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Surgical treatment of bronchiectasis in children

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Summary

Children aged 2 to 16 years were examined by bronchography between 1983-1988. All procedures were carried out with the patient under general anesthesia. Bronchiectasis was assessed in 50 of them. Surgical procedure was lobectomy or bilobectomy in 21 and pneumonectomy in 5 of 26 patients who were operated. There were no early or late mortality in the control period of 1 to 3 year and all the patients were in good condition.

Key words: Bronchiectasis, bronchography

The prevalance of bronchiectasis is low and diminishing in developed countries. This is due to the decrease in severe pulmonary infections in childhood brought by the use of antibiotics, the development of vaccines, effectively preventing pertussis and measles and the progressive decline of tuberculosis [3]. In Turkey, bronchiectasis still remains an important cause of chronic lung disease in children.

Although plain chest film may be suggestive of bronchiectasis, bronchography is the definitive procedure to establish the presence and distribution of bronchiectasis.

Bronchiectasis can be treated medically and surgically. Medical treatment is the treatment of choice when the disease is minimal and asymptomatic and for patients with extensive involvement of the lung [2]. We want to report the anatomical localisation defined by bronchography and results of surgery of 50 bronchiectatic children followed up at Vakıf Gruba Hospital, İstanbul during 1983-1988.

Meterial and Method

Bronchography was performed in 50 children (27 girls, 23 boys) with a clinical history and chest radiograph suggestive of bronchiectasis. The patients were 2-16 years old; (mean 9,2±4.3). There was no evidence of a recent pulmonary infection in any of the patients studied. All procedures were carried with the patient were under general anesthesia. For bronchography, the bronchial tree was suctioned with a catheter and contrast material was administered through an uncuffed pediatric disposable endotracheal tube.

The contrast agent used was an aqueous suspension of propyliodine (Dionosil aqueous, Glaxo); 0.75-1cc per kg. Bilateral bronchograms were obtained in all patients. For each patient the bronchograms were assessed by two pulmonary radiologist independently. The bronchograms were assessed for the distrubition of bronchiectasis within each lung and lobe, type (cystic, varicose or cylindrical) of bronchiectasis. (Fig. 1-2).

The follow up was 1 to 3 years. The patients were assessed clinically and radiographically at the follow up period.

Results

In 50 bronchiectatic patients bronchography revealed cylindrical type in 36, saccular in 14. In 24 patients the distribution of bronchiectasis was diffuse and bilateral; in 26 the distribution of the disease was localised.

The criteria for surgery were as described by Lindskop and Hubbel [5].

1) symptoms severe enough to cause discomfort or complication.

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1) symptoms severe enough to cause discomfort or complication.
2) the presence of localised bronchiectatic changes,
3) an adequate cardiorespiratory reserve,
4) no other disease that would be a contraindication for surgery.

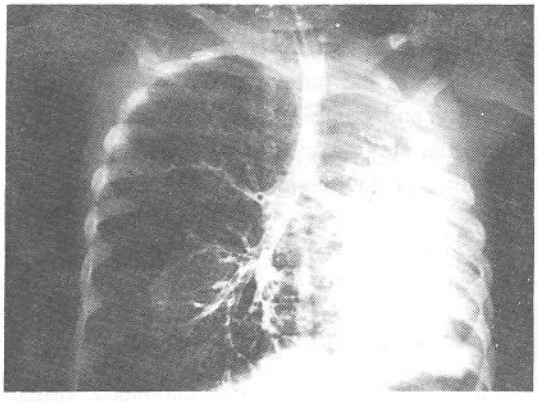

Fig. 1. Bilateral bronchogram shows saccular bronchiectasis involving the left kemithorax.

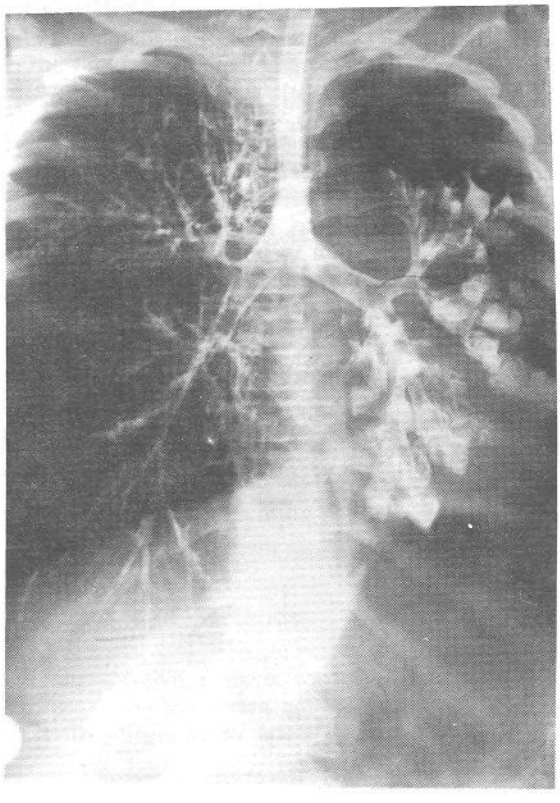

Fig. 2. Bilateral bronchogram shows cystic bronchiectasis involving the left hemithorax.

26 patients who had localised disease and were symptomatic fulfilled this criteria and underwent operations. The operations performed are shown in Table I.

Complications of surgery: Of the 26 patients treated surgically there were only two cases with complications. One was a mild wound infection successfully treated with antibiotics. We had a serious complication, bronchopleural fistula associated with empyema in one of the cases in whom pneumonectomy was performed. The patient was treated with drainage. There was no operative or late death in any of our patients.

Only one patient was lost to follow-up. For the other patients the follow-up period ranged from 1 to 3 years after discharge. One of the patients who had pneumonectomy and 1 patient with right lower and middle lobe involvement had progressive deterioration due to widespread or irreversible bronchitis. The other patients were free of any symptoms.

Table I.

Operations Performed	No of the patients		%
Pneumonectomy (left)		5	- 19.3
Lobectomy or bilobectomy		21	80.7
Left upper lobe	8		
Right lower, lobe	6		
Right lower and middle lobes	3		
Left lower and lingula lobes	3		
Right middle lobe	1		
Total	26		100

Discussion

Bronchiectasis is defined as an abnormal and irreversible dilatation of one or more bronchi [4]. In most patient the diagnosis is apparent from physical examination and chest radiograph. Bronchography has been used to confirm the diagnosis and determine the distribution of anatomic involvement. The classification of bronchiectasis is based on the those proposed by Reid [7]: Cylin-

drical bronchiectasis where the bronchi are dilated but in regular shape; varicose in which the contours of bronchi are irregular and saccular in which there is progressive increase in bronchial dilatation and the bronchi resembles a balloon. Most of our patients had cylindrical (70 %), the rest had saccular type of bronchiectasis.

The indications for performing bronchography have changed in the past years. Indications are as follows: a) To confirm a clinical diagnosis when laboratory information are nondiagnostic, b) to establish the presence of localised disease so that resection can be amenable if the remaining lung tissues is minimally involved or normal. c) to diagnose bronchiectasis in persistant hemoptysis [1]. The treatment of brohchiectasis includes segmental removal, chemotherapy of infection and specific therapies (e.g.immunoglobin) for the underlying causes whenever feasible.

Patients with localized lesions and symptoms causing discomfort, e.g. recurrent exacerbation of fever, excess sputum production, dispnea are treated surgically. For localized disease surgery is advocated in children because the residual lung can grow to fill the space left in the chest after resection [5]. Of the 50 patients 26 had localized bronchiectasis for which surgical resection was performed. Most of the patients underwent surgery for lobectomy (80.7 %).

The complication rate in our series is 4 %. Serious complication (fistula and empyema) was observed in 1 case. Our complication rate is compatible with those reported by Sandersen et al [8].

The mortality rate due to surgery was 0 % in our patients. postoperative fatality rate is also low in the literature and has declined from 1.3-1.7 % to less than 1 per cent in the 1970s [6]. During the follow-up period we had only 2 patients developing extensive disease (7.7 %). Our follow-up period is relatively short to assess the prognosis after surgery in childhood bronchiectasis.

Our study confirms the findings by others [6] that bronchography is a definitive and safe procedure. Surgical resection is preferred when the lesion is localised and the patient is symptomatic. The mortality and complication rate of surgery is low. Other studies need to be carried out in the future to evaluate longterm effect of surgery.

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