PEDIATRIC BRONCHOSCOPY; AN OVERVIEW

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The 1st bronchoscopy using a rigid esophagoscope to successfully remove a foreign body (a pig bone) from a farmer's airways was performed by a German otolaryngologist, Gustav Killian, in 1897.[1] Rigid bronchoscopy (RB) has been the main diagnostic and therapeutic procedure for suspected foreign body aspiration till recently. With the introduction of fiberoptic broncoscopy in 1969, flexible fiberoptic bronchoscopyy (FFB) is rapidly replacing RB as a diagnostic tool as well as a therapeutic procedure.

The application of FFB in paediatic practice was first reported in 1978.[2] Paediatric bronchoscopy has been limited to RB under general anesthesia (GA), to either retrieve foreign bodies or diagnose anatomical abnormalities, and is the best way to visualize the paediatic airways[3]. The advent of this and ultrathin FFB has considerably extended the use of broncho-scopes in children[4] and neonates[5]. They can be passed through the nose or mouth, endotracheal tube or a tracheostomy. They provide a dynamic view of both the upper and lower airways. The effects of endobronchial lesions such as polyps and granula-tion tissues, or extrabronchial compression and larygomalacia or tracheomalacia can be safely seen without the distortion caused by a rigid tube. The small directional tip of the flexible bronchoscopy allows better visualization of the upper lobe bronchial distal bronchus. RB requires GA and is associated with subglottal oedema that can lead to stridor and laryngospasm. FFB can be done with child in bed and does not require moving a sick child to an operation theatre. Furthermore, the expense of using the operating and recovery room is avoided. However, RB is more suitable in certain circumstances.

The removal of foreign bodies, evaluation of large haemoptysis during active bleeding, search for H-type tracheo-oesphageal fistulas and evaluation of posterior aspect of the larynx as in bilateral vocal cord paralysis. This is also woth mentioning that with more widespread use of FFB, the lack of properly trained personell in rigid bronchoscopy is surfacing as a problem in some centres.

A survey regarding practices and differences in the use of FFB and RB in children in Europen centres was published sometime back[6]. The most common site for performing FFB and RB were an equipped room and operation theatre, respectively, though some centres used operation theatre for FB and others used an equipped room for RB. The type of sedation most commonly used for RB was GA though some centres used sedation and local anaesthesia for rigid bronchoscopy. On the other hand, sedation and local anesthesia were most commonly used for flexible bronchoscopy, while some used GA instead. The consumption of oxygen also differed according to the method used, being more frequent for rigid than for flexible bronchoscopy. The most common three indications in the descending order of frequency, in the survey were: Recurrent/Persistent Pneumonia, Persistent atelectasis and Persistent wheezing for the flexible instrument and for rigid bronchoscopy foreign body, stridor and recurrent/ persistent pneumonia. The diagnostic yield for the two bronchoscopies varied according to the indication for which they were carried out. Using flexible and rigid bronchoscopies, the highest yield was for " Stridor" and for "Persistent atelectasis", respectively. The most common side effect after flexible bronchoscopy was cough and fever, and after rigid bronchoscopy were cough and laryngospasm.

Bronchoalveolar levage (BAL) as a useful diagnostic procedure, is gaining ground both in immuunocompelent and in immunosupressed

patients for a more accurate aetiological diagnosis in interstitial pneumonia or acute pneumopathy.[7-10] Similarly the role of VAL is being explored in children for several disorders.[11]

Ever since its availability in 1971, flexible bronchoscopy has rapidly replaced rigid bronchoscopy a diagnostic as well as a therapeutic tool. However, this was not the case for foreign body aspiration, mainly because rigid bronchoscopes have the advantage of a wide working channel that permits good ventilation, visualization and instrumentation. Flexible bronchoscopy has been, at the most, been used as an initial evaluation procedure for foreign body aspiration, especially if the diagnosis is not clear. Furthermore, flexible bronchoscopy is valuable because in up to 9% of patients, a diagnosis of foreign body aspiration proves incorrect.[12] As far as removal of foreign body via FFB is concerned, this has not been uniformly accepted by all endoscopists. A Mexican study,[13] using flexible bronchoscopy under "Balanced" GA complemented with local 1% lidocain, has reported a very high success rate of 91.3% in extracting foreign bodies from infants and children. They would introduce FB through nose and extract the foreign bodies up to the oropharynx, and would carry out the final extraction through the mouth by a laryngoscope. I suggest to use oral route for flexible bronchoscopy when foreign body extraction is a possibility, thus avoiding the use of laryngoscope for final extraction through mouth, especially when the procedure is performed under sedation and local anesthesia.

One final word of caution, as recommended by the survey from 51 European countries, is that both rigid and flexible bronchoscopies are safe procedures , but must be performed by properly trained staff and in a hospital environment because of the slight likelihood of side effects that carry out a certain risk in pediatrics cases.

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