

## Case Report

# A Rare Case Of Ruptured Liver Abscess Manifested As Pneumoperitoneum- Case Report And The Review Of Literature

Krishna Prasad K<sup>1\*</sup>, Dharmendra Kumar<sup>2</sup>, Nawaz Shariff.A<sup>3</sup>, Suma<sup>2</sup>

1. Professor, Department of General Surgery
2. Postgraduate, Department. of General Surgery
3. Senior resident, Dept. of General Surgery, Sri Devaraj Urs Medical College, Tamaka, Kolar, Karnataka

## Abstract

The presence of free air within the peritoneal cavity is known as pneumoperitoneum. In 85% to 90% of cases pneumoperitoneum is due to perforated bowel of various aetiology which includes perforated peptic ulcer, typhoid, trauma, perforated tumour etc. We are reporting is a rare case of pneumoperitoneum resulting from a ruptured liver abscess in a young male with no comorbidity. A 28 year old male presented to the casualty of RL Jalappa Hospital and Research Centre with diffuse pain abdomen. Clinically it was suspected as peritonitis secondary to hollow viscus perforation. Erect abdomen X-Ray showed air under diaphragm. Exploratory laparotomy was performed. On table it was found to be a case of ruptured liver abscess for which marsupialization and thorough peritoneal lavage was given. Culture of the pus from the liver abscess revealed Klebsiella sensitive to Piperacillin and Tazobactam, and antibiotic treatment was administered. **Conclusion:** Although pneumoperitoneum resulting from a ruptured liver abscess is rare, it must be kept in mind as a possible source, especially when the hollow organs are normal.

**Key words:** Ruptured abscess, Pneumoperitoneum, Klebsiella, Erect Abdomen X-ray

## Introduction

The presence of free air within the peritoneal cavity is known as pneumoperitoneum. In 85% to 90% of cases pneumoperitoneum is due to perforated bowels of various aetiology which includes perforated peptic ulcer, typhoid, trauma, perforated Tumor etc. It can also occur from rupture of an abscess in an intra-abdominal solid organ, such as spleen or liver. [1] In about 10% of cases of pneumoperitoneum surgical intervention is not required. The rare case of pneumoperitoneum is reported here resulting from a ruptured liver abscess in a young male without any associated comorbidity.

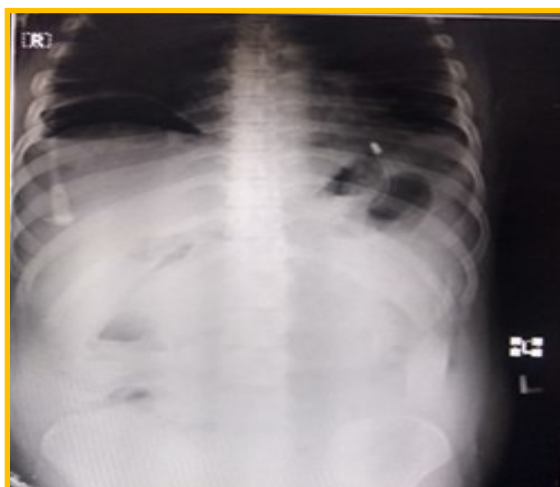
## Case Report

A 28 year old male patient presented to the casualty of RL Jalappa Hospital and Research Centre, Kolar with a complaints of pain abdomen since 20 days, which aggravated in last 24 hours, pain was insidious in onset, initially pain was on the right side of hypochondrium, it was on and off and became diffuse from and was severe in intensity. Patient also complained of vomiting previous day, patient had 4-5 episodes of vomiting, vomitus was non bilious and non-blood tinged. Patient also complained of fever on and off. It was of low grade, insidious in onset and was not associated with chills and rigors. On examination patient was dehydrated with feeble pulse and blood pressure of 80/60 mm of Hg. Fluid challenge was given and patient condition was stabilized. Erect abdomen X-Ray showed air under diaphragm. USG abdomen and pelvis was done which showed hepatomegaly with moderate amount of peritoneal collection. On USG guided

### \*Corresponding Author

Dr. Krishna Prasad K  
Professor, Department of General Surgery,  
Sri Devaraj Urs Medical College, Tamaka, Kolar,  
Karnataka, India.  
E-mil: kamishettykp63@gmail.com

tapping purulent content of the peritoneal collection was noted. Patient was planned for the exploratory laparotomy and proceed. Other blood investigation were within normal limit except for renal parameters which was increased dehydration. During exploratory laparotomy it was found that abscess in the right lobe of liver was ruptured with about 2000ml of seropurulent content. Thorough peritoneal lavage was given pus was sent for the culture sensitivity report. Post operatively patient developed respiratory distress for which supportive care was given. Culture Sensitivity of pus report showed Klebsiella sensitive to Piperacillin and Tazobactam. Patient was treated with the sensitive antibiotic and his condition improved symptomatically.



**Fig 1.** Erect Abdomen X-Ray showing air under diaphragm



**Fig 2.** Intra operative finding showing ruptured liver abscess

## Discussion

Ochsner and DeBaakey, in their classic paper on pyogenic liver abscess in 1938, described 47 cases and reviewed the world literature. This was the largest experience at that time and the first serious attempt to study this disease. More recent studies from the 1980s through the 2000s have suggested a small but significant increase in the incidence of pyogenic liver abscess to as high as 22/100,000 hospital admissions. Common causes of liver abscess are diseases of the biliary system, a portal venous source arising from intestinal pathology, embolization of bacteria during hepatic surgery, and trauma but in 15% to 45% of cases it is cryptogenic where no cause is identifiable. Most are single and insidious in onset, as the case reported here. In approximately 40% of cases hepatic abscesses are polymicrobial. Anaerobic organisms are involved in approximately 40% to 60% of the cultures, the most common organisms being *Escherichia coli* and *Klebsiella pneumoniae*. For reasons that are not entirely clear, *Klebsiella pneumoniae* is the most commonly isolated pathogen in pyogenic liver abscesses in Taiwan, particularly among patients with diabetes mellitus. *Klebsiella* is frequently associated with gas forming abscesses, as in the present case, where rupture of the abscess resulted in pneumoperitoneum. The microbiology of pyogenic abscesses depends on the initial source of infection, and apart from *Escherichia coli*, the other pathogens commonly isolated includes *Enterococcus* spp., particularly *Enterococcus faecalis*, *Streptococcus viridans*, *Bacteroides* and sometimes *Staphylococcus aureus*. The essential element to establish the diagnosis of hepatic abscess is radiographic imaging.

Chest x-rays are abnormal in approximately 50% of the time, with findings reflecting subdiaphragmatic pathology, such as an elevated right hemidiaphragm, right pleural effusion or atelectasis. Occasionally, there may be left-sided findings in the case of an abscess in the left lobe of the liver. Pneumoperitoneum is a rare radiological finding in the case of liver abscess. It usually results from the perforation of an intraperitoneal hollow organ, in which case it is considered a

surgical emergency (in 85% to 90% of cases). Only about 10% of pneumoperitoneum have “nonsurgical” causes, for which surgical intervention is usually not required. These include thoracic causes (e.g., chronic obstructive pulmonary disease, pneumothorax), abdominal causes (connective tissue disease, subclinical or sealed perforated viscus), gynecological causes (e.g., pelvic inflammatory disease, recent vaginal examination, gynecological manipulations) and iatrogenic causes (e.g., previous open abdominal surgery with retained postoperative air, peritoneal dialysis, endoscopic gastrointestinal procedures). Pneumoperitoneum may result from rupture of an abscess in any intra-abdominal solid organ such as spleen and liver. The present case of pneumoperitoneum from rupture of pyogenic liver abscess in the liver is unusual.<sup>[7]</sup>

Chou<sup>[2]</sup> reported that gas forming pyogenic liver abscess accounted for 10% to 20% of pyogenic liver abscess. Morioka et al<sup>[3]</sup> reviewed the literature and reported 27 cases of gas containing pyogenic liver abscess in Japan. Chung-Hunk-Nee and Ukikasa<sup>[4]</sup> also described similar case. Matsuyama<sup>[5]</sup> reported a case of pneumoperitoneum resulting from a ruptured liver abscess with an unusual gas shadow in the right upper quadrant of the abdomen which was overlooked on admission. Yen chun lai also reported that ruptured hepatic abscess mimicking perforated viscus.<sup>[6]</sup> Treatment of hepatic abscess should include a multidisciplinary team approach, ideally involving surgery, interventional radiology, and infectious disease specialists. Main treatment goals include drainage of the abscess and antibiotic eradication of the pathogen. Initial emergency management should be followed by a goal-directed sepsis protocol, if indicated. Early broad-spectrum antibiotic therapy should be aimed at the most commonly responsible organisms. After obtaining the Antibigram pattern from the pus, appropriate antibiotics should be started without any delay. There have been multiple antibiotic regimens described but most often should include an extended spectrum B-lactam, or combination of a third generation cephalosporin or fluoroquinolone and metronidazole. Of course, local resistance patterns should be considered when initiating antibiotic therapy.

Drainage technique may vary depending on surgical expertise and availability of interventional radiology. Some advocate that large abscesses such as those greater than 5cm may benefit from open surgical drainage. Percutaneous drainage by either ultrasound or CT guided is ideal for most other abscesses.

## Conclusion

In conclusion, we are aware that not every case of pneumoperitoneum is attributable to a perforated hollow viscus. Additionally, a ruptured hepatic abscess is more life-threatening than an unruptured one. A rapid accurate diagnosis and prompt surgical intervention is essential for life saving of an individual with pneumoperitoneum

## References

1. Kumar N. Ruptured liver abscess presenting as pneumoperitoneum. *Hellenic J Surg* 2017;89:172-74.
2. Chou FF, Sheen-Chen SM, Chen YS, et al. The comparison of clinical course and results of treatment between gas forming and non-gas forming pyogenic liver abscess. *Arch Surg* 1995;130:401-5.
3. Morioka T, Makino H, Takazakura E. Two cases of gascontaining liver abscess: Review of the Japanese literature. *Nihon ShoukaiyouGakkaiZasshi (Jpn J Gastroenterol)* 1991;88:2691-6.
4. Ukikasu M, Inomoto T, Kitai T. Pneumoperitoneum following the spontaneous following the spontaneous rupture of a gas containing pyogenic liver abscess: Report of a case. *Surg Today* 2001;31:76-9.
5. Matsuyama S, Satoh H, Yunotani S. An unusual presentation of spontaneous pneumoperitoneum secondary to the rupture of a gas containing pyogenic liver abscess: Report of a case. *Surg Today* 1994;24:63-6.
6. Yen-Chun Lai, Yu-Jang Su, Wen-Han Chang. Ruptured hepatic abscess mimicking perforated viscus. *Ijid* 2008;12:e95-7
7. Sabiston Textbook of surgery 20<sup>th</sup> ed.