

## Diffuse lung diseases and HRCT: limitations of radiologists

Doenças pulmonares difusas e TCAR: os limites do radiologista

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The use of patterns to interpret pulmonary lesions seen in chest imaging studies has been discussed for decades. There have always been discrepancies between what is seen on imaging studies and the pathological findings. In addition, the agreement between experienced thoracic radiologists on the interpretation of such patterns is the focus of study within this broad group of diseases.<sup>(1)</sup>

Currently, HRCT scans are an integral part of the evaluation of patients with diffuse lung diseases, since these scans overcome the deficiencies observed in chest X-rays, allowing greater agreement between and among radiologists with regard to the patterns observed.<sup>(2)</sup> In addition to being used for the diagnosis of pulmonary lesions, CT scans also aid in determining prognosis and monitoring the progression of lesions.<sup>(3)</sup> The following question arises: are those patterns characteristic of certain diseases?

When radiologists are confronted with a diffuse lung disease, the identification of honeycombing or peribronchovascular thickening allows the working diagnosis to be accurate in over 90% of the images analyzed. In cases in which there are lung cysts, accuracy ranges from 80 to 89%. Although ground-glass attenuation alone is of little help for the characterization of lesions, this changes when it is seen in combination with other characteristics, such as honeycombing or predominant distribution in the lower lung.<sup>(3,4)</sup>

The identification of these patterns and their association with specific diseases allow definitive diagnosis without the need for biopsy, principally when there is a correlation between the patterns observed and the clinical data. This is true in a number of situations, principally in usual interstitial pneumonia.<sup>(3,5,6)</sup> In approximately 50% of cases, HRCT findings suffice for the differentiation between usual interstitial pneumonia, nonspecific interstitial pneumonia and the chronic form of hypersensitivity pneumonia.<sup>(5)</sup> In addition, HRCT is useful for the diagnosis of other diseases, such as lymphangitic carcinomatosis, silicosis, sarcoidosis and the

subacute form of hypersensitivity pneumonia, as well as pulmonary alveolar proteinosis.<sup>(3)</sup>

Another point to be considered is the capability of the radiologists who interpret the HRCT scans. Although the level of agreement between readers at different facilities ranges from fair to moderate, the overall accuracy of the clinical diagnosis of idiopathic pulmonary fibrosis in specialized centers is good (87.2%).<sup>(7)</sup>

Antunes et al., in an article published in this issue of the Brazilian Journal of Pulmonology, concluded that the level of interobserver and intraobserver agreement in the analysis of HRCT scans of patients with diffuse lung diseases ranged from fair to almost perfect, and that this agreement was influenced by radiologist expertise, knowledge of the clinical history of the patient and degree of confidence in the development of the diagnostic hypotheses.<sup>(8)</sup> Another group of authors also recognized that the accuracy of the interpretation of CT scans by experienced radiologists cannot be generalized to all radiologists.<sup>(4)</sup>

According to another group of authors, the diagnosis of idiopathic pulmonary fibrosis requires specific knowledge that should be available at tertiary referral centers, where there is collaboration among clinicians, radiologists and specialized pathologists.<sup>(7)</sup> The study conducted by Antunes et al. provides a welcome analysis of the training offered to radiologists during their academic studies: a well-structured residency program will allow good reproducibility of the method, but the experience of the specialist in the field is central to greater diagnostic reliability.<sup>(8)</sup> This corroborates the analysis carried out by another group of authors, who recommended that the training of professionals for radiological interpretation be expanded to regional centers.<sup>(2)</sup>

Undoubtedly, HRCT scans are a valuable tool for the diagnosis of patients with diffuse lung diseases. However, we must consider the limitations of HRCT for this purpose and, above all, the method should be based on the clinical condition of the patient. Radiologists play a key

role in this diagnostic process and in patient follow up. However, they should be aware of their limitations, which are related to individual experience and to the method itself. The limitations of the method include nonspecific lesion patterns (e.g., ground-glass attenuation), a large number of diseases with similar findings and the fact that one disease might present with different patterns or have an uncharacteristic presentation.

These are the limitations of radiologists, or more specifically, of the diagnostic method used.

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