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CASE REPORT: ANAESTHETIC MANAGEMENT OF A PATIENT WITH DWARFISM UNDERGOING EMERGENCY CAESAREAN SECTION

Dr Rashmi	Senior Resident, Pt. B.D. Sharma PGIMS, Rohtak.
Dr Asha*	Senior Resident, Pt. B.D. Sharma PGIMS, Rohtak. *Corresponding Author
Dr Abhilasha	Senior Resident, Pt. B.D. Sharma PGIMS, Rohtak.

ABSTRACT **Background:** Short statured females usually undergo delivery by lower segment caesarean section due to cephalopelvic disproportion. Both regional and general anaesthesia are challenging in patients of dwarfism.

Case presentation: We are presenting a case of primi gravida undergoing emergency caesarean under spinal anaesthesia.

Conclusion: Anaesthetic management is challenging in short statured parturient especially in emergency cases. This case was successfully managed with careful preanaesthetic examination and appropriate planning under spinal anaesthesia with backup for general anaesthesia.

KEYWORDS :

Background

Dwarfism, defined as an adult height under 145 cm in male or 135 cm in female, is a category of disorders with extreme global growth failure.[1] Short statured females usually undergo delivery by caesarean section due to cephalopelvic disproportion. Both regional and general anaesthesia are challenging in patients of dwarfism as it is often complicated by conditions such as deformed spine, limited neck mobility, and narrowed pharynx.

Case report

A 22 year old primigravida patient of dwarfism presented in labour for emergency caesarean section. She was a typical case of disproportionate dwarfism with short limbs compared to body. She was 124 cm tall with weight 50 kg. She had normal IQ. She had not undergone any investigation in past to diagnose her cause of dwarfism. On pre anaesthetic check-up there is no significant past medical or surgical history. She was not exposed to anaesthesia in past. On examination her cardiorespiratory systems appeared normal. On spine examination there was lumbar lordosis with palpable lumbar vertebrae. Airway examination showed Mallampatti grade II, with normal neck flexion and extension. All routine investigations were within normal limits. After discussion with the obstetrician and the patient, we planned to administer spinal anaesthesia with backup plan for general anaesthesia. All the risks were informed to the patient and consent was taken.

All routine monitors like non-invasive blood pressure (NIBP), heart rate (HR), electrocardiography (ECG), pulseoxymeter (SPO_2) were attached. Her baseline HR and NIBP were 106 per minute and 128/84 mm of Hg respectively. Here baseline saturation was 99% on air and ECG showed normal sinus rhythm. Intravenous line was secured with 18 G cannula and ringer lactate was started. Patient was placed in left lateral decubitus position and L_3-L_4 space was identified. Skin and subcutaneous tissue was infiltrated with 2 ml of 2% lignocaine. Sub arachnoid block was given with 1.2 ml of 0.5% bupivacaine heavy with 25G Quincke's spinal needle. Then patient was made supine with wedge under right buttock. T_4 level of block height was achieved bilaterally. After three minutes of block her NIBP fell to 80/46 mm of Hg and HR 76 per minute. 6 mg of inj Mephentramine was given. Her next BP reading was 96/60 mm of Hg after 3 minutes. Her NIBP was maintained between 100-110/50-70 during the whole procedure. Baby with birth weight 2.7 kg was delivered with APGAR score 10 at 1 and 5 min. Patient complained of mild stretching pain in the chest when obstetrician took uterus out of the abdomen. There were no other complaints from the patient. Intra and postoperative course was uneventful. She was shifted to post-operative recovery room after level of anaesthesia was T_6.

Discussion

People with dwarfism are categorized into two types generally, one with short stature having normal anthropometric proportions and second are those with disproportionate development having short limbs and short trunk which may also be deformed in many cases. Achondroplastic dwarfism is most common type of dwarfism with a genetic disorder of bone growth. It occurs in 1 in 15,000 to 1 in 40000 live births approximately.[2] The marked features of achondroplasia include typical facial features, disproportionate short stature and an exaggerated lumbar lordosis. There may be severe spinal deformity which can lead to cord compressions. In our case possibility of any hereditary cause was ruled out, although the cause of her growth deficiency is unknown. The anaesthetic management of the patient with dwarfism for Caesarian section presents with significant challenge due to poor bony landmarks and spinal deformities. There is no standard guidelines for anaesthetic management for such patients. The most followed anesthetic management for Caesarean section is combined spinal-epidural anaesthesia. However, it may be difficult technically to perform spinal or epidural in these patients as they have spinal deformity, lumbar lordosis and potential cord compression. X-ray is also not available in pregnant patients for landmarks identification or to see the severity of spinal deformity. In this case patient had minor lumbar lordosis with palpable lumbar vertebrae and there were no symptoms of any cord compression. We decided to administer spinal anaesthesia. She was a typical case of disproportionate dwarfism with short limbs compared to body and the volume of subarachnoid and epidural spaces are uncertain, for such patients the most appropriate type and dose of local anesthetic are unclear. After careful consideration we decided to give her very low dose 1.2 ml of 0.5% heavy bupivacaine. The patient achieved desired level of anaesthesia and the surgery was uneventful. According to literature the reference dosage of anesthetic administered to our patient is consistent with reported by Samra[3], who used minimum dose for providing effective spinal anaesthesia as 0.06 $mgcm^{-1}$ height.[3] We recommend 0.06 mg cm^{-1} height dosage to be adequate to avoid any unstable hemodynamics.

This report describe successful use of spinal anaesthesia for Caesarean section in a dwarf patient. Although, some authors have cautioned against the routine use of specific regional blockade as there are no specific dosage guidelines as neurological anomalies caused due to spinal abnormalities attributes to it. Epidural anaesthesia combined with spinal anaesthesia can also be administered to such patients. The risk of general anaesthesia versus regional anesthesia must be considered for each patient as severity of spinal abnormalities can vary considerably in every patient, therefore adequate titration of doses should be done. Nevertheless, anaesthesia itself poses a significant risk to patients with dwarfism, early recognition by anesthesiologist can prevent that. Pre-operative assessments should be carefully made and any contraindications such as cord compression or severe spinal deformity should be ruled out. Patient's X-ray and MRI taken before pregnancy might help in preoperative evaluation. Regional anaesthesia whether spinal, epidural or combined spinal epidural should be planned accordingly and carefully. Another option is to administer general anaesthesia which has risks of its own due to anticipated difficult airway because of conditions such as big head and tongue, limited head extension. There may be presence of cervical spine instability and underdeveloped pharynx.[4] Therefore, careful evaluation of indicators of difficult airway such as mallampati classification, thyromental distance, sternomental distance should be

done. Difficult airway cart should always be present on standby and timely appropriate planning should be done, for patients with high risk airway awake fiber optic can also be done.

Conclusion

Anaesthetic management is challenging in short statured parturients especially in emergency cases. Both regional and general anaesthesia are challenging in short statured patients. Our case was successfully managed with careful preanaesthetic examination, appropriate planning under spinal anaesthesia with backup for general anaesthesia.

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