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Case Report

Anaesthetic Management of Child with Laryngeal Papilloma Causing Airway Obstruction

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ABSTRACT

We present a case of a nine year old female weighing 28kgs whose presenting complaints were respiratory distress, stridor, progressive difficulty in breathing since past two months and near aphonia from one month. Induction was done with 100% oxygen with 6% sevoflurane. Patient was induced in spontaneous respiration. Patient was intubated with uncuffed ETT of size 3mm ID as sufficient space was not available for a bigger size tube. After complete excision of papillomas and achieving spontaneous ventilation, patient was extubated successfully and was relieved of all obstructive symptoms.

Key words: laryngeal papilloma; airway obstruction

INTRODUCTION

Laryngeal papillomatosis is a benign papillary tumour derived from squamous epithelial cells. It is a rare, benign and chronic disease most commonly caused by human papilloma virus (serotypes 6 and 11). [1] Lesions are known to affect entire airway but larynx is the most commonly affected site. [2] Children are more commonly affected as compared to adults. [3] In adults, symptoms vary according to size and position of the tumour and include hoarseness of voice, strained voice. In small children breathing difficulties occur more frequently and symptoms include a weak cry, difficulty in swallowing, noisy breathing and chronic cough. Uncontrolled growths of these laryngeal papillomas pose a great threat by causing airway obstruction and should be removed immediately. [4] Treatment strategies include endoscopic stripping, carbon dioxide laser removal. Recurrences are frequent and may require antiviral therapy. [5,6]

CASE SUMMARY

We present a case of a nine year old female weighing 28kgs whose presenting complaints were respiratory distress, stridor, progressive difficulty in breathing since past two months and near aphonia from one month. Her airway was assessed as Mallampati grade I. On indirect laryngoscopy, chink could not be visualized and larynx was filled with multiple papillomas. Her respiratory rate was 28 breaths per minute. Severe suprasternal retractions with inspiratory stridor were present. On auscultation, bilateral air entry was reduced. Her heart rate was 132 per minute and on air oxygen saturation was 94%. All routine investigations were within

normal limits. Patient was posted for excision of papillomas under general anaesthesia.

Parents were explained about the risk of anaesthesia and need for tracheostomy and written informed consent was taken. Preoperative medications were avoided. Anticipating difficult airway, small sized endotracheal tubes (ET), tracheostomy tubes, resuscitation equipment were kept ready. Inside the theatre all routine monitors (electrocardiography, SpO2, non-invasive blood pressure) were attached. Intravenous (IV) atropine 10 µg/kg was given before induction. Induction was done with 100% oxygen with 6% sevoflurane. Patient was induced in spontaneous respiration. Inhalational induction was commenced with sevoflurane. IV propofol 30mg was given. Anaesthesia was maintained using oxygen and sevoflurane in increasing concentrations. Patient was intubated with uncuffed ETT of size 3mm ID as sufficient space was not available for a bigger size tube (Fig 1).

Fig 1-Clinical picture showing laryngeal Papilloma

We were able to ventilate the patient but with great resistance. After slight excision of papilloma, tube was changed with a bigger size tube (4.5mm ID) to avoid leakage and resistance. Anaesthesia was maintained with sevoflurane and atracurium was administered after assessment of ventilation. Patient remained stable throughout the procedure. After complete excision of papillomas and achieving spontaneous ventilation, patient was extubated successfully and was relieved of all obstructive symptoms. Post operative period was uneventful and patient was discharged on 5th post operative day.

DISCUSSION

Laryngeal papillomas are most common benign tumors in children. Although benign, malignant transformation can be life threatening because of growth and proliferation of papilloma lesions. [7] Children who have laryngeal papillomas are often misdiagnosed as asthma, recurrent bronchitis and croup because of hoarseness and stridor. The treatment recommendation for papillomas is to remove as much disease as possible but laryngeal and respiratory functions should be preserved simultaneously. [3] Surgical ablation with carbon dioxide laser and endoscopic stripping remain the method of choice. There is no permanent cure for this condition and recurrences are known to occur. [6,8]

Anaesthetic evaluation includes the thorough physical examination with special attention being paid to patient's airway. Preoperatively, if the patient's airway is stable, the examination should include indirect laryngoscopy or flexible nasopharyngolaryngoscopy to define the extent and severity of airway pathology. Conversely, if patient is having stridor with or without use of accessory muscles, immediate attention is required and all emergency airway equipments are made available immediately. [3]

Certain objectives followed while administering anaesthesia to these patients during laryngeal surgery is to facilitate good surgical access and provide immobile surgical field, adequate masseter relaxation for introduction of suspension laryngoscope, adequate oxygenation and ventilation, maintenance of cardiovascular stability despite varying levels of surgical

stimulation and avoidance of trauma and laryngospasm. [2]

Maintenance and induction of anaesthesia is challenging in these patients because of sharing of airway by both surgeons and anesthetists. Difficult airway cart should be kept ready in operating room setting with all sizes of laryngoscopes, bronchoscopes. endotracheal tubes, tracheostomy sets and good communication between operating surgeon and anesthetists is mandatory for dealing with such complicated cases. [2,4,5]

The size of lesion and presence of obstructive symptoms or respiratory distress are critically important in anaesthetic management. In presence of obstructive symptoms, patient should not be made apneic until airway is secured. Airway should be maintained using awake intubation or intubating while patient is spontaneously breathing under deep inhalational anaesthesia. Tracheostomy is not a favourable option in these patients because of risk of viral spread and if at all tracheostomy is performed in emergency situation, early decannulation should be planned. [9] Apneic ventilation and jet ventilation are other alternative ventilation strategies but they carry risk of hypoxia, hypercapnia and barotrauma. Endotracheal intubation helps in avoiding these risks. Advantage of intubation is control on airway, protection from aspiration and easier to maintain depth of anesthesia. The disadvantage is being inadequate surgical exposure and the risk of spread of the disease. Emergency cart should be well prepared prior to induction. Despite various anaesthetic techniques available, maintenance of spontaneous ventilation and avoidance of muscle paralysis till airway is secured remains the basis for anaesthetic management. [2] In our patient we intubated the patient spontaneously breathing under deep inhalation anaesthesia. Because of very small space available one should select small size endotracheal tube; we also encountered the similar situation. But after excision of papilloma small sized tube will create difficulty in ventilation because of leakage. Changing tube in between the surgery is difficult and problematic but we successfully replaced the tube intraoperatively to prevent further leakage.

Hence we conclude that laryngeal papillomas in children need special attention as it obstructs the already narrow paediatric airway and associated respiratory distress makes it challenging for the anaesthetist. Good coordination between surgeon and anaesthetist should be there in best interest of the patient.

Conflict of Interest: The authors declare that there is no conflict of interests regarding the publication of this paper in view of financial and other relationships.

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