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Acute Bronchospasm Following Supraclavicular Block- A Case Report.

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Summary.
Anaesthesia for emergency surgery in an asthmatic patient presents several challenges. Airway instrumentation is an important factor for triggering bronchospasm. Regional anesthesia is widely chosen wherever possible to overcome this problem. However bronchospasm can occur during regional anaesthesia also. We report a case of acute bronchospasm during brachial plexus block by supraclavicular approach.

Acute bronchospasm following supraclavicular block- A case report

Regional anaesthesia is often cited as safe alternative for general anaesthesia for asthmatic patient. We report a case of bronchial asthma posted for emergency debridement and tendon repair for crush injury of hand.

A 48 year old male patient was posted for emergency debridement of crush injury of left hand following a road traffic accident. Tendon repair was also planned. The patient had had solid food two hours earlier.

The estimated blood loss was approximately 300-500ml and the patient was hemodynamically stable. He had history of recurrent asthma since ten years and was on irregular medications. On a typical month he had one or two wheezing episodes which responded to inhaled broncho dilators. He was not on regular steroids and there was no history of hospitalization for acute asthma. There were no specific triggering factors for an asthmatic attack like cold, allergens or exercise. His effort tolerance was normal.

On examination the patient was thin built and pale. Chest was clear and respiratory rate was normal. He was able to cough effectively and his breath holding time was more than twenty seconds. Other systems were within normal limits. His mallampatti grading was three and had irregular teeth with poor oral hygiene. Chest x ray showed emphysematous changes. His routine blood investigations and ECG were within normal limits.

Regional anaesthesia in the form of supraclavicular brachial plexus block was planned. The patient was given Inj. Midazolam 1mg, Inj. Ondansetron 4mg and Inj. Ranitidine 50mg intravenously as premedication. He was explained about the procedure. Under nerve stimulator guidance (Inmed, vadodara) 40 ml of local anesthetic solution(10 ml of Lignocaine 2% with adrenaline, 15ml of 0.5%bupivacaine and rest normal saline) was injected when twitches were elicited in the hand at 0.5mA current strength. Prompt relief of pain and onset of heaviness started at five minutes after the block. A tourniquet was applied for hemostasis and surgery was started. After approximately ten minutes from the block patient had tachypnoea and tachycardia . His spo2 fell down to 92% from his baseline of 97%. On auscultation bilateral extensive wheeze was present. In spite of supplemental oxygen his saturation fell below 90%.

A diagnosis of acute asthmatic attack was made and the patient was given salbutamol via MDI, Inj. Terbutaline 0.2mg SC, Inj. Deriphylline 2cc slow IV. He was also nebulized with salbutamol and budesonide solution for 15 minutes. His saturation improved to 93% with oxygen and wheeze decreased markedly. Inj. Hydrocortisone 200 mg was given Intravenously and the surgery was allowed to proceed. Rest of the procedure and immediate post operative period was uneventful.

DISCUSSION

Acute bronchospasm triggered by regional anaesthesia has been reported. Spinal anaesthesia has been shown to increase pulmonary response to methacholine (a broncho constrictor) in normal lungs in animal models.[1] Reports of bronchospasm after spinal[2] and epidural anaesthesia also exist. [3, 4]

Anxiety, high levels of sensory and motor block has also been suggested to be the reason. Block of sympathetic fibers of the lungs as a reason of bronchospasm has been refuted due to the apparent paucity of sympathetic neural influence on the airway.[5,6]

Broncho spasm has been triggered by Interscalene block,[7] interpleural block [8] and intercostal phenol injections. Though the authors mentioned sympathetic blockade as the reason, it was questioned. Phrenic nerve blockade and resultant ipsilateral diaphragmatic paralysis can cause difficulty in breathing after brachial plexus blocks. Broncho spasm following supraclavicular block has not been reported. Injection of large volumes of local anaesthetics at room temperature can trigger an asthmatic attack, as in this case. Warming of lignocaine has shown to increase the pH and shorten the onset time when administered epidurally. [9,10]

Routine pre operative broncho dilators has been suggested in asthmatic patients even in the absence of clinically evident bronchospasm. This was not done in this patient. The cold operating room environment and injection of local anesthetic mixture at room temperature probably has triggered an asthmatic attack in this patient.

Although regional anaesthesia may be an attractive option to general anaesthesia in asthmatic patients, it should be borne in mind they also have the potential to trigger an asthmatic attack. Any regional procedure involving injections of large volumes of cold local anaesthetic solutions can evoke bronchospasm in patients with bronchial hyper reactivity. Routine warming of local anaesthetic solutions can prevent this problem and need further studies.

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