**BOOP: what is old, what is new?**

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Old is the disease, and old is the description of the pathological lesion. New is the term bronchiolitis obliterans organizing pneumonia (BOOP), and new is the recognition of the characteristic clinical and radiological findings associated with the histological lesion, i.e. the recognition of a clinicopathological entity. How can this entity be defined?

Firstly, it can be idiopathic or can be produced by a variety of immunological, toxic, and inflammatory processes. Idiopathic BOOP [1, 2] or cryptogenic organizing pneumonia (COP) [3] can be defined as a clinicopathological entity of unknown origin characterized by: i) the clinical presentation with a preceding flu-like illness and a short history of progressive dyspnea associated with: 2) patchy infiltrates on chest radiogram and/or computerized tomographic (CT) scan; and 3) the pathohistological pattern of intraluminal organization predominantly within the alveolar ducts.

BOOP is a disease with a restrictive ventilatory defect involving the lung parenchyma. Therefore, the disease is best classified as part of the spectrum of infiltrative or interstitial lung diseases [2, 4]. It is not a predominant or pure disorder of the small airways, as the first two words of the name BOOP may suggest. What is new recognized as BOOP or COP is, according to Epler and Colby [1], the same reaction that was labelled bronchiolitis interstitial pneumonia (BIP) by Liebow and Carrington [5] in their classification of the chronic interstitial pneumonias.

The pure bronchiolitis obliterans (without organization) is a totally different disease, both clinically and pathologically. It is a true disorder of the small airways with stenotic, scarred, constrictive bronchiolitis (without intraluminal plugs or polyps) leading to airflow obstruction; the chest radiogram is normal or shows hyperinflation and occasionally small nodules [6-9]. It appears to be a much rarer disease than BOOP. The majority of the 52 cases in the first extensive roentgenologic-pathologic study of bronchiolitis obliterans, published by Gosink et al. in 1973 [6], would be classified as BOOP today.

The German pathologist Lange [10] was first to describe the pathological lesion of BOOP as early as 1901, in two cases. What he observed and termed "Bronchitis et Bronchiolitis obliterans" was not the small airways disease of scarred constrictive bronchiolitis with airflow obstruction; it was exactly the lesion now called BOOP or cryptogenic organizing pneumonia. Clinically, his two cases presented with a history of fever, cough and increasing dyspnoea of eight days and six months duration, respectively. On auscultation, crackles were heard in both patients. Both died on the second day in hospital. The postmoriem findings were described by Lange in detail, and he found organizing exudates with plugs of granulation and young connective tissue that were located within small bronchi, bronchioi, and alveoli. He already recognized that the plugs always extend from the walls of bronchioles into the alveolar lumen, and never grow from the alveolar wall itself.

In 1983, Davison et al. [3] in London, recognized the association of the distinct clinical features with the pathological lesion in this condition. In their report on eight cases of unknown etiology, they suggested the term “cryptogenic organizing pneumonitis” in order to avoid confusion with postinfective organizing pneumonia. They also reported the dramatic response to prednisolone and the frequent relapse when the dose was reduced too quickly.

In 1985, Epler et al. [2] extended Davison’s observations in their report on 50 idiopathic cases with this clinical syndrome. This article from Boston popularized the disorder and gave important information such as the typical clinical presentation, the typical patchy infiltrates on chest radiographs, and the fact that long-term treatment (3-12 months) with steroids is necessary to prevent relapse of the disease. Already in 1983, Epler and Colby [1] were first to use the term “BOOP” in an Editorial on the spectrum of bronchiolitis obliterans with a proposal for a clinical classification of this disease.

Since 1985, there were first preliminary reports on the bronchoalveolar lavage (BAL) cell types and the constant decrease in the CD4/CD8 ratio of BAL lymphocytes [11, 12] as well as on CT findings [13, 14]. It was only in 1989, that first observations appeared on the peripheral location of the patchy infiltrates in BOOP [15, 16]. It is our experience that the CT scan is more sensitive in recognizing the peripheral character of the patchy infiltrates than the conventional chest radiogram, and that they are frequently shaped like triangles which appears to be the characteristic CT feature of BOOP infiltrates [17].

To the best of our knowledge, there have so far been 41 cases of idiopathic BOOP reported in Europe.
Pathologic features

BOOP

Warwick MEH. - Cryptogenic organizing pneumonitis. Gaensler EA. - Bronchiolitis obliterans organizing pneumonia. The differences are clearly presented by our authors who have to recognize, however, is the clear distinction for another entity, namely idiopathic pulmonary fibrosis. BOOP exclusion of and after ruling out conditions or entities that show idiopathic histological lesions with a specific and may be found in influenza and other organizing infections [1, 6, 40, 42], hypersensitivity pneumonitis [43, 44], chronic eosinophilic pneumonia [15, 43, 46], radiation pneumonitis [47], organizing diffuse alveolar damage, distal to bronchial obstruction, associated with chronic aspiration, lung abscesses, and Wegener's disease [48].

There is also a localized form of the histologic BOOP pattern that may best be termed "focal organizing pneumonitis." Usually, such solitary lesions are incidental findings in asymptomatic patients where biopsy or resection was performed for suspected carcinoma [1]. Thus, idiopathic BOOP or COP can only be diagnosed after exclusion of BOOP secondary to an underlying disorder and after ruling out conditions or entities that show histological lesions with a BOOP pattern.

We believe that there is no way back to one name for this clinicopathological entity. We have to live with BOOP or COP as we have to live with different names for another entity, namely idiopathic pulmonary fibrosis (IPF) also called usual interstitial pneumonia (UIP) (Liebow); cryptogenic fibrosing alveolitis (CFA) (Turner-Warwick); diffuse fibrosing alveolitis (DFA) (Scadding); the list of synonyms for IPF is not exhaustive! What we have to recognize, however, is the clear distinction between BOOP or COP as an interstitial or infiltrative lung disease and pure obliterative bronchiolitis (BO) as a disease of the small airways with airflow obstruction. The differences are clearly presented by du Bois and Gagnière [49] in their Editorial in this issue of the Journal.

References


Le C.T. scan est plus sensible pour reconnaître le caractère périphérique des infiltrats irréguliers que ne l'est le cliché thoracique conventionnel. Les 42 cas publiés en Europe sont ensuite passés en revue.