Bronchial Carcinoid Tumor

P. Subbarao
V. Bhatnagar
D.K. Mitra
A.K. Gupta

Bronchial carcinoid tumors are rare in the pediatric age group. Much of the experience is based on observations made in adult patients. Since these tumors are slow growing malignancies, conservative lung sparing procedures are being increasingly adopted. Lobectomy or pneumonectomy is performed only when it is unavoidable. This communication reports a case of bronchial carcinoid tumor in a 10-year-old girl who required pneumonectomy. No similar reports have been found in the indexed Indian literature.

Case Report

A well built 10-year-old girl was referred from a peripheral military hospital with a history of recurrent episodes of high grade intermittent fever associated with unproductive cough during the preceding three months period. Symptoms decreased with antibiotic therapy only to recur after sometime. Serial skiagrams of chest showed persistently collapsed left lower lobe (*Fig. 1*).

From the Departments of Pediatric Surgery and Radio-diagnosis, All India Institute of Medical Sciences, New Delhi 110 029.

Reprint requests: Dr. D.K. Mitra, Additional Professor, Department of Pediatric Surgery, AIIMS, New Delhi 110 029.

On bronchoscopic examination, done before referral, the left lower lobe bronchus was reported to be totally blocked with a mass lesion and she was referred after initiation of antituberculous treatment. Bronchoscopic examination was repeated after admission–a smooth fleshy mass was seen arising from the left lower bronchus and comletely blocking it. The left upper lobe bronchus was only partially visible. A biopsy from the mass was reported as 'inflammatory granulation with mononuclear cell infiltration'. Chest CT (*Fig. 2*) revealed extensive patchy consolidation and cystic bronchiectasis involving the left lower lobe. Emphysematous changes were noted in the left upper lobe. The mediastinum was shifted to the left with an abrupt cut off of the left upper lobe bronchus which was seen partially. There was no obvious perihilar lymph node involvement. In view of the established pathological changes, left lower lobectomy was planned. At surgery, a fleshy mass totally obliterating the lower lobe bronchus was noticed. Left lower lobectomy was performed and after closure of the bronchial stump the upper lobe was not expanding adequately. Hence, the stump closure was undone and retrograde bronchoscopy through the stump demonstrated a residual mass extending into the lingular and upper lobe bronchi. Since it was not deemed possible to save the upper lobe after excision of the residual mass, resection of the remaining lung was carried out. Biopsy was reported as 'typical' carcinoid tumor. There was no extension beyond the bronchial wall and no infiltration of the lung parenchyma. Excision biopsy of a seemingly significant hilar lymph node was reported as 'reactive hyperplasia'. The left lower lobe showed cystic bronchiectasis and the entire lung paren-

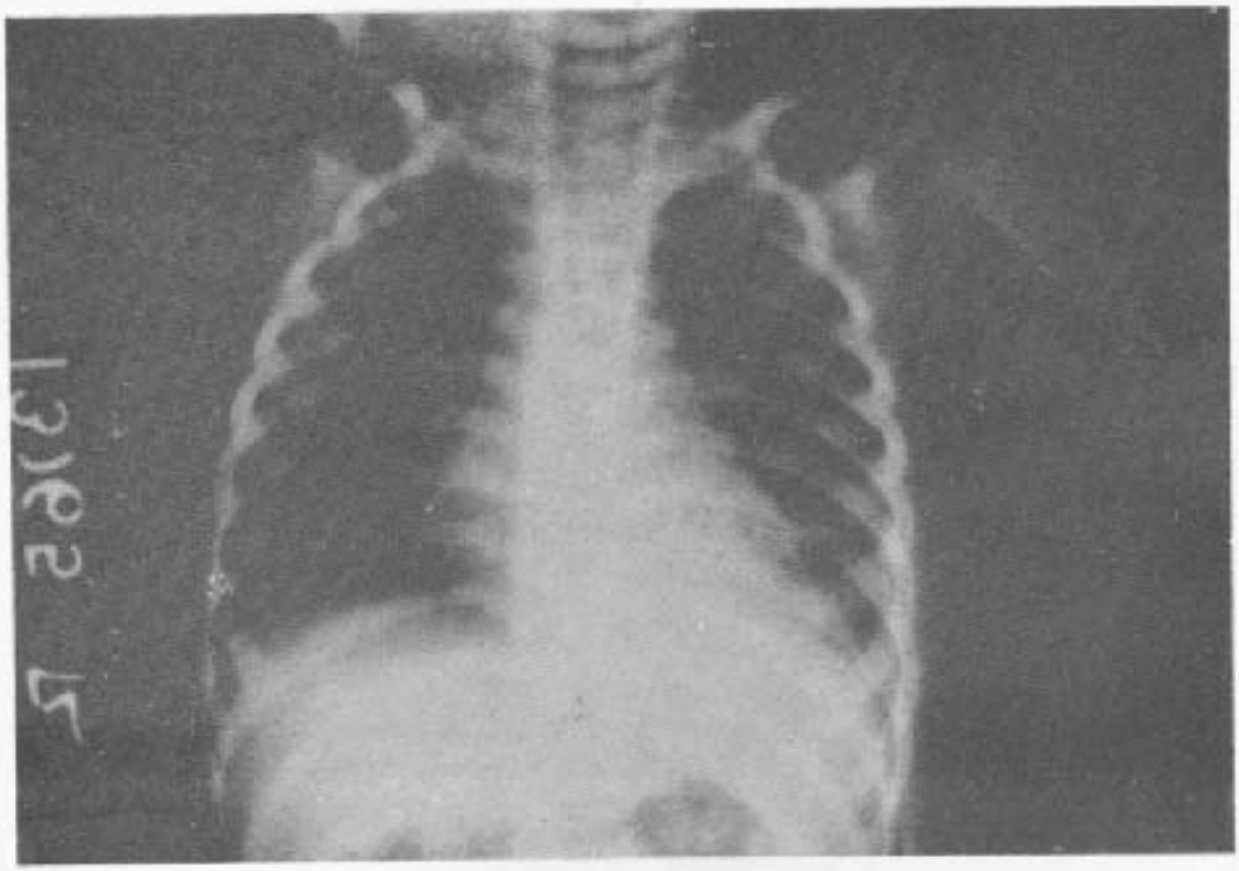

Fig. 1. Plain X-ray chest showing collapsed left lower lobe.

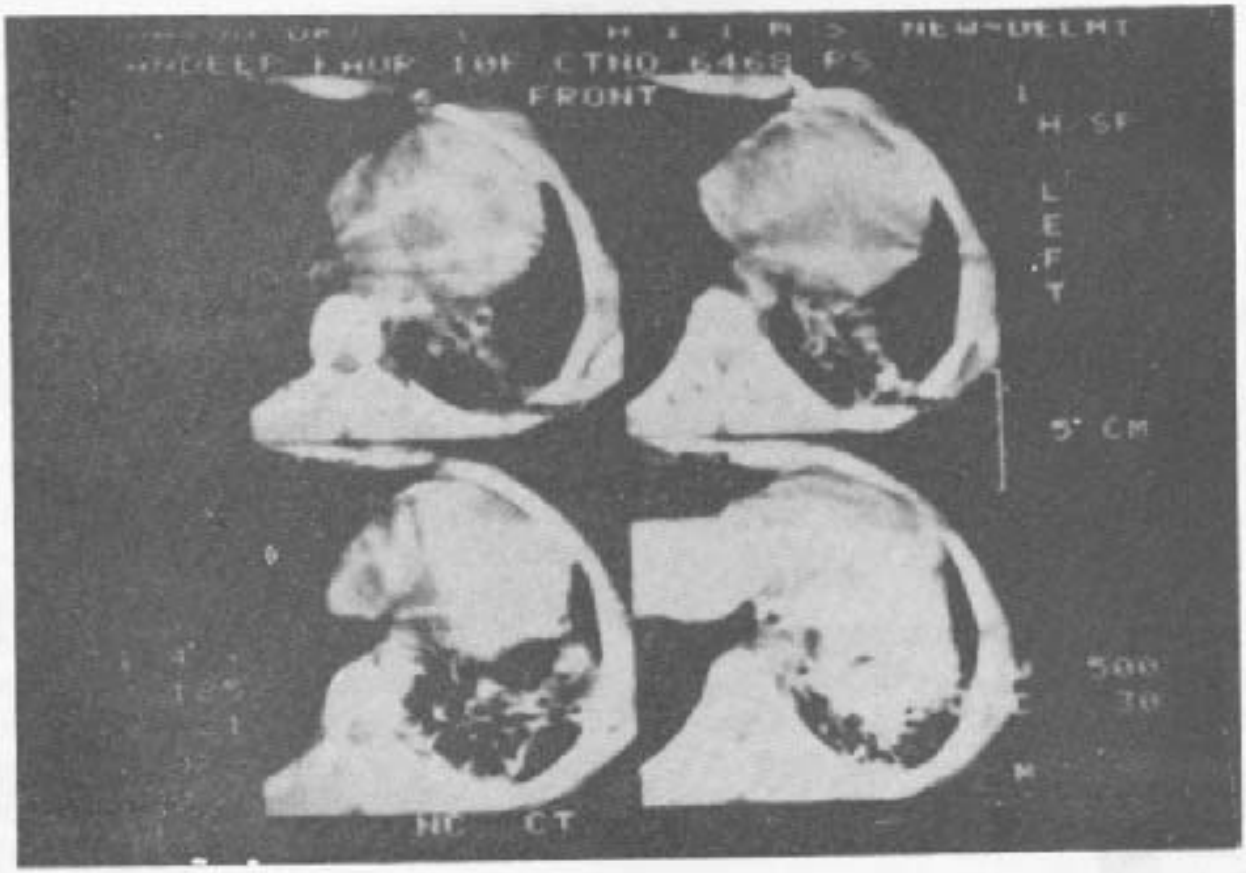

Fig. 2. CT scan of chest showing cystic bronchiectasis of left lower lobe.

chyma showed evidence of chronic inflammatory changes. The post-operative period was uneventful and at follow-up after three years she was free from the disease as assessed by repeat CT of chest and urinary 5-hydroxyindole acetic acid levels.

Discussion

Bronchial carcinoid was first recognized by Laennec in 1831 and was described by Muller in 1882(1). Bronchial carcinoid tumors were thought to originate from Kulchitsky's cells of bronchial epithelium, which are derived from multipotential neural crest cells(2). Endocrine symptoms are rarely noticed in children though there are anecdotal reports of acromegaly, Cushing's syndrome, carcinoid syndrome, peptic ulcer diathesis (due to histamine release) and hypercalcemia in adults(3-6). Generally, these involve major bronchi, predominantly the left side(7). It should be kept in mind in a child with recent onset of asthma, signs suggestive of foreign body (bronchial obstruction), recurrent episodes of respiratory infection, localized collapse of the lung and hemoptysis(8). Bronchial carcinoids present in one of two growth patterns: endobronchial polypoid masses producing obstruction, atelectasis and infection or 'iceberg' lesions with predominantly extrabronchial growth and a small endobronchial extent causing mucosal ulceration and hemoptysis(5). The case being reported had no endocrine manifestation, was located on the left side, presented with recurrent episodes of chest infection associated with secondary bronchiectasis and was an endobronchial type of lesion.

The various diagnostic procedures described are bronchoscopic biopsy, bronchial brushing, washings, sputum cytology(9) guided needle aspiration biopsy, CT, MRI and 123 I, MIBG scans especially to detect metastases missed by other modalities such as CT, US(10). In the case under review the endoscopic biopsy was non-contributory possibly because it was very superficial. In view of their low grade malignancy, low incidence of regional lymph node involvement at primary diagnosis and a small percentage of recurrence after conservative surgical procedures, many advocate parenchyma preserving endoscopic or bronchoplastic procedures(1,3,8,11).

Pulmonary resection is reserved for those cases where the lesion transgresses the bronchial wall and infiltrates the parenchyma or there is pulmonary suppuration distal to the obstructing tumor, as was evident in the case being reported. However, atypical carcinoid tumors demand radical, planned resections because of increased incidence of regional lymph node involvement at diagnosis and recurrence after conservative surgery. Regional lymph node enlargement is usually due to reactive hyperplasia secondary to pulmonary infection(8,12). In their review, Wildburger and Hollwarth(11), found only 25 cases of bronchial carcinoids up to 12 years and added 2 of their own. Of these 27 cases, one died, one had local recurrence and one developed metastases after 22 years of the initial treatment. Hence, it is advised that following surgery the patients should be examined at regular intervals for a minimum period of 25 years including urinalysis for 5-HIAA which may act as a tumor marker(1). Early diagnosis and adequate surgical therapy is essential for achieving the best results.

REFERENCES

1. Okike N, Bernatz PE, Woolner LB. Carcinoid tumors of the lung. Ann Thorac Surg, 1976, 22: 270-277.
2. Gmelich JT, Benseh KG, Liebow AA. Cells of Kulchitsky type in bronchioles and their

relation to the origin of peripheral carcinoid tumor. Lab Invest 1967, 17: 88-98.

3. Hartman GE, Shochat SJ. Primary pulmonary neoplasms of childhood: A review. Ann Thorac Surg 1983, 36: 108-119.
4. Saeed Uz Zafar M, Mellinger RC, Fine G, *et al.* Acromegaly associated with a bronchial carcinoid tumor: Evidence for ectopic production of growth hormone releasing activity. J Clin Endocrinol Metab 1979, 48: 66-71.
5. Walter JB, Isreal MS. Structure and effects of some common tumors. *In:* General Pathology, 6th edn. Eds Walter JB, Israel MS. Edinburgh, Churchill Livingstone, 1987, pp 342-369.
6. Sarfti E, Lavergne A, Gossot D, *et al.* Bronchial carcinoid tumor and hypercalcemia. Ann Int Med 1987, 06: 476-477.
7. Lack EE, Harris GBC, Eraklis AJ, *et al.* Primary bronchial tumors in childhood. Cancer, 1983, 51: 492-497.
8. Radhakrishnan J, Reyes HM. Bronchial carcinoid tumor. J Pediatr Surg 1979, 14: 610-611.
9. Lowe JE, Bridgman AH, Sabiston DC Jr. The role of bronchoplastic procedures in the surgical management of benign and malignant pulmonary lesions. J Thorac Cardiovasc Surg 1982, 83: 227-234.
10. Bomanji J, Levison DA, Zuzarte J, *et al.* Imaging of carcinoid tumors with iodine 123 metaiodobenzylguanidine. J Nuclear Med, 1987, 28: 1907-1910.
11. Wildburger R, Hollwarth ME. Bronchoadenoma in childhood. Pediatr Surg Int 1989, 4: 373-380.
12. Thunnissen FBJM, Eijk JV, Beak JPA, *et al.* Bronchopulmonary carcinoids and regional lymph node metastases. A quantitative pathologic investigation. Am J Pathol 1988, 132: 199-122.

Multiple Atresias of the Bowel with Reference to Tandler's Theory of Embryopathogenesis

S.R. Prasad
D.K. Mitra
V. Bhatnagar
M. Mathur

Atresia of multiple segments of bowel has been reported with an incidence ranging from 6-29% in different series(1). Association of duodenal atresia with multiple atresias of the small and large bowel is very rare. No satisfactory theory has been put forward to explain the etiopathogenesis of multiple atresias of bowel. In the present case of multiple atresias of bowel, histopathological evidence supporting Tandler's solid cord theory of embryogenesis of atresias of bowel is evident.

Case Report

A two-day-old premature male child, born after 34 weeks of gestation was brought with history of repeated episodes of bilious vomiting. He had not passed meconium. History of maternal polyhydramnios was present.

From the Departments of Pediatric Surgery and Pathology, All India Institute of Medical, Sciences, New Delhi 110 029.

Reprint requests: Dr. D.K. Mitra, Additional Professor and Head, Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi 110 029.