia after blunt trauma.

Keywords: Blunt trauma, pneumobilia, conservative management

INTRODUCTION

Pneumobilia is defined as the presence of gas in the biliary system. It may be detected after biliary-enteric anastomoses, percutaneous (PTC) and endoscopic (ERCP) procedures (1). The presence of air in the biliary tract without any intervention suggests infection, abscess, or an abnormal connection between the biliary-enteric system and may require immediate treatment. Emphysematous cholecystitis, and pyogenic cholangitis are accepted as causes of infectious pneumobilia (2). Pneumobilia due to blunt abdominal trauma is a clinical situation that is encountered very rarely (3). Herein, we present a patient with blunt abdominal trauma-related pneumobilia that was detected by abdominal tomography, and was treated non-operatively.

CASE PRESENTATION

An 18-year-old male patient was admitted to the emergency department after falling from a tractor and the tractor's rear wheels crushing his hips. He had no additional diseases and drug use. The patient's abdominal examination was normal except minimal suprapubic tenderness. The pelvis was tender on compression. On abdominal computed tomography (CT), there were no signs of solid or hollow organ injury or intraabdominal free air; however, diffuse air was detected in intrahepatic bile ducts (Figure 1a, b). Computed tomography of the pelvis revealed multiple fractures in the sacrum, right acetabulum, right pubic rami and diastasis in multiple joints. The patient did not have a history of gallstone disease, and there were no stones in the gallbladder either on abdominal CT or ultrasound images. He was previously not exposed to any surgical or endoscopic procedures directed to the bile ducts. The patient was operated on by orthopedic surgery. He was followed-up by our clinic during his hospital stay, and his physical examination and laboratory findings remained normal. He was discharged uneventfully. The patient is under follow-up for the past 3 months without any complications.

DISCUSSION

Pneumobilia is a rare condition indicating a passage between the gastrointestinal and biliary systems. This is often perceived as a serious intra-abdominal pathology that requires laparotomy. The most common causes are gallstone disease and consequent biliary-enteric fistula, and biliary tract surgery. In the literature, the incidence of gallstone-induced biliary-enteric fistula has been reported as 0.4-3.5%, and it is stated that pneumobilia can be detected in about 50% of these patients (1). Pneumobilia may also be associated with ERCP, emphysematous cholecystitis, pyogenic cholangitis, and incompetent Oddi sphincter. The most common cause of pneumobilia in the absence of previous biliary surgery or biliary-enteric fistula is an incompetent Oddi sphincter.

A case of retrograde pneumobilia due to intestinal obstruction in a patient without any history of previous surgery or biliary-enteric fistula has also been reported in the literature (4). Pneumobilia due to blunt abdominal trauma is extremely rare (2, 5, 6). Only a limited number of such cases have been reported in the literature. The pathophysiology was described as the passage of air within the proximal enteral loops to the sphincter of Oddi and biliary system in a retrograde manner with increased intra-abdominal pressure, by Gering et al. (5). Besides blunt abdominal trauma, Ladurner et al. (3) reported a case of pneumobilia after cardiopulmonary resuscitation (CPR). In that patient, CPR has been performed for 3 minutes for sudden cardiac arrest in a patient who had been followed-up due to trauma. There was no pneumobilia on the

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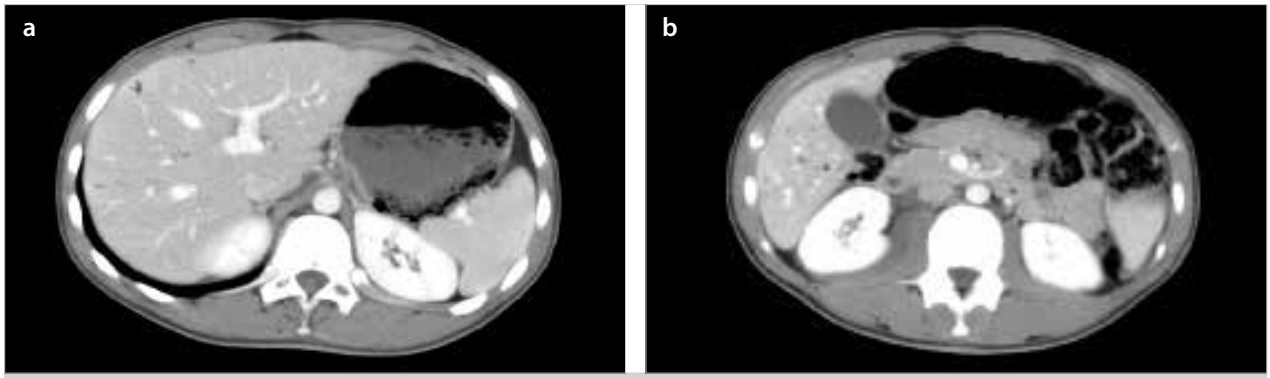


Figure 1a,b. Image of diffuse air within intrahepatic bile ducts

abdominal CT images obtained prior to the cardiac arrest, while pneumobilia was identified in the second CT image set after the CPR. This situation was thought to be due to the retrograde passage of air into the the biliary system due to the increased intra-abdominal pressure during CPR.

Pneumobilia may be detected in plain X-ray, but CT and magnetic resonance imaging (MRI) views are more selective (2, 6). The diagnoses of patients presented in the literature were all made by CT images (7, 8). Similarly, in our case, the presence of diffuse air within intrahepatic bile ducts was observed on abdominal CT images.

It is difficult to make a definite treatment recommendation due to the limited number of cases. In the study containing the maximum number of cases reported in the literature, Barnes et al. (6) reported that they had a different approach in all 3 cases of pneumobilia due to blunt abdominal trauma. They performed laparotomy due to pneumobilia to the first case, and the intra-abdominal organs were found to be intact. In the second patient, they performed duodenoscopy to rule out a possible duodenal injury and have determined that the duodenum was normal. They managed the third patient conservatively, and reached the conclusion that isolated pneumobilia can be treated conservatively. Bautista et al. (4) have found that pneumobilia due to high proximal small bowel obstruction regresses spontaneously with non-operative management by nasogastric decompression. We believe that in our patient the pneumobilia resulted from retrograde Oddi sphincter dysfunction due to increased intra-abdominal pressure.

CONCLUSION

Conservative management without surgery seems to be the most appropriate method in the treatment of pneumobilia in hemodynamically stable patients with isolated pneumobilia and those without additional radiologic findings and clinical signs.

Informed Consent: Verbal informed consent was obtained from patient who participated in this case.

Peer-review: Externally peer-reviewed.

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REFERENCES

1. Yamashita H, Chijiiwa K, Ogawa Y, Kuroki S, Tanaka M. The internal biliary fistula--reappraisal of incidence, type, diagnosis and management of 33 consecutive cases. HPB Surg 1997; 10: 143-147. [CrossRef]
2. Thompson RJ, Irwin T. Pneumobilia following blunt abdominal trauma. Ir J Med Sci 2007; 176: 313-315. [CrossRef]
3. Ladurner R, Kotsianos D, Mutschler W, Mussack T. Traumatic pneumobilia after cardiopulmonary resuscitation. Eur J Med Res 2005; 10: 495-497.
4. Bautista JL, Budhraja MD, Barcia TD, Shankel SW. Pneumobilia associated with small-bowel obstruction. JAMA 1988; 260: 1930-1931. [CrossRef]
5. Gering SA, Foster MA, Harnisch MC, McNeil JJ. Traumatic pneumobilia: case report. J Trauma 2001; 51: 391-394. [CrossRef]
6. Barnes SL, Badrudduja M, Bernard AC, Boulanger BR. Pneumobilia after blunt trauma: a self-limited condition? J Trauma 2006; 60: 637-639.
7. Yıldız F, Coban S, Terzi A, Cece H, Uzunkoy A. An uncommon cause of pneumobilia: blunt abdominal trauma. Ulus Travma Acil Cerrahi Derg 2011; 17: 363-364. [CrossRef]
8. Fatin RP. Trafik kazası sonrası izole pneumobilia: Olgu sunumu. Bozok Med J 2014; 4: 75-77.