



ULTRASOUND GUIDED POPLITEAL BLOCK IN AN ACHONDROPLASTIC PATIENT POSTED FOR EMERGENCY FOREFOOT AMPUTATION: A CASE REPORT

Anaesthesiology

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ABSTRACT

Dwarfism is defined as failure to achieve a height of 148cm by adulthood. More than a hundred different types of dwarfism have been described, but the commonest form of this relatively rare condition is achondroplastic dwarfism. Anaesthetic management in such individuals is always challenging for every anaesthetist and depends on the experience and also the surgery for what the patient is posted for. Here we report a case of 65year old male with achondroplasia, of height 124cm scheduled for emergency forefoot amputation which was done under ultrasound guided popliteal block and saphenous block. Procedure was uneventful. Patient was stable.

KEYWORDS

Achondroplasia, forefoot amputation, popliteal block

INTRODUCTION

Achondroplasia is a congenital, disfiguring condition which is the most common form of short-limbed dwarfism. Defective cartilage formation is the hallmark of this condition, which results in a wide spectrum of skeletal abnormalities including spinal defects. Various other systems such as cardiac, pulmonary and neurological can be simultaneously affected adversely including airway defects¹. Anaesthetic management of such individuals is complicated because of their multisystem affliction and associated atlantoaxial dislocation.

CASE REPORT

A case of 65year male with Achondroplasia, of height 124cm weighing around 50kg presented to pre anaesthetic clinic with left foot cellulitis scheduled for forefoot amputation. Pre anaesthetic examination revealed scoliotic spine, bilateral lower limb deformity which restricted him from complete flexion at the knee joint. On airway examination the patient was edentulous, short neck, with limitation of extension of the neck, Mallampati class 4. He gave no history of any significant comorbidities and no previous anaesthetic exposure. Cardiopulmonary examination and laboratory parameters including ECG, chest X ray were normal. Echocardiography and pulmonary function tests were not done to know his cardiopulmonary reserve. Considering clinical examination, routine investigations being normal, Patient was classified under ASA Class II and approved for the proposed surgery under ultrasound guided Popliteal block. Patient shifted to operating room, connected to basic monitors and basal parameters noted. Difficult airway cart including fiberoptic bronchoscopy was kept as backup in case of a failed block. Total toxic dose of local anaesthetics was calculated based on his weight. Positioning the patient for block was one of the challenges faced during the procedure. Patient was laid right lateral with all the supports. Under all aseptic precautions, ultrasound guided popliteal block was performed using linear probe (6-13 Mhz). after identifying the popliteal fossa, linear probe was placed in the transverse position at the crease and ensured that the left side of the screen corresponds to the lateral side of the patient (where the biceps femoris muscle will lie). Then scanned medially and laterally to find the popliteal artery. The probe was traced cephalad to locate the common peroneal and tibial nerves, and the point where both the nerves join. We used in plane approach for a single short nerve block, 1-2 cm cephalad to the point of separation of the nerves to ensure that the injected local anaesthetic will surround the nerves. Block was given with the mixture of local anaesthetics of Inj.2% Lignocaine 10ml and Inj.0.5% Bupivacaine 10ml. Saphenous nerve block was supplemented with Inj.2% Lignocaine 5ml to avoid sparing. Surgery commenced after 20minutes of confirming complete motor block. Appropriate position maintained. Haemodynamics monitored throughout the procedure and patient shifted to recovery room with all the parameters being normal.

DISCUSSION

Achondroplasia is the most common cause of dwarfism caused by gain

of function mutation in fibroblast growth factor receptor 3 (FGFR3) gene. 80% mutations are the result of sporadic mutation while 20% are autosomal dominant. Females are more affected than the males^{2,3}. Achondroplastic dwarf presents with numerous anaesthetic challenges and careful preoperative evaluation is required for optimization.

A general recommendation regarding the ideal anaesthetic technique cannot be given, as both general anaesthesia and regional anaesthesia preferably neuraxial blockade present potential problems. Therefore individual decisions are necessary².

Although there are multiple reports using neuraxial anaesthesia, vertebral abnormalities can complicate its technique. Dry tap in subarachnoid block and narrow epidural space causing difficulty in threading catheters has been reported. Also spinal anaesthesia even when applied successfully, carries the risk of failure of block as a result of unpredicted spread of the subarachnoid block due to anatomical deformity of spine².

The risk of neurological injury while extending neck during laryngoscopy for tracheal intubation due to anatomical abnormalities seen in these patients. Increase incidence of gastro-esophageal reflux disease in dwarf patients therefore increase the risk of aspiration². The possibility of difficult mask ventilation and intubation should be kept in mind and difficult airway cart should be kept ready.

Though general anaesthesia is administered in such cases using a fiberoptic bronchoscopy, for necessary procedure, the idea of proceeding with the peripheral nerve block looks feasible and also avoids all the complications associated with the condition.

In our case, assessing all the deformities and unknown cardiopulmonary status of the patient, we decided to go ahead to proceed the case with ultrasound guided popliteal nerve block and saphenous nerve block which was successfully performed. Patient tolerated the procedure well. Thus we conclude that Peripheral nerve blocks can be tried in such cases to avoid all the anticipated difficulties.

CONCLUSION

The possibility of difficult mask ventilation and intubation should be kept in mind and difficult airway cart should be kept ready. Peripheral nerve blocks can be tried in such cases to avoid all the anticipated difficulties and can be used as an alternative procedure in an individual with anticipated difficult airway and spine deformity, wherever applicable.





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