

Anaesthetic Management of a Patient with Solitary Fibrous Tumour of Pleura with Postoperative Diagnosis of Doege Potter Syndrome: A Case Report

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ABSTRACT

Pleural tumours represent a small yet significant subset of thoracic malignancies. Solitary Fibrous Tumours of the Pleura (SFTPs) are typically benign and account for 5% of all pleural tumours. Authors report a case of SFTPs excision with a postoperative diagnosis of Doege Potter Syndrome (DPS) in a 63-year-old male patient who was referred with complaints of chronic productive cough and breathlessness. Upon clinical and radiological evaluation, he was diagnosed with SFTPs. The patient experienced preoperative and intraoperative hypoglycaemic episodes, which were diagnosed as DPS during postoperative evaluation. This syndrome is a paraneoplastic condition associated with the secretion of Insulin-like growth factor-2 (IGF-II), observed in less than 5% of patients with SFTPs, with hypoglycaemia being a major symptom. Awake intubation and other procedures were performed with the patient in a propped-up position as he was unable to lie supine, which caused dyspnoea.

Keywords: Awake intubation, Double lumen tube, Hypoglycaemia, Paraneoplastic syndrome

CASE REPORT

A 63-year-old male patient who has been complaining of breathing problems and a chronic productive cough for the last three months was seen at the outpatient pulmonology department. His personal history revealed a 28-year history of smoking and chewing tobacco. He had no other co-morbidities. On examination, his respiratory rate was 45 to 50 breaths per minute, and his oxygen saturation on room air was 94%. He couldn't lie supine and felt a little more comfortable in the left lateral position. He was dyspneic after 2-3 words. Reduced air entry was noted on the right-side of the chest, whereas there was no air entry on the left-side, and the tracheal shift sign was negative. He was aware of the time, place, and person. His pulse rate ranged between 110 and 115 beats per minute, with no radio-radial or radio-femoral delay, and a blood pressure reading of 118/78 mmHg. His Mallampati grade was 2, and he had no missing or loose teeth. Preoperatively, he had multiple episodes of transient hypoglycaemia. Among the radiological investigations, the Computed Tomography (CT) scan of the chest showed a massive pleural mass measuring 16×17×22 cm in the left hemithorax [Table/Fig-1]. This mass caused a partial collapse of the left upper lobe and

a full collapse of the left lower lobe, along with a slight pleural effusion. Tracheal and mediastinal shifts to the right were seen [Table/Fig-2]. The electrocardiogram showed T wave inversion with p-mitral visible in lead II, III, and V1. The patient was unable to perform spirometry. All routine blood investigations yielded results within acceptable limits. The histopathology of the pleural tap revealed no acid-fast bacilli and indicated malignant cytology.

The patient was scheduled for surgery under American Society of Anaesthesiologists II (ASA-II) after thorough preanaesthesia assessment, and all necessary informed consents for high-risk, postoperative ventilation were signed.



[Table/Fig-1]: CT image demonstrates a heterogenous giant mass on the left hemithorax measuring 16×17×22 cm.



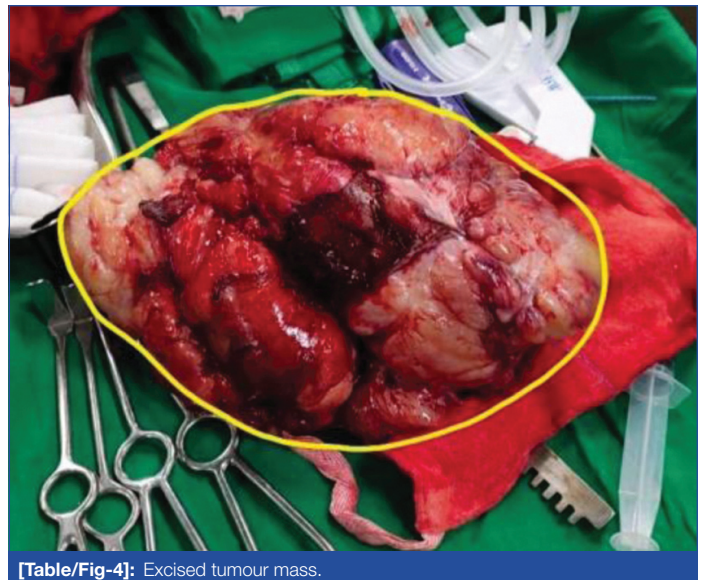
[Table/Fig-2]: Preoperative chest X-ray showing left hemithorax with mediastinal and tracheal shift.

The night before and the morning of the surgery, the patient received Duolin (levosalbutamol 1.25 mg+ipratropium 500 mcg) and Budecort (Budesonide 0.5 mg) nebulisation. Two 18G intravenous peripheral accesses were obtained. In the preoperative area, intravenous injections of 0.2 mg Glycopyrrolate and 8 mg Dexamethasone were administered. Once the patient was inside the operating room, all standard monitors were attached. Under stringent aseptic conditions and local anaesthetic, a central line was secured in the right internal jugular vein in a propped-up position. At the T7-T8 level, a thoracic epidural was secured using an 18-G epidural catheter. Airway preparation was performed with the infiltration of 2% injection lignocaine in the anterior tonsillar fossa, along with a transtracheal block using 3 cc of 4% Inj.loxicard. Additionally, a bilateral glossopharyngeal nerve block was administered using a 26G Quinke Babcock's spinal needle.

The patient was preoxygenated with 100% oxygen while in a propped-up position [Table/Fig-3]. The patient was intubated with a 35 Fr left-sided double-lumen tube using a C-Mac video laryngoscope, following End-tidal Carbon Dioxide (EtCO₂) confirmation of proper tube insertion. Drugs were administered according to the normal general anaesthesia protocol. The patient was maintained on O₂, air, and sevoflurane. The placement of the tube was checked after sequentially clamping the tracheal and bronchial cuffs, and air entry was confirmed by auscultation. In the right radial artery, an arterial line was placed. The plateau pressure was 38, and the peak pressure was 41 at the baseline. The patient was then placed in a right lateral position for surgery. Once within the cavity, one-lung ventilation was started. Saturation abruptly decreased to 89%, which was managed with 100% FiO₂. A bolus of phenylephrine (1-2 µg/kg) and an infusion of noradrenaline of 0.05 µg/kg/min were administered to alleviate the hypotension. Following a 3 cc test dose of Inj.lignocaine-adrenaline at the start of the procedure, 6 cc of 0.125% of Inj. Bupivacaine was combined with 3 µg of epidural morphine. The blood loss was about 900 mL, which was replaced with two packed cell volumes. During surgery, the patient was well hydrated. An epidural infusion was started with 0.25% Inj. Bupivacaine at 3 mL/hour once the mass had been removed, and closure had begun [Table/Fig-4]. Vasopressors were not required later on. The patient had multiple episodes of hypoglycaemia preoperatively and intraoperatively, which completely resolved after tumour excision, which on further postoperative evaluation was found to be a case of DPS, which is associated with refractory hypoglycaemia. Endotracheal suctioning was done after the patient was made to lie supine. The patient was extubated after confirming



[Table/Fig-3]: Intraoperative-awake intubation.



[Table/Fig-4]: Excised tumour mass.

adequate efforts. Injection Bupivacaine epidural was kept up for postoperative analgesia. The patient was sent to the Intensive Care Unit (ICU) after surgery for observation. He was monitored in the ICU for eight days, and his vital signs remained steady. The patient was shifted to the general ward and discharged from the hospital on day 20 of the procedure. The patient was followed-up 15 days after discharge and underwent regular clinical evaluations, including imaging studies. A CT scan was conducted six months after the mass resection, which revealed no signs of recurrence.

DISCUSSION

The SFTPs are composed of 5% of the total pleural tumours, usually occurring in the age group of 40-60 years [1]. The incidence rate is 2.8 in 100,000 populations [2]. Solitary fibrous tumours have also been found in the breast, spinal cord, head and neck, and other areas [3]. Wada Y et al., reported a case of a solitary fibrous tumour in the pelvic cavity with DPS [4]. SFTPs were first described by Lamperer and Rabin in 1931. Kim DW et al., reported a similar case of SFTP with DPS where complete resection of the mass was performed through thoracotomy under general anaesthesia [5]. Surgery with complete resection is the only curative treatment. Therefore, it is important for anaesthesiologists to understand the condition of patients and develop an appropriate anaesthetic management strategy [6].

Multiple challenges were faced in the management of the present case. Firstly, due to the tracheal and mediastinal shift, intubation was quite challenging. It was impossible to intubate or ventilate the patient because of the possibility of tracheal collapse and stridor brought on by muscle relaxants during general anaesthesia due to pressure from the pleural mass. Shen W et al., shared a similar case experience in which intubation and other procedures were performed in a supine position [6]. However, in present case study, the patient was unable to lie supine, so all procedures were conducted in a propped-up position. Awake intubation was the technique of choice. Patient was intubated using different blocks listed above since the facility only has a fibre optic bronchoscope, through which double-lumen tubes cannot pass. The requirement for an emergency tracheostomy in the event that the patient cannot be ventilated or intubated was explained to the surgeons. Proper fluid management is required to prevent fluid overload and pulmonary oedema in the dependent lung during one-lung ventilation. The patient was desaturating in the supine position and was unable to lie supine for more than a few seconds. All procedures were performed in a propped-up position, including intubation and central venous access, to secure an already difficult airway.

Secondly, the patient had multiple episodes of hypoglycaemia preoperatively and intraoperatively, which completely resolved

after tumour excision. Upon further postoperative evaluation, the patient was found to have DPS, which is associated with refractory hypoglycaemia. It is caused by inappropriate secretion of IGF-II, a molecule that inhibits hepatic gluconeogenesis and increases glucose uptake by activating insulin receptors. Therefore, blood sugar monitoring was done at regular intervals intraoperatively. Postoperative laboratory tests showed low levels of serum insulin, IGF-I, and C-peptide [7].

Thirdly, effective pain management was crucial in this case. Providing good analgesia both during and after surgery will reduce the duration of ventilatory support, facilitating early extubation and mobilisation.

CONCLUSION(S)

This case report discusses the anaesthesia management of excising a SFTPs in a patient diagnosed with DPS postoperatively. In this case report, authors infer that a good preoperative strategy and a thorough awareness of the patient's perioperative condition are necessary for the anaesthesiologist, which reduces the challenges of perioperative management. The case illustrates the importance of an anaesthetist and surgeons working together in advance to

facilitate comprehensive planning and prevent complications during the perioperative phase.

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