Anaesthetic Management of a Case of Early Pregnancy with Systemic Sclerosis

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Introduction

Systemic sclerosis (SSc) is a multisystem disorder characterized by fibrosis of the skin, blood vessels and visceral organs. The course, extent and severity of disease varies greatly among patients [1,2].

A patient of SSc was advised termination of early pregnancy due to her ongoing medication. She had symptoms of Raynaud's phenomenon over eight years. Consequently pulseoximetry was impossible during the procedure, which was performed under general anesthesia. The other anaesthetic implications of the disease are discussed.

Case Report

A 29 year old patient, a known case of SSc of six years duration, was advised termination of 10-week pregnancy due to her ongoing medication. The patient was on tablet penicillamine 500mg, capsule nifedipine 20mg and ecosprin 75 mg for two years. She had Raynaud's phenomenon for eight years, with increasing severity over the previous 2 years.

On examination the patient was thinly built, averagely nourished and had normal vital parameters. The skin was waxy, smooth and tight and face appeared mask like. The inter-incisor distance was 3cm and movement at the temporomandibular joint (TMJ) was restricted. She had a Mallampati Class III airway. The breath holding time was 15 sec.

Haemoglobin was 10 gm%. Other routine investigations including X Ray Chest and ECG were within normal limits. Treadmill test showed good effort tolerance and pulmonary function tests suggested a moderately restrictive lung disease.

She was advised to discontinue tablet ecosprin seven days prior to surgery and was kept fasting the night prior to surgery. The other medicines were continued as before. Though the safer option of regional anesthesia was offered the patient consented only for GA. The anaesthetic risks were explained, a high risk consent was obtained and she was accepted as an ASA III case.

A 20 G intravenous (IV) cannula was started. Inj metoclopramide 10mg and inj ranitidine 50mg IV were administered half an hour before the procedure. Inj glycopyrrolate 0.2 mg, inj midazolam 1mg and inj pethidine 20mg IV were given prior to induction. The patient was induced with inj propofol 150mg IV and maintained with 50% Oxygen and Nitrous oxide administered via a facemask. Isoflurane in concentrations ranging from 0.6 to 1% was used as the inhalational anaesthetic agent. Positioning the patient in the lithotomy position was difficult due to the over all stiffness. A paediatric size Sims speculum had to be used. The cervical os was restrictive and dilatation was performed with difficulty. 10 units of inj pitocin in 500ml Ringer Lactate (RL) was infused IV at 20 drops per minute. Recovery was uneventful.

The arterial pressure, ECG and capnograph were monitored continuously. Pulseoximetry was impossible due to involvement of fingers and toes in the disease process. Extremities were warmed with blankets, "Gamgee" pads and hot water bags. Warm IV fluids were infused. The air conditioner of the OT was switched off. A heat convector was used to increase the ambient temperature.

Discussion

Systemic sclerosis is a multisystem disease characterized by the overproduction and growth of collagen, widespread vascular damage and microvascular obliteration.

Raynaud's phenomenon is the first symptom that occurs in most cases of SSc [3], resulting from microvascular obliteration. It is defined as episodic vasoconstriction of arteries and arterioles of the fingers, toes and sometimes the face, which is brought on by cold or emotional stimuli. Patients may experience triphasic colour changes consisting of pallor, cyanosis (both associated with numbness and coldness) and rubor (with pain and tingling) of the fingers [1].

General principles to manage Raynaud's phenomenon

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include protecting extremities from cold, warming hands and feet for 10 minutes few times a day and stopping smoking. Nitroglycerine ointment along the course of digital arteries, low dose aspirin and calcium channel blockers are useful. Other treatment methods include intravenous iloprost (synthetic prostacyclin analogue), low molecular weight dextran, pentoxifylline and sympathetic blocks[4].

Raynaud's phenomenon may impair pulseoximetry [5]. Difficulty in pulseoximetry has not been documented in systemic sclerosis, though changing the probe between fingers has been carried out to prevent ischaemic damage to poorly perfused digits [6]. Severe limitation in jaw movement causes problems in endotracheal intubation [7,8]. Fibre optic laryngoscope facilitates intubation. Tracheostomy occasionally is necessary [9]. Tracheal intubation of our patient may have been difficult and traumatic and hence mask ventilation was done.

Hypomotility of the gut occurs in patients of SSC leading to an increased risk of regurgitation and aspiration. It has been demonstrated that administration of prokinetic and antacid drugs, before general anesthesia (GA) reduces the incidence of regurgitation to levels near or below that of the general surgical population. Cricoid pressure prior to intubation is recommended [3,7].

Measurement of arterial pressure can be difficult and misleading. A contracted circulating volume may manifest as hypotension during anaesthesia. Forearm blood flow is reduced. Catheterisation of peripheral arteries should be avoided [3].

The inspiratory capacity, pulmonary compliance and diffusing capacity are reduced. Varying degrees of heart block and arrhythmias may be seen. The patient should be evaluated for the presence of pulmonary and systemic hypertension, right or left ventricular failure, pericarditis, pericardial effusion and angina pectoris [1,3].

Conventional agents have been used for anaesthesia. Penicillamine may produce a myasthenic type state. Muscle relaxants should be used with caution. Ventilation may be difficult and breathing should be controlled, if

blood gas values are abnormal. Ventilatory assistance may be needed if narcotics are used. Regional anaesthesia provides peripheral vasodilatation [3] but there is concern of unpredictable spread and prolonged action of local anaesthetics [8]. Identification of anatomy for regional anaesthesia may be difficult. Local anaesthetics with epinephrine should be avoided [10]. Regional anaesthetic techniques may be used, which are by no means always preferable to GA. A meticulous anaesthetic technique assures success even when GA is administered.

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