Ancillary diagnoses by fibreoptic bronchoscopy

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Summary

Fibreoptic bronchoscopy was commenced at Sri Jayewardenepura General Hospital in December, 1993 and 60 patients were subjected to bronchosocpy by end of May, 1994. Some of the patients were referred by the Neurologist, Oncologist, Cardiologist and Neonatalogist as the clinical picture was masquerading. At bronchoscopy vocal cords, trachea, carina and bronchial tree were observed. Bronchial biopsy, bronchial brush smears and bronchial wash were obtained for histological and cytological examination. Bronchial wash was examined for evidence acid fast bacilli (AFB) compatible with Myobacterium Tuberculosis. A diagnosis was made in 16 (26.7%) patients; 8 were bronchial carcinomas. The diagnoses of the other 8 patients are as follows; 3 pulmonary metastasis, one vocal cord carcinoma, one vocal cord palsy, one tracheoesophageal fistula, one carcinoid tumour and one as laryngomalacia. AFB was detected by direct smear and by culture of bronchial wash in one patient who also had bronchial carcinoma in this study. This was not atypical Mycobacterium. It is well known that fibreoptic bronchoscopy is used to diagnose bronchial carcinoma. This study highlights the use of fibreoptic bronchoscopy in the diagnosis of diseases related to the bronchial tree other than bronchial carcinoma.

Introduction

The use of fibreoptic bronchoscopy in the diagnosis of bronchial carcinoma is accepted world over[1,3]. Various studies have shown the value of fibreoptic bronchoscopy in the diagnosis of pulmonary tuberculosis in suspected sputum negative cases[4,5] and also in unsuspected cases[6]. Transbronchial lung biopsy, bronchoalveolar lavage, fine needle aspiration biopsy are other methods that are used to increase the diagnostic range by this technique.

The objective of this documentation is to highlight that lesions other than bronchial carcinoma also could be diagnosed by this technique in addition to tuberculosis when all other investigations have not been helpful in arriving at the definite diagnosis.

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Patients, materials and methods

Patients were referred from medical wards of Sri Jayewardenepura General Hospital, General Hospital — Colombo, Chest Hospital — Welisara, and Kandy and Base Hospitals. The procedure was explained to the patients and consent obtained. Atropine was given as premedication. No Sedative was given. 10% lignocaine spray, 2% lignocaine jelly on swab and 4% lignocaine were used as local anaesthesia. The vocal cords and tracheobronchial tree were observed and bronchial biopsy, bronchial brush smears and bronchial wash were obtained from the relevant abnormal pulmonary segments.

At least two smears were prepared by spreading the brush gently over clean glass slides. One was air dried and stained by May Grunwald Giemsa stain and the other smear was fixed in alcohol and stained with haematoxylin and eosin.

Bronchial wash material was obtained by injecting 10 ml of isotonic saline through the bronchoscope followed by immediate suction. This was repeated several times until 35-10 ml was collected. At the end of bronchoscopy a further 5 ml of isotonic saline was instilled and retained secretions were collected. Bronchial wash material was divided into two portions and sent for cytological examination and for evidence of tuberculosis.

Bronchial biopsy was performed in 11 patients, bronchial brush smears were made on 56 patients and bronchial wash was examined for cytology and for AFB in 57 patients. The fibreoptic bronchoscpe was immersed in Gluteraldehyde for 20 minutes in between use.

Results

Diagnoses	*No. of Patients*
Bronchial Carcinoma	8
Pulmonary metastasis	3
Vocal cord carcinoma	1
Vocal cord palsy	1
Tracheo oesophageal fistula	1
Carcinoid tumour	1
Laryngomalacia	1
Total	16 (26.7%)

The clinical presentation of some of these patients were of interest. Some patients were referred to exclude bronchial carcinoma but various pathology other than bronchial carcinoma was diagnosed by bronchoscopy.

Two patients who were diagnosed as pulmonary metastasis were suspected to have bronchial carcinoma. One patient is a 32 year old lady who presented to the Neurologist with headache of one month duration. She had no neurological signs except bilateral papilloedema. Computed Tomography Scan of head showed two hypodense areas surrounded by cerebral oedema suggestive of secondaries. Chest X-ray showed an opacity in the right base. At bronchoscopy only unhealthy mucosa was noted, but brush smears revealed malignant cells not conforming to typical bronchial carcinoma. We felt that she had an occult primary carcinoma with secondaries in the brain and lung.

The other patient had carcinoma of Thyroid with pulmonary metastasis. The third patient was a 52 year old lady who presented with cough and haemoptysis of 1 week duration. The chest X-ray showed a well defined opacity in right upper lobe. There was a history of leiomyosarcoma of uterus, hysterectomy had been done one year back. Bronchoscopy revealed large malignant cells with elongated cytoplasam and spindle shaped nuclei compatible with leiomyosarcoma.

The patient who had vocal cord carcinoma was referred to exclude bronchial carcinoma as he had an opacity in the Chest X-ray. He had hoarse voice which was thought to be due to recurrent laryngeal nerve palsy.

The patient who had tracheoesophageal fistula had carcinoma of oesophagus. She was on nesogastric feeds and awaiting surgery. She developed recurrent respiratory tract infection and referred for bronchoscopy.

The patient who had carcinoid tumour presented with lung abscess involving the apical segment of the right lower lobe. At bronchoscopy a growth was seen in right lower lobe bronchus arising from apical segment. Biopsy of this growth revealed carcinoid tumour.

22 days old neonate who had laryngomalacia was transferred to the Neonatalogy Unit with pnuemonia and septicaemia. The baby was ventilated and treated with antibiotics. The baby responded to treatment and was off ventilator in 4 days. He went into respiratory difficulty when he was extubated and had to be intubated again. There was evidence of laryngomalacia at bronchoscopy and baby was treated successfully by the ENT Surgeon.

Discussion

It is important to investigate a patient with opacity in the Chest X-ray. In addition to the basic investigations such as full blood count, ESR, sputum smears for AFB and malignant cells, some of these patients had been subjected to various investigations such as Computed Tomography scanning of chest and head, rigid bronchoscopy, tomography and bronchography. It is necessary to make a definite diagnosis either by histology or cytology before planning out treatment and none of the above investigations would provide this. The final diagonsis was arrived by examination of material namely bronchial biopsy, bronchial brush smears and bronchial wash obtained by fibreoptic bronchoscopy. However, vocal cord palsy, tracheoesophageal fistula, laryngomalacia were diagnosed by direct observation.

Transbronchial lung biopsy is used to elucidate peripheral localized opacity in the chest radiograph and diffuse lung disease. This has to be performed under fluoroscopic control and has slightly higher risks than direct fibreoptic bronchoscopy. Bronchoalveolar lavage is used to investigate chest infection in immunocompromised host and diffuse lung disease. The need did not arise to employ these methods in this study.

The diagnostic yield was highest from the examination of brush smears in this study. All three patients with pulmonary secondaries were diagnosed by examination of bronchial brush smears. This had been the case even for bronchial cacinoma in previous studies[6,7]. The bronchial brush could be passed through a narrowed segmental or subsegmental bronchus and smears could be obtained. Furthermore bronchial brush smears could be taken from a suspected segmental bronchus as shown by the chest radiographs even though it appears normal to the direct visual examinations.

Various studies[1,3] have shown the importance of fibreoptic bronchoscopy in the diagnosis of bronchial carcinoma. It is also used in the diagnosis of pulmonary tuberculosis, in suspected cases where sputum smears are negative[4,5] for AFB. We have shown in our study[6] that bronchial wash should be examined for AFB by direct

smear and by culture in all the patients undergoing fibreoptic bronchoscopy in a country where tuberculosis is prevalent. This study shows the importance of fibreoptic bronchoscopy in the diagnosis of diseases related to the respiratory tract in addition to bronchial carcinoma.

Conclusion

Fibreoptic bronchoscopy is a safe procedure which is useful in the diagnosis of diseases related to the respiratory tract in addition to bronchial carcinoma.

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