

CASE REPORT

Empyema Thoracis - Anaesthetic Management

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ABSTRACT

Empyema is one of the oldest recorded illnesses, in human beings. Thoracoscopic surgery has become a clinical reality because of the recent advances in both surgical and anaesthetic techniques. The anaesthetic management of thoracoscopic procedure poses a number of serious challenges. The severity of the underlying disease process and the associated hazards of the surgical procedure itself, may compromise the safety of the patient. A case of post tuberculous empyema is presented with a view to stress on the importance of specialized care required in such cases.

Key Words: Empyema thoracis, Double lumen tubes.

INTRODUCTION

While thoracoscopy permits a less invasive approach to surgical disease of the chest, the anaesthetic requirements necessary to provide optimal operating conditions without compromising patient safety often can be more demanding than those required for thoracotomy.

Regional anaesthesia in awake, sedated, spontaneously breathing patients has been used to perform limited thoracoscopic procedures. However, most patients managed with such techniques had tachypnoea, tachycardia, respiratory alkalosis, and decreased oxygen saturation. The technique is uncomfortable for the patient as well as the surgeon, and the anaesthesiologist in charge has little control over the course of events.

Potential disadvantages include the need for patient cooperation, the inability to administer 100% oxygen (FiO₂) and the difficulty associated with emergently securing the airway should the patient go into respiratory failure or urgently require a thoracotomy. The ability to deflate the lung on the operative side in awake, spontaneously breathing patients certainly is less reli-

able than with the use of double-lumen endotracheal tubes (DLT's). Procedures that stimulate coughing or risk soiling the contralateral lung are best performed under general anaesthesia.

CASE REPORT

A 19 years old girl was referred to one of our chest surgeons with six weeks history of high-grade fever, cough and breathlessness. She was a diagnosed case of pulmonary tuberculosis for which she was having irregular treatment. On examination she was febrile (101OF) with heart rate of 120/min. Chest examination revealed no air entry on right Side. X-ray chest confirmed hydropneumothorax Rt. Post tuberculous empyema Rt was diagnosed, immediate chest intubation was performed and 500 ml of pus was drained. Chest tube was left in place and about 300 ml pus was drained through it daily. Her condition gradually deteriorated and the right lung remained quite for another five days.

Thoracoscopic washing of right chest was planned under general anaesthesia.

On the day of surgery patient was pre-oxygenated with 100% oxygen for about five minutes and anaesthesia was induced with Pentothal sodium (5mg/Kg IV). A disposable single lumen Portex endotracheal tube of size 7.5 mm was facilitated under the effects of suxamethonium. Anaesthesia was maintained with oxygen and nitrous oxide 50% each with 0.5% of halothane. Pancuronium was used for relaxation and IPPV continued. Patient's condition was monitored with DINAMAP and pulse oximetry.

Patient was placed in left lateral position, thoracoscope introduced by the surgeon and washing started with normal saline.

Near the end of the procedure, increased airway resistance was felt in the ventilating bag. SpO₂ gradually decreased and continued declining. In a few mo-

ments it became very difficult to ventilate the patient. All anaesthetics were switched off and the patient was ventilated with 100% oxygen. A rapid check was made of the breathing circuit, connectors and endotracheal tube for any sort of kinking or blockade. There was no kinking. The surgeon was cautioned, the breathing circuit disconnected from ETT and suction applied to the tube. About 50 ml of blood stained fluid was sucked out. While continuing ventilation the patient was immediately placed in supine position and the ETT maneuvered into the left main bronchus. After giving few puffs of oxygen the left main bronchus was also sucked through ETT with a small bore catheter. The surgeon was asked to perform bronchoscopy to clear the left bronchus of any clots/ debris or thick fluid. Rigid bronchoscopy was done, the left main bronchus cleared of blood stained fluid, and was washed with normal saline. The bronchoscope was withdrawn replacing it with an endotracheal tube. The patient was ventilated with 100% oxygen. The thoracoscopic opening was closed and the residual effects of the relaxant were reversed with atropine and neostigmine.

Post operatively patient remained tachypnoeic and could not maintain her saturation. She was shifted to the intensive care unit with ETT and placed on ventilator using assist control mode ventilation. Patient was nebulised and given a good antibiotic cover. She was ventilated for 12 hours, using FiO₂ of 50-40% and remained haemodynamically stable. After 12 hour her tachypnoea settled with ABGs showing an almost normal acid base status. She was removed from ventilator

and extubated. After observing the patient's status for another 24 hrs in ITC, she was shifted to her ward.

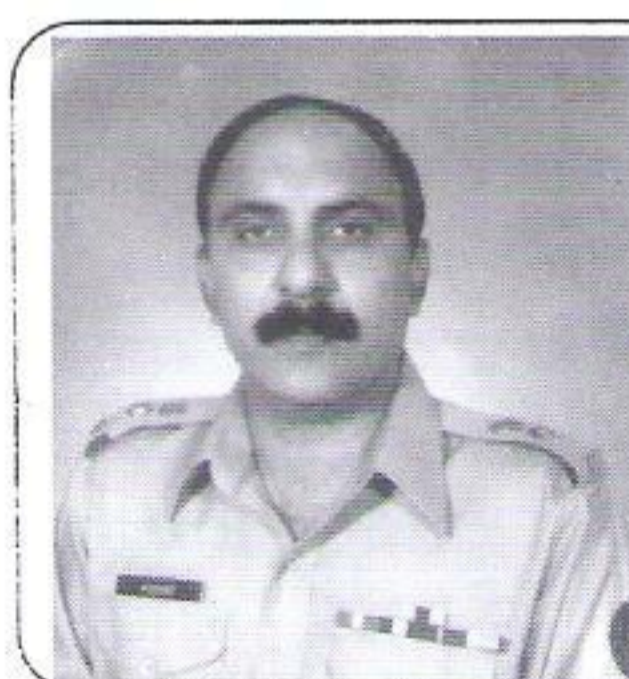
DISCUSSION

Soiling of the normal lung is a documented complication in case of empyema chest. Anaesthetic management of such cases demands isolation of the diseased lung. Using single lumen ETT in such cases readily invites and facilitates the spread of the purulent fluid or the thoracoscopic washings into the normal side and can very easily lead to a catastrophe as we encountered in the presented case.

The development and refinement of endotracheal tubes, positive pressure ventilation, bronchial blockers, endobronchial tubes and the endobronchial DLT's have led to the wide spread use of one lung ventilation for thoracic surgery. For thoracoscopic surgery, selective ventilation of the non-operative side and collapsing the lung on the operative side permit the visualization of intrathoracic structures through the thoracoscope and are mandatory for the performance of certain procedures. The inability to deflate the lung on the operative side severely compromises the ability to visualize intrathoracic structures and decreases the likelihood of operative success.

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Maj Muhammad Asghar was born in 1958. He graduated from Dow Medical College, Karachi in 1982. He got commission in AMC in 1983, and joined grading course in anaesthesiology in 1986. Qualified in FCPS-II examination in 1992. He has served in various military hospitals, PAF hospitals as well as Armed Forces Medical Services of KSA. He has been accepted by CPSP as supervisor for FCPS – II training since April 1997, and as an observer from September 1998. He has special interest in intensive care. Presently he is serving at CMH Lahore.

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