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Case Report

SPONTANEOUS PNEMOPERITONEUM AFTER BLUNT TRAUMA CHEST: A CASE REPORT

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ABSTRACT

Pneumoperitoneum is a striking feature of hollow viscous perforation and may need immediate surgical intervention. Pneumothorax and pneumoperitoneum with presence of abdominal contusions make the surgeon in dilemma for choosing conservative or therapeutic approach

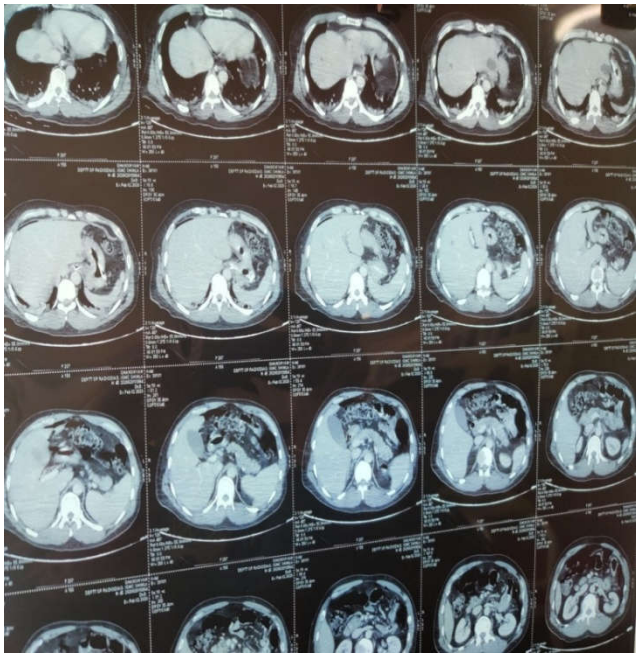
INTRODUCTION

Pneumoperitoneum is a condition in which there is an abnormal collection of air in the peritoneal cavity. It results from a perforated hollow viscous in 90% of the cases and requires immediate surgical intervention [1]. After blunt trauma chest Spontaneous/idiopathic pneumoperitoneum is rare. It is usually diagnosed after negative laparotomy.

CASE REPORT

A 45-year male patient presented to emergency surgery department after road side accident. He presented with respiratory distress, multiple abrasions over right half of chest and abdomen. His glasgow coma scale was 15/15, pulse rate was 110 per minute, and Blood pressure was 92/64mm Hg, respiratory rate was 30/minute and oxygen saturation was80 % with 6 liters of oxygen. On Chest auscultation there was crepitus on right side with diminished breath sound at right infrascapular and midaxillary region. On palpation there was Generalised abdominal tenderness with obliteration of liver dullness. On auscultation Bowel sound were sluggish. Pelvic compression test was negative and examination of Spine was normal. Patient resuscitated and X-ray chest done. It showed fracture of 7th 8thrib on right side with pneumothorax. Inter Costal Tube Drainage done on right side. After fluid resuscitation and intercostal tube placement, vitals of patient improved with Oxygen saturation increased up to 98%.

Abdominal X ray showed gas under both the dome of diaphragm. Gross pneumoperitoneum, minimal fluid in right sub diaphragmatic region was seen in CECT Abdomen. Exploratory laparotomy was done. There was Blood tinged fluid present at right sub diaphragmatic region. Liver, spleen, bowel loops were found to be normal.



CECT Abdomen Showing Pneumoperitoneum

The stomach and duodenum were fully mobilized, and the lesser sac explored. No perforation found in the distal esophagus, stomach or duodenum. No rent/ tears detected in diaphragm. Abdomen closed and patient shifted to ICU. Post-

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operatively patient gradually improve and postoperative period was uneventful. Chest and abdominal X-raysdone and the sub diaphragmatic air and pneumothorax disappeared. Chest tube removed and on 8th postoperative day patient discharged.

DISCUSSION

In trauma patients Pneumoperitoneum reliably indicates gastrointestinal perforation in 90 % of cases and usually requires exploratory laparotomy [1]. The remaining 10% of cases are attributable to a variety of non-pathologic causes that result in free sub diaphragmatic air but may not require surgical intervention and these cases have been referred to as "idiopathic" or "spontaneous" Pneumoperitoneum. These cases generally can be attributed to some of the benign causes. The common causes are air leakage from pneumatosis cystoides intestinalis, a small perforated duodenal ulcer, a leak from a colonic diverticulum, insufflations of air through the female genital tract, chronic obstructive pulmonary disease, cardiopulmonary resuscitation, or mechanical ventilation [1,2] , several thoracic causes, such as traumas, pneumothorax and bronchoperitoneal fistulas [2]. Air can reach the peritoneal cavity in both blunt and penetrating chest traumas, following normal or abnormal pathways, i.e., diaphragmatic interruptions in the former case and congenital defects or post-traumatic diaphragmatic injuries in the latter case [3,4]. Complications from missed intra-abdominal injuries can be disastrous. It has been proposed that in polytrauma cases with combined pneumothorax and pneumoperitoneum, a clinical/subclinical visceral perforation may have occurred, permitting only the leakage of air and not of bowel contents [5].Due to fear of missed abdominal injury explotatory laparotomydone for the present case and exploration of hollow viscera and diaphragm did not show any injury or perforation. Pneumoperitoneum in this case can be due to very high intrathoracic pressure following the initial impact caused pneumothorax and pneumomediastinum, leading to dissection of air through the mediastinum into the retro- peritoneum and, finally to the peritoneal cavity [5]. Very high intrathoracic pressure is required to cause dissection of air through the retroperitoneal space [6]. Pneumomediastinum and then pneumoperitoneum due to trauma occurs in up to 10% of cases of blunt chest trauma. It is due to air leaking from ruptured alveoli which collects in the interstitial space in more than 95% cases. As intrathoracic pressure increases, the air dissects along the sheath of adjacent vessels into the mediastinum. The air can then dissect into various spaces, including the pleural space and along the thoracic great vessels and esophagus into the retroperitoneum, where it may rupture into the peritoneal cavity and cause Pneumoperitoneum. This pathophysiologic process was first described by Macklin in 1939 and now called as Macklin effect [7]. Asanza –Llorent *et al* reported study of two cases of pneumoperitoneum following blunt chest and abdominal trauma.

In both patients laparotomy did not show bowel perforation and conservative treatment could have been provided [8]. There is a dilemma for surgeons to intervene the abdomen in X-ray and CT showing Pneumoperitoneum in traumatic patients with concurrent pneumothorax. The findings of free fluid in peritoneal cavity, mesenteric or bowel wall thickening mandate surgical emergency. If ultrasound abdomen, CT abdomen findings are questionable and surgeon wants a conservative treatment, then serial examinations of the abdomen, frequent laboratory examinations, and constant monitoring of vital signs must be undertaken. Diagnostic laparoscopy may be an alternative in high index of suspicion. Masayoshi etal suggested the criteria for non surgical approach in a setting of pneumoperitoneum are (a)thorough physical examination (b)no peritoneal signs (c)pneumothorax (d)negative DPL (e) no intraperitoneal effusions in USG /CT (f) closed observation and repeated examination (g)absence of major brain injury, or altered sensorium (9).

CONCLUSION

Complications from missed intra-abdominal injuries can be disastrous for patient. Patients with suspicion of intra-abdominal injuries should be explored immediately in emergency. Poly trauma patient with pneumoperitoneum and deteriorating vitals should be explored immediately to save patient life.

References

1. Sabsovich I, Desai R, Alba R, Jose Yunen and David Sammett (2008) Idiopathic pnemoperitoneum after blunt chest trauma. Surgical Rounds 31: 4.
2. Mularski RA, Ciccolo ML and Rappaport WD (1999) Nonsurgical causes ofpneumoperitoneum. .West J Med. 170: 41- 46.
3. Catalano O (1995) Pneumoperitoneum caused by thoracic injury. Radiol med. 89: 72-75. 4. Kane NM, Francis IR, Burney RE, Wheatley MJ, Ellis JH, *et al*. (1991) Traumatic pneumoperitoneum: implications of computed tomography diagnosis. Invest Radiol 26: 574–578.
4. Gantt Cb Jr, Daniel WW, Hallenbeck GA (1977) Nonsurgical Pneumoperitoneum. Am j surg 134: 411-414
5. Glauser FL, Bartlett RH (1974) Pneumoperitoneum in association with pneumothorax.Chest 66: 536-540
6. Assenza M, Passafiume F, Valesini L, Centonze L, Romeo V, *et al*. (2012) Pneumomediastinum and Pneumoperitoneum after Blunt Chest Trauma: The Macklin Effect. J Trauma 1.
7. Asanza-Llorente JA, Quesada-Peinado MC, Díaz-Oller J, Moreno-Montesinos JM and Medina-Domínguez MT (2007) Pneumoperitoneum in polytraumatized patients without perforated hollow viscera. Cir Esp 82: 364-366.
8. Nishina M, Fujii C, Ogino R, Kobayashi R, Kohama A (2000) Pneumoperitoneum and pneumoretroperitoneum in blunt trauma patients. J Trauma 49: 565–566

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