

**CASE REPORT**

Tension Pneumothorax Following Open Cholecystectomy Under General Anaesthesia

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Abstract

We report a case of tension pneumothorax developing in the immediate post operative period following open cholecystectomy.

Key Words

Tension pneumothorax, Post-operative

Introduction

Pneumothorax complicating anaesthesia is relatively uncommon and precise data describing it are not available. A specific problem related to Pneumothorax is development of Tension Pneumothorax in which air enters the intra-pleural space but cannot leave it. It may arise spontaneously or during anaesthesia, especially when intermittent positive pressure ventilation is used. Once a tension pneumothorax is suspected, percussion of the chest will usually reveal the side which is affected. It requires immediate insertion of chest tube to prevent compression of lungs, hypercarbia and low cardiac output. We report a case of tension pneumothorax developing in the immediate post operative period following open cholecystectomy.

Case Report

A 60 year old female patient was admitted in SKIMS in Dept. of General Surgery with symptoms of epigastric pain associated with vomiting. An ultrasonography report confirmed a diagnosis of Cholelithiasis - a single large stone sitting near the Hartmans Pouch. She was a known hypertensive, controlled on Tab. Enalapril 5mg OD. She did not give any history or symptoms of any other systemic diseases. Her weight was 72 Kg and height of 5ft and 1" qualifying her as Obese. Her preoperative-general physical condition was normal along with normal investigation reports. In Pre-Anesthesia Clinic she was given a category of ASA-2, and was posted for Open

Cholecystectomy under GA.

A day before surgery she was given premedication for overnight sedation with Tab. Diazepam 5 mg. Induction of Anaesthesia was done with Inj. Sodium Thiopentone 5mg/kg and Inj. Suxamethonium 1.5mg / kg. Inj Morphine 0.1 mg/kg was given for analgesia. Intubation was done with Portex PVC, ETT size 7.0 mm ID with help of Gum Elastic Bougie as there was difficulty in intubation. International -II Boyles Anaesthesia Machine with Bains Co-axial circuit was used. Monitoring included continuous EKG trace, Noninvasive BP and Pulse-Oximetry. Maintenance of Anaesthesia was carried out with Inj. Pancuronium 0.08 mg / kg and flows of 40 % O₂ and 60 % N₂O. with Tidal volumes of approximately 500ml were given using Manual Positive Pressure Ventilation.

The course of procedure remained uneventful - An Open cholestostomy was performed. There were adhesions around the Gall Bladder. The Pt. developed mild airway spasm at intubation which resolved by itself. Intra-Op vitals remained stable with HR in the range of 67- 112 and NIBP in the range of systolic-110 to 138 and diastolic in the range of 68 to 98 mm Hg. SaO₂ remained in the range of 94 to 97 %.

At the end of surgical procedure patient was given the reversal drugs - Inj. Neostigmine 60 mg / kg and Inj. Atropine 20 mg /kg. Patient developed good respiratory

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effort, gained consciousness and the patient was extubated. 100% Oxygen was given but within a minute the patient developed bradycardia - 58/min with blood pressure dropping down to 90 / 60 mm Hg. The Pt. became dusky, with SaO₂ dropping down to 44%. Inj. Atropine increments were given to resolve bradycardia. Patient developed discordant breathing with the color remaining dusky. Auscultative findings showed almost no air entry in right side of the chest. Patient was kept in operating room and 100% Oxygen was given.

Initial management was continued in Operating room as described above and Inj Aminophylline 0.5 mg/ kg / hr. and Inj Hydrocortisone 100 mg was given. Slight chest percussions were given to the patient thinking of a possibility of mucus plug. Oxygen saturation of the patient came upto 55% and the patient continued to have dusky color and laboured breathing with no air entry on the right side of the chest. Suspicion of Pneumothorax was considered, and an urgent CXR was done. The CXR obtained at that time showed Pneumothorax on the right side. Immediately a Rt. Thorocostomy was done in 5th ICS along the mid-axillary line and the Chest Tube was connected to an under water seal. At the time of thorocostomy a gush of air was felt coming from the pleural space confirming the impression of Tension Pneumothorax. Within a few minutes the air entry improved on the right side along with the patients Oxygen saturation and hemodynamics. The breathing became more regular and the patient started feeling much more comfortable. The chest tube was finally removed after a week.



Fig. 1. CXR AP-Showing right sided Pneumothorax

Discussion

Pneumothorax can occur due to intrapulmonary alveolar rupture, injury to visceral pleura, injury to parietal pleura [1]. Tension pneumothorax should be suspected during anesthesia if inflation becomes increasingly difficult and the patients condition steadily deteriorates. Very occasionally a tension pneumothorax may be bilateral, [2, 3], so that this possibility must always be borne in mind and the situation confirmed with CXR as soon as possible.

Bucking on the tracheal tube at the end of surgery can lead to very high airway pressure and may be responsible for the leak of air or gas into the pleural space. This in combination with intermittent positive pressure ventilation during anesthesia can lead to life threatening tension pneumothorax. Administration of Nitrous Oxide in such patients can also result in rapid deterioration.

Intraoperative pleural trauma can result in pneumothorax that develops slowly and first present as restlessness in post operative period. Tension Pneumothorax occurs when air enters the pleural space during inspiration, but owing to ball-valve action cannot escape during expiration. The most reliable signs of tension pneumothorax are tachycardia, decreased breath sounds, hyperresonance, and hypotension associated with rise in PaCO₂, and falling PaO₂.

Pneumothorax in the post operative period needs to be differentiated from bronchospasm, pulmonary edema, pulmonary embolism and pulmonary aspiration. Rapidly deteriorating general condition inspite of ventilation with 100% oxygen in the postoperative period after general anesthesia and in the absence of a predisposing cause should alert the anesthetist to the possibility of tension pneumothorax. The standard emergency treatment in these cases is a wide bore needle placement in midclavicular line in 2nd ICS or if possible immediate tube thorocostomy (4).

References

1. Atlee J, Alayne L. Complications in Anesthesia. 6th ed, W.B. Saunders Company. (1999) pp. 254.
2. Patkar J. Bilateral Tension Pneumothorax and Massive Surgical Emphysema During Anaesthesia. *Ind J Anaesth* 2004; 48 (3) :221-223.
3. Rastogi PN, Wright JE. Bilateral tension pneumothorax under anaesthesia. *Anaesthesia* 1969; 24(2): 249-252.
4. Bilateral Tension Pneumothorax. Available at <http://www.emedicine.com/MED/topic/2793.htm>, Section 6 accessed on, Oct. 2005.