Follicular bronchiolitis associated with lung abscess in an eight-year-old girl

Nevin Uzuner[1], Arzu Babayiğit[1], Duygu Ölmez[1], Özkan Karaman[1], Erdener Özer[2]
Demet Can[3], Handan Çakmakçı[4], Ahmet Önen[5], Aydanur Kargı[2]

Departments of [1]Pediatric Allergy, [2]Pathology, [4]Radiology, and [5]Thoracic Surgery, Dokuz Eylul University Faculty of Medicine, and [3]Behcet Uz Children's Hospital, Izmir, Turkey

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Hemoptysis as a result of pulmonary or bronchial pathologies is a rare but potentially serious problem in childhood. The presented case is an eight-year-old previously healthy girl who was admitted to the emergency department because of recurrent hemoptysis. Because high resolution computerized tomography (HRCT) showed an abscess cavity, antibiotic therapy was continued about six weeks. Lobectomy was done when massive hemoptysis recurred. Histopathological examination revealed follicular bronchiolitis, which is a very rare entity, particularly in childhood. Although HRCT imaging is of great value in the diagnosis of this disease, in our case it failed to show any evidence of follicular bronchiolitis. In conclusion, the definitive diagnosis of follicular bronchiolitis always requires histopathologic examination of open lung biopsy.

Key words: follicular bronchiolitis, children, histopathology.

Follicular bronchiolitis is a well-defined pathological condition consisting of abundant hyperplastic lymphoid follicles with reactive germinal centers distributed along the bronchioles[1]. There are only a few reports of follicular bronchiolitis in the pediatric literature. The presented case was an eight-year-old previously healthy girl who underwent lobectomy because of massive hemoptysis. Histopathological examination of her surgical specimen revealed follicular bronchiolitis.

Case Report

An eight-year-old girl was admitted to our hospital with complaints of cough and hemoptysis. It was learned from her medical history that she had been referred to a state hospital because of fever and hemoptysis following cough two weeks previously. The chest X-ray and high-resolution computerized tomography (HRCT) findings of the patient showed infiltration in the right upper zone and an abscess cavity (Fig. 1). Based on these findings, vancomycin, ceftriaxone, and ornidazole were started. On the 14th day of the antibiotic therapy, massive hemoptysis (250 ml) recurred and the patient was referred to our hospital for further investigation. On physical examination, she was pale in appearance and had no abnormal pulmonary auscultation finding. No remarkable finding other than mild anemia, elevated erythrocyte

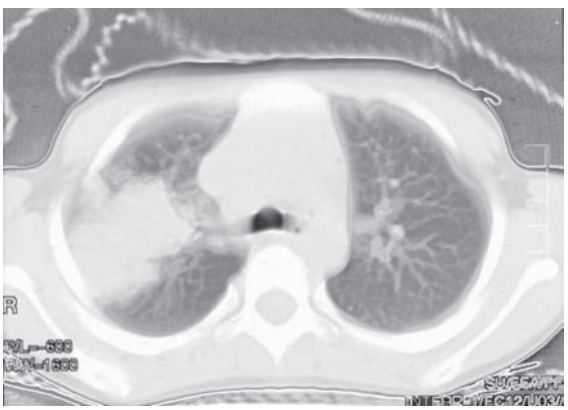

Fig. 1. Cavity consistent with abscess in the upper lobe of the right lung (HRCT).

sedimentation rate and C-reactive protein (CRP) levels were determined (Table I). On the HRCT examination, a cavity consistent with an abscess regressing with antibiotic therapy on the posterior segment of the upper lobe of the right lung was detected (Fig. 2). Vancomycin, ceftriaxone, and ornidazole were continued for six weeks.

The patient underwent emergent lobectomy of the upper right lobe due to massive hemorrhage (300 ml) following the completion of the antibiotic treatment. Gross examination of the surgical specimen revealed an abscess with a maximum diameter of 27 mm (Fig. 3). Histopathological examination of the surgical specimen revealed a resolving abscess formation

Table I. Laboratory Investigations of the Patient

Hematocrit (%)	30.8
White blood cells count (per mm^3)	6600
Platelets (per mm^3)	151,000
Mean corpuscular volume (fl)	75.8
Reticulocyte count (%)	0.4
Prothrombin time (sec)	12.9
Partial thromboplastin time (sec)	27.5
Erythrocyte sedimentation rate (mm/hr)	29
C-reactive protein (ng/ml)	9.21
Immunoglobulins (mg/dl)	Ig G=810, Ig M=110 Ig A=120, Ig E=15
Sweat test	24 mEq/L
Anti-HIV	Negative
Tuberculin skin test	8x8 mm
Sputum culture	Negative
Sputum AFB	Negative
PCR for tuberculosis bacilli in the sputum	Negative
BAL fluid culture	Negative
BAL fluid AFB	Negative
BAL fluid PCR for tuberculosis	Negative

HIV: Human immunodeficiency virus. AFB: Acid-fast bacilli. PCR: Polymerase chain reaction. BAL: Bronchoalveolar lavage.

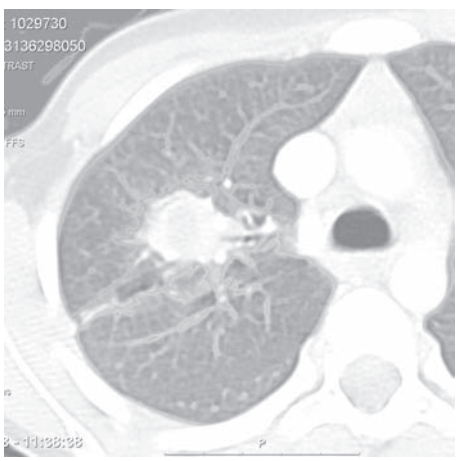

Fig. 2. Significant reduction in the size of the cavity compared with the first investigations (HRCT).

Fig. 3. Cutting surface of the upper right lobectomy specimen. Note the nodular area.

and follicular bronchiolitis. The latter consisted of abundant peribronchial lymphoid follicles adjacent to and distant from the abscess (Fig. 4). The patient was discharged two weeks after the lobectomy, with inhaled steroids which were continued for six months. Systemic steroid was not given to the patient because her clinical situation improved and pulmonary function tests after the operation were in normal limits with inhaled steroids. She has been without complaints during her follow-up for a year.

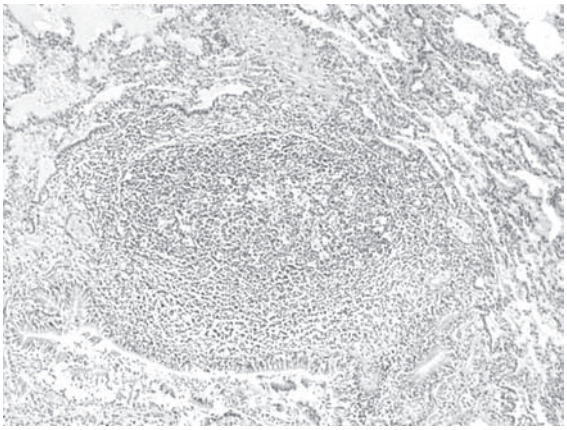

Fig. 4. Lung parenchyma distant from the abscess consisting of a peribronchial lymphoid follicle (hematoxylin-eosin, x100).

Discussion

Follicular bronchiolitis is hyperplasia of bronchial-associated lymphoid tissue and characterized by hyperplastic follicles as a consequence of lymphoid tissue hyperplasia. Most cases are associated with asthma, chronic obstructive pulmonary diseases, cystic fibrosis, collagen tissue diseases, autoimmune diseases, immune deficiency states and systemic hypersensitivity reactions[1-3]. It also occurs in a variety of non-specific airway inflammatory conditions. Follicular bronchiolitis of the lung in our patient was considered to have developed as a result of initial pulmonary infection and consequent lung abscess.

Clinical signs of follicular bronchiolitis are non-specific, including cough, shortness of breath, tachypnea and cyanosis[4]. Symptoms of the disease have been emphasized to begin in the infantile period[2], but our patient was asymptomatic until she was eight years old. Benesch et al.[5] reported in their study that the disease may also begin in later periods of life. Although follicular bronchiolitis is a very rare entity in childhood, three of the reported cases were of Turkish origin, which may suggest that an infectious agent or genetic predisposition currently not determined leads to dysfunction in the pulmonary lymphoid tissues.

High-resolution computerized tomography imaging is of great value in the diagnosis of follicular bronchiolitis. It may reveal parenchymal nodular opacities, bronchial dilatation, thickening of the bronchial wall, interlobular septum thickening, peribronchovascular consolidation, bronchiectasia and bronchiolectasia[3]. But computerized tomography did not provide any clue for the diagnosis in our patient. Thus, we emphasize that open lung biopsy should be performed in order to establish a definitive diagnosis even though HRCT findings are not consistent with the diagnosis.

Although the clinical findings in children with follicular bronchiolitis begin in early childhood, last over a long period and almost all patients show findings consistent with the disease on HRCT, the patient presented here had clinical findings that began later, at eight years of age, and tomography did not provide any diagnostic clue for follicular bronchiolitis.

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