Anaesthetic Management of a Patient with Sarcoidosis Presenting for Mastectomy

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Sarcoidosis is a rare condition, the reported incidence being 1-64 per 100000 population worldwide.1 There are anecdotal reports of serious cardiac, pulmonary and airway problems in patients with sarcoidosis undergoing surgical procedures under anaesthesia.

CASE REPORT
A 48 year lady with sarcoidosis presented for mastectomy for carcinoma breast. Prior to two years, she had experienced difficulty in breathing even while carrying out a conversation. A biopsy of cervical lymph node revealed her disease to be sarcoidosis. She was treated with oral steroids for a year, which improved her symptoms.

The patient became hypertensive since one year. She was on Tab bisoprolol 2.5 mg and hydrochlorothiazide 6.25 mg once daily. She weighed 71kg, her blood pressure was 130/80 mm Hg and heart rate 68/minute. Her airway examination showed a mouth opening of 5 cms, thyromental distance of 3 fingers and Mallampatti Class 2. Both heart sounds were normal with no added sounds. Chest was clear and air entry equal bilaterally. Physical examination revealed lumps in both breasts. Hematological & biochemical investigations were all within normal limits. Chest X-ray PA view showed calcified node in the right hilum. There was no cardiomegaly. ECG showed sinus rhythm with a heart rate of 70/minute, PR interval 0.16 sec and no significant ST-T changes. Echo cardiograph showed normal sized heart chambers and valves with good LV function and no wall motion abnormality. A tricuspid regurgitation of 27mm Hg was present. Pulmonary function test showed mild restriction with FEV1 94% of predicted & FVC 90% of predicted, FEV1/FVC ratio of 104. CT study of chest and abdomen did not reveal any abnormality except the calcified node in right hilum of lung.

The patient was premedicated with Tab Diazepam 10mg, Pantoprazole 40mg on the night before and 6.00 am on day of surgery. In addition she was given inhaled bronchodilators and Inj Hydrocortisone 100mg intravenously an hour before induction of anaesthesia.

In the OR, monitoring of ECG, pulse oximetry, NIBP was instituted. She was given Inj Midazolam 1mg and Fentanyl 80mcg intravenously. This was followed by precurarisation with 5 mg Atracurium and induction with 100mg Propofol and 100mg succinylcholine. Endotracheal intubation was performed with size 7mm ID cuffed oral endotracheal tube and cuff inflated with 6ml air. Patient was connected to an anaesthesia work station and ventilated with 1 % halothane in a mixture of air and oxygen with an FiO₂ of 0.35. A low dose propofol infusion was also started. Vital parameters (heart rate, BP, ECG, SpO₂, ETCO₂, were all kept stable and maintained throughout the surgical procedure (left mastectomy and wide excision of lump right breast) Muscle relaxation was achieved with Atracurium 45mg iv. At the end of surgery which lasted for 150 minutes, neuromuscular blockade was reversed with Inj. Neostigmine 2.5mg and Atropine 1.2mg. Diclofenac 100mg was given as rectal suppository. The patient recovered completely and was awake with mild pain which was relieved in about 15 minutes. Post operative pain relief was achieved with intravenous Injection Tramadol 50mg 6th hourly. The post operative period was uneventful.

DISCUSSION
Sarcoidosis is an idiopathic multisystem granulomatous disorder occurring commonly in the age group of 20-40 years with a slight preponderance in females.1 Sarcoidosis results from an exaggerated cell mediated immune response which can be inherited, acquired, or both.

The organ most frequently affected is the lung followed by lymph nodes. Other organs such as skin, eye and liver could also be affected. Sarcoidosis favours nonsmokers. In the lung, the inflammatory cells and granulomas distort the walls of the alveoli, bronchi and blood vessels. Approximately 50% patients develop permanent pulmonary abnormalities and 5-15% have progressive fibrosis of the lung. There is an interstitial lung disease which presents with dyspnea on exercise and dry cough with rales in the lung fields on examination. Endobronchial sarcoidosis can produce distal atelectasis. Large vessel pulmonary granulomatous arteritis is common. Pleural involvement occurs in 1 to 5% cases as unilateral pleural effusion.1 Cor pulmonale may develop owing to sarcoidosis.

Intrathoracic lymphadenopathy occurs in 75 to 90% of all patients. The most commonly involved are hilar and...
paratracheal nodes. Subcarinal, mediastinal nodes may also involved. Nasal mucosal involvement occurs in 20% patients who present with nasal stuffiness. Laryngeal involvement occurs in 1-5% of cases. These individuals have hoarseness of voice, dyspnea, wheeze and stridor. Hypercalcaemia occurs in 1-2% cases. Neurologic findings are observed in 5% of patients. Seventh nerve involvement with unilateral facial paralysis is most common. The hypothalamo-pituitary axis is involved and the condition presents as diabetes insipidus. Nearly 5% of patients have significant heart involvement with clinical evidence of cardiac dysfunction. Arrhythmias and conduction disturbances can occur. Papillary muscle dysfunction, pericarditis, CCF is also observed. Myocardial sarcoidosis although rare may manifest as heart block, cardiac arrhythmias or restrictive cardiomyopathy. Chest radiograph could show bilateral hilar adenopathy with or without parenchymal changes and "ground glass appearance" consistent with active alveolitis is seen on CT scan.

Lung function tests show decrease lung volumes, decreased diffusing capacity and normal or increased ratio of FEV1/FVC. The therapy of choice is glucocorticoids. Initial dose of prednisone is 20 to 40 mg/day for less than two years.

Sarcoidosis appears to be associated with increased risk for cancer in affected organs. This may be secondary to immunological abnormalities associated with sarcoidosis. Sarcoidosis may be improved or exacerbated by pregnancy.

Anaesthetic problems in patients with sarcoidosis
Laryngeal involvement and tracheal stenosis may interfere with passage of appropriate sized adult endotracheal tube. Stenosis of trachea and bronchi as a result of sarcoidosis and symptomatic improvement following dilatation with Fogarty catheter has been described. Anaesthesia may contribute to precipitating heart block in a patient with sarcoidosis as is described in the case report of a fit young man with sarcoidosis who developed complete heart block during emergency mastoidectomy. The case was managed with temporary venous pacemaker and later insertion of permanent pacemaker. Cardiac sarcoidosis is a dreaded condition where left ventricular dysfunction manifested as severe reduction in ejection fraction and myocardial conduction defects occur. Cases of sudden death during stable cardiac function have been reported. In our case anaesthesia did not result in any additional morbidity or problems.

In conclusion it is prudent to be prepared for cardiac events, difficult intubation and respiratory compromise in patients with known sarcoidosis.

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