Fibreoptic Bronchoscopy - A Major Step in Diagnostics

Pages with reference to book, From 38 To 40

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The introduction of fibreoptic endoscopy is a major advancement in the field of diagnostics. Light from a cold source passes down a bundle of quartz fibres to illuminate the lumen of the passage seen. The reflected light is returned to the examiners eye via the image bundle which may contain 20,000 fibres, the alignment of which is strictly maintained to prevent distortion of the image. The tip of the instrument can be angulated and the use of forceps for obtaining specimens for histological and cytological examination is provided for. The fibreoptic bronchoscope, a member of the endoscope family, also has provision for brush biopsies, catheter sucUon, needle aspirates, bronchial secretion aspirates and broncho-alveolar lavage. The tracheobronchial tree is viewed directly thus greatly facilitating the diagnosis and staging of pulmonary tumours.

Fibreoptic bronchoscopy is one of the final investigations which determines the type and extent of a tumour which has been diagnosed initially by radiography and sputum studies. In cases of chronic cough, where the investigations are inconclusive and the response to treatment is not satisfactory, fibreoptic bronchoscopy is most appropriate.[1] Haemoptysis associated with an abnormality on a chest radiograph particularly in middle aged patients should be subjected to bronchoscopy as there is a high, risk of malignancy.[2]

The fibreoptic bronchoscopy has also been found very useful in carrying out bronchography. Along with the investigation a visual examination is also thus possible.[3] In therapeutic practice the instrument is utilized for extraction of foreign bodies either by suction or forceps.[4] In acute lobar or segmental collapse, the instrument is useful for suctioning[5] along with the other conventional therapy.

Whether transbronchial biopsy can replace open lung biopsy is still controversial. Levin et al found a high corelation in his series of patients[6], whereas other workers found it inadequate[7]. Suspected cases of pulmonary tuberculosis with negative sputum smears when subjected to fibreoptic bronchoscopy yield a diagnosis through staining the material obtained and a positive culture.[8,9] Also in cases of Pneumocystis Carinii pneumonia, the procedure provides a positive result.[10,11] As any other diagnostic procedure there are potential complications to be foreseen with fibreoptic bronchoscopy too. A large number of these are associated with the premedication or topical anaesthesia.[12] Xylocaine is safe and well tolerated and a total dose of 300 mg has little risk for producing toxicity.[12,13] Laryngospasm or bronchospasm may be produced due to the procedure,[12,14] especially in patients with bronchospastic disease. Atropine parenterally or by inhalation may be used as a preventive. Transient cardiac arrythmias may develop in patients undergoing bronchoscopy. These are usually correlated with the time of'arterial oxygen desaturation. Supplemental oxygen and cardiac monitoring should thus be instituted routinely.[15]

Fever and pneumonia may be encountered in patients with advanced age and after obtaining bronchial brushings in the presence of a neoplasm. Pneumothorax, is another complication which can be avoided by the use of fluoroscopy[16]. Haemorrhage may be caused in cases where transbronchial biopsies are obtained, especially in patients who are immunosuppressed or uremic. [17,18] Tamponade with the scope in a segmental bronchus acts as a preventive measure.

Further advances in the use of the fibreoptic bronchoscope are in the field of laser technology. The areas of bronchial dysplasia and carcinoma in situ are first labelled with a haematoporphyrin derivative injected systemically.[19,20] The fibreoptic bronchoscope is equipped with a special system which detects

this fluorescent material and gives a diagnosis of occult carcinoma.[19,21] Another development is the flexible needle which is passed through the bronchoscope and penetrates the trachea and bronchi and facilitates in obtaining an aspirate. This provides a very accurate staging of the carcinoma[22,23] which compares well with CT scanning results and has no serious sequelae.[23]

The few contraindications for routine bronchoscopy are severe hypoxemia, serious arrythmias, recent myocardial infarction and unstable angina pectoris. Biopsy procedures are contraindicated in patients with uncorrected bleeding diathesis, uraemia, pulmonary hypertension and severe anaemia.

With a high diagnostic yield, the safe technique with higher benefits against the low risks, fibreoptic bronchoscopy should be instituted in all cases with the indications. This will provide a quick diagnosis and facilitate the decision for further management.

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