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INTRA-OPERATIVE RAYNAUD'S PHENOMENON-CAN NERVE BLOCKS BE THE SOLUTION? : A CASE REPORT

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ABSTRACT A 45 years old female patient, known case of systemic sclerosis, came for debridement of left thigh cellulitis. Patient was also a known case of Diabetes mellitus and Hypertension for last two years. Patient had a history of ICU (Intensive care uit) admission 6 months back with signs and symptoms suggestive of heart failure, although no past reports were available. Even after taking all standard precautions, patient developed Raynaud's phenomenon intraoperatively involving only the fingers for which we had given wrist block with 9 ml of 0.5% loxicard and 0.0625% bupivacaine bilaterally.The case was unique in its nature as the usual management of unresolving raynauds phenomenon with vasodilators could not be done here due to unknown cardiac status of the patient. It will be a helpful case for intraoperative management of similar cases.

KEYWORDS : Systemic sclerosis, Raynauds phenomenon, nerve block

Introduction:

Systemic sclerosis, previously known as scleroderma, is an autoimmune disease characterized by excessive fibrosis that occurs more commonly in females. It may exist as localized or generalized systemic process.[1] Limited cutaneous systemic sclerosis is "limited" to the skin of the face and upper extremities as the cutaneous manifestation, but diffuse cutaneous systemic sclerosis causes generalized skin thickening and multiple end-organ damage.[2] The prevalence rate of this disease is around 5/100,000 with an incidence of 1/100,000. Higher rates have been reported in USA, Australia, and Europe as compared to Asia. [3] Raynaud's phenomenon is the most common occurrence besides skin thickening in the patients of Systemic sclerosis. Raynaud's phenomenon is due to transient cessation of blood flow to the digits of the hands or feet, driven by physical or chemical strain and might have a more severe progression with digital necrosis and ulceration leading to disability.[4,5] In India, Systemic sclerosis being a relatively rare disease, and intraoperative Raynaud's phenomenon in a patient of unknown cardiac status presenting to emergency department, makes this case unique.

Case History:

A 45 years old female, diabetic and hypertensive, weighing 55kg, classified under American Society of Anesthesiologists physical status Grade III, presented to the emergency department of our hospital for debridement of cellulitis on the medial aspect of left thigh of size 10x12 cm. She was a diagnosed case of systemic sclerosis for the past 3 years with typical features of the disease. She had thick skin which was smooth and waxy with the pinched nose (Figure1). Her skin was tightly adherent to the underlying cutis with flexion deformity of the fingers of both hands. She has been recently diagnosed with gastroesophageal reflux disease and also complained of dyspnoea on exertion. She also complained of numbness in her toes and fingers during the winter season which suggested that she was having Raynaud's phenomenon. All these features indicated the extensive systemic involvement of the disease in the patient. Moreover, she was also diagnosed with Hypertension and Diabetes two years back. She was taking tablet prednisolone 10mg once daily, tablet atenolol 10mg once daily and tablet metformin 500mg once daily. However, the patient was noncompliant with medications and was on and off on them over the 3 years period. Six months back she had a history of ICU admission with signs and symptoms suggestive of heart failure for which she was managed conservatively, though no medical records for that were available.

A detailed history of patient focussing on any medical or surgical interventions in the past was taken.

On airway examination, she had microstomia with a restricted mouth opening of two finger breadth(Figure 2). Mallampati grade was III. Her thyromental and sternomental distance were 6cm and 12cm respectively (Figure3). Her pulse was 62 per minute and blood pressure was 160/90 mm Hg. In respiratory system examination air entry on bilateral sides was equal and clear. In cardiovascular system examination, the apical impulse was shifted to left, S1 was heard and S2 was loud in pulmonary area. Rest of the systemic examination was within normal limits. All laboratory investigations of the patients were within normal limits except random blood sugar level which was 185 mg% and total leucocyte count of 20,000 /mm^3. Her chest X-ray showed bilateral lower zone reticular opacities and right lower zone bronchiectasis with cardiomegaly. ECG showed sinus bradycardia and right ventricular hypertrophy. Arterial blood analysis showed mild metabolic acidosis.

Regional anaesthesia (spinal anaesthesia) was decided as a choice of anaesthesia in context of its anticipated difficult intubation. The patient was explained about the procedure verbally as well as graphically and after taking well documented and informed consent, patient was wheeled into the operation theatre. On table monitors were attached which included a pulse oximeter, three leads Electrocardiogram, non invasive blood pressure monitoring and End-tidal Co2. Oxygen was given through Hudson mask at 6L/minute. Baseline readings were taken. Blood pressure was 160/98 mm of Hg i.e. on a higher side, pulse was 64/min and oxygen saturation was 96%. Anticipating a difficult airway, difficult airway trolley was already prepared which includes laryngoscopes with blades of all types and sizes, endotracheal tubes and oral and nasopharyngeal airways of appropriate sizes, bougie, Airtraq, laryngeal mask airway of appropriate size and cricothyrotomy equipment. A suction device was kept ready. ENT surgeon was also kept standby. The 18G cannula was taken on the dorsum of right hand. She was then given injection Metoclopramide 10mg and injection Ondensetron 4mg as premedication. Because of her history of Raynaud's phenomena, O.T temperature was kept warm. Prewarmed intravenous fluids were started. The patient was placed in sitting position and low dose (1.5 ml of 0.5% bupivacaine heavy)spinal was given at L3-L4 level under aseptic precautions. 25 mcg of fentanyl was added to the drug. The patient was immediately given supine position. The sensory block was evaluated by the pinprick test (22-gauge hypodermic needle), whereas motor block was evaluated by a modified Bromage scale (0: no motor block; 1: hip block; 2: hip and knee block; 3: hip, knee and ankle block). Midazolam 1mg given for anxiolysis. Ten minutes after the injection of drug, the sensory block was reached at T10 dermatome and Bromage scale was 3. Thirty minutes into the procedure there was sudden fall in oxygen saturation. On evaluation, no impairment of the patient's respiration or consciousness was observed. On further probing patients finger digits were found to be cyanosed which indicated towards the development

of Raynaud's phenomenon. Since the cardiac status of the patient was not completely evaluated and the patient had a recent history of heart failure it was decided to avoid calcium channel blockers and other vasodilators in this patient which form the mainstay of treatment of Raynaud's phenomenon. As the presentation of Raynaud's phenomenon was limited to the finger digits it was decided to go ahead with bilateral wrist block with 9 ml of 0.5% loxicard and 0.0625% bupivacaine(Figure 4,5&6). Five minutes post block, cyanosis disappeared bilaterally and rest of the procedure went uneventfully. Post-procedure patient was given oxygen by Hudson mask and was kept under watch in the recovery room. Motor block regressed at 120 minutes and sensory block regressed at 180 minutes. The patient was then shifted to female surgical ward. During shifting patient's vitals were stable.

Discussion:

Patients with systemic sclerosis pose a great challenge to the anesthetist because of its extensive systemic involvement. Reduced mouth opening and limited oropharyngeal space make direct laryngoscopy difficult. Whenever one comes across such a case a thorough examination of the patient's airway should be done one day prior to the surgery. Nasal patency should also be checked so that tubes of adequate size can be kept ready at one's disposal. Other components of a difficult airway trolley should be kept ready. Whenever possible neuraxial blockade is always preferred over general anaesthesia. By using neuraxial blockade we avoid the risks involved in handling difficult airway which can anytime progress to a CAN'T INTUBATE CAN'T OXYGENATE situation.[6] Secondly, neuraxial blockade blunts the thoracolumbar sympathetic outflow preventing the development of Raynaud's phenomenon intraoperatively.[7] Moreover, these patients have other systemic involvements like gastroesophageal reflux disease(aspiration risk) and interstitial lung disease(increased airway pressures) which further complicates the situation if general anaesthesia is given to the patient.

The drugs which form the mainstay of the treatment of Raynaud's phenomenon include calcium channel blockers (Nifedipine), prostacyclin analogs (Iloprost), endothelin antagonists (Bosentan), phosphodiesterase 5 inhibitors (Sildenafil).[8] Surgical intervention commonly performed for this condition in our set up is cervical sympathectomy. Though other options available include Endoscopic thoracic sympathectomy. In this case, the patient had an unknown cardiac status and had a recent history of heart failure. So it was decided to avoid any kind of medical therapy in the form of vasodilators which could have complicated the hemodynamics of the patient. Another option was to give cervical sympathetic blockade but bilateral blockade would have again affected the cardiac function. Thus, we decided to give the patient bilateral wrist block with a low dose of local anesthetic. Giving peripheral blocks in cases of systemic sclerosis is a challenge in itself. Because of the abnormal nerve and muscle physiology, use of peripheral nerve locators is limited. Moreover prolonged duration of action of local anesthetics has been documented in the past and because of the risk of nerve injuries, the volume of drug that can be given is also limited. In this case, we gave blind wrist blocks with 9 ml of 0.5% loxicard and 0.0625% bupivacaine on each side. If the available, use of ultrasonography in such cases would be a great help.

Conclusion: Intraoperative Raynaud's phenomenon is not a common complication to occur but if it happens options available are limited. Thus prevention forms the mainstay management of Raynaud's phenomenon. Thus giving good OT environment and prevention of any form of sympathetic stimulation by giving good analgesia and anxiolysis is recommended. Though sympathectomy is not the permanent solution but can effectively be used for symptomatic relief. Use of USG for giving blocks in such cases of systemic sclerosis will prove helpful.

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