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ANAESTHETIC MANAGEMENT OF TRACHEOBRONCHIAL FOREIGN BODIES IN CHILDREN

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Tracheobronchial foreign bodies in children mostly present as emergency to hospital. Sander's technique is the great advantage for the removed of tracheobronchial foreign bodies by rigid bronchoscope. It has made the procedure safe for removal of foreign bodies in children, particularly for prolonged endoscopy. Preoperative preparation of the patient with the administration of antibiotics, intravenous fluids and steroids has made the endoscopy easier. Safe and suitable general anaesthesia by an experienced anesthesiologist is required for complete removal of tracheobronchial foreign body. In the present study most of the foreign bodies removed from the children were small plastic- whistles available as free gifts with some cheap candies in the local market.

INTRODUCTION

Various techniques of anaesthesia have been employed for bronchoscopy. Both general and local anaesthesia has been used [1]. Though blood oxygen saturation can be maintained under local anaesthesia but in emergency procedures and young patients it is not possible to earn.' out bronchoscopy under local anaesthesia. Sanders introduced jet ventilation technique for bronchoscopy under general anaesthesia that was modified by Spoercl[4]. Ideal anaesthetic technique must provide adequate ventilation and smooth quick recovery. Tracheobronchial foreign bodies are common in developing countries^ and mostly occur in lower socioeconomic class with compromised nutritional status and general health. The susceptible age is 1-6 years'. Safe and suitable anaesthesia with skill and experience is required for complete and safe removal of foreign bodies in the airway. What follows is a retrospective study of the management of tracheobronchial foreign bodies in the patients in Ayub Teaching Hospital.

MATERIALS AND METHODS

This study comprises of ten patients undergoing bronchoscopy under general anaesthesia for removal of tracheobronchial foreign bodies. The age of the patients varied from six months to ten years. All the patients were received in hospital as emergency cases. Preliminary treatment was instituted according to the condition of the patients. The diagnosis was made from history of the patient with clinical examination and X-ray.

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chest. One child was cyanosed and tracheostomy was already done in emergency.

Intravenous cannula was introduced in all the cases. Patients were subjected to bronchoscopy under general anaesthesia. Induction was done b> Injection Thiopentone (2- 4 mg/kg) and muscle relaxation achieved by Succinylcholine (1mg/kg). After oxygenation and achieving jaw relaxation, bronchoscope was introduced along with the Macintosh laryngoscope. Sander's injector was connected to the bronchoscope and ventilation performed by jet ventilation. The connector was connected to the anaesthetic machine by rubber tubing and intermittent jet ventilation performed b\ manual control. Intermittent IV Succinylcholine was used as indicated. Vital signs were monitored during operation and post-operative recovery noted. Patients were placed in lateral position afterwards.

RESULTS

The age of the patients ranged between six months and ten years. The type of foreign bodies included the whistles and various seed nuts. The whistles were peculiar plastic type with one end broad. Time taken for the procedure varied from 10 min. to 30 minutes. Using the Sanders injector with jet ventilation, we never failed to remove a foreign body endoscopically. The procedure has been always smooth. Not a single case required thoracotomy or bronchotomy.

DISCUSSION

Bronchoscopy for removal of tracheobronchial foreign bodies requires safe and suitable anaesthesia which provides the important requisites for bronchoscopy *viz..*, depression of cough reflex and jaw relaxation. During general anaesthesia, it is the adequate ventilation and

oxygenation that matters the most and it is the ventilation that ultimately decides the oxygen and carbon dioxide tensions in blood[1]. Sanders jet ventilation with the injector has been shown to maintain $PaCO_2$ within normal limits[8]. It makes the procedure smooth and does not give rise to a competition between the anaesthetist and surgeon for the common airway. The duration of bronchoscopy is not a problem.

Tracheobronchial foreign bodies occur mostly in small children and are presented to hospital as an emergency. Because of the presence of severe respiratory infection and cough, particularly in vegetable foreign body, fluid intake becomes limited and vomiting adds to the problem by causing dehydration. The respiratory infection increases the difficulty in anaesthesia and oxygenation. The swollen oedematous mucosa bleeds easily on touch or suction and distal bronchial examination becomes very difficult[7].

In all our cases we routinely use antibiotics, intravenous fluids and steroids preoperatively. This helps to relieve or educe the complications created by infection and oedema. Injection Atropine has been helpful to reduce the tracheobronchial secretions and bradyarrythmia during the procedure[9]. The higher incidence of respiratory infection in the poor socio-economic group, in whom tracheobronchial foreign bodies are common, increases the complications and problems in their anaesthetic management.

In our setup we prefer to do a bronchoscopy whenever there is a least doubt of possible foreign body inhalation[10], thanks to the advent and availability of Sander's injector attachment which has made bronchoscopy in children completely safe.

Before the advent of jet ventilation into clinical practice with its slight modification by Spoerel[4] following methods have been tried for ventilation and anaesthesia:

1. Local anaesthesia: It is still used in diagnostic bronchoscopy with certain sedative drugs [3,11,12] but it is quite unsatisfactory in children and in emergency cases.

2. Intermittent Ventilation: through Bronchoscope using a tight fitting rubber tube: It would produce adequate oxidation but would share the common airway with the surgeon. It was a great hindrance to the surgeon who had to stop his work whenever ventilation was to be performed.

3. Endotrachial catheter insufflation of oxygen gave satisfactory level of $PaC0_2$ but after sometimes started rising at a rate of 0.4 KPa/min This apnic oxygenation technique can be used only for short duration which is impractical in tracheobronchial foreign bodies.

We used the Sanders connector for jet ventilation in this study while as the first author has used 16 FG ordinary injection needle bent at right angles inserted into observer's end of the bronchoscope[14]. This produces an adequate ventilation gives a good time span for safe bronchoscopy and never gave rise to any problem in our cases. For the removal of spindle shaped whistle in a child we used the forceps while some authors have reported the use of Fogarty Catheter[15,16].

CONCLUSION

Tracheobronchial foreign bodies are common in children and usually present as emergency. Sander's technique with its special connector for jet ventilation has made Bronchoscopic removal of foreign body easier and safer. It should be used preferentially for foreign body removal from tracheobronchial tree. Any patient with the history of foreign body in tracheobronchus should be sent to tertiary care hospital for safer Endoscopic removal. Preoperative preparation with antibiotics, steroids and intravenous fluids also matters in the management. Most of the children presented with foreign bodies had inhaled toy whistles available as free gift with certain cheap candies. The authors would request the manufacturers and concerned authorities to ban such dangerous gifts for children.

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