Improving the Evaluation of Diffuse Infiltrative Lung Diseases by Means of Mutual Education: Difficult Task, but Worth a Try

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In this issue of *Respiration*, Diette et al. [1] present the results of an interesting analysis, examining whether US pulmonologists are prepared and willing to accept a high-resolution computerized tomography (HRCT) diagnosis of usual interstitial pneumonitis/idiopathic pulmonary fibrosis (UIP/IPF), instead of a lung biopsy.

This idea makes sense because transbronchial lung biopsy presents obvious and important limitations in this field, whereas surgical biopsy is not always feasible and is associated with not trivial morbidity and mortality rates [2]. Furthermore, diffuse lung diseases (DLDs) often present regional heterogeneities which represent problems for the reading pathologist, especially when multiple biopsies of different lobes cannot be performed. For example, according to different authors [3–5], discordant findings in multiple biopsies can be found in up to 26% of patients affected by idiopathic interstitial pneumonias (IIPs). In addition to the sampling error, histology also presents difficulties related to inter-observer agreement.

Nicholson et al. [6] reported that in 18% of the biopsy specimens the diagnosis was given by pathologists with low confidence; the largest variation (over 50%) was found in the differential diagnosis between UIP/IPF and nonspecific interstitial pneumonia (NSIP). Otherwise, providing clinical and radiological information to pathologists can lead to a substantial change in the pathological diagnosis in 20% of IIPs. For these reasons, a reliable noninvasive diagnosis of DLDs should be welcomed by all pulmonologists across the pond. We assume that the

results of this study can also be reasonably applicable to specialists outside the US.

A secondary aim of the study was to examine the consistency of physicians' practices with the current evidence-based guidelines [7]. The information obtained was significantly more extensive because a list of the 16 more common subacute or chronic diffuse conditions was also added to the questionnaire. The participating pulmonologists were asked to indicate how frequently in their practice they were willing to rely on the HRCT diagnosis of these conditions to begin a treatment, assuming that the HRCT diagnosis, made by an experienced radiologist, was concordant with the clinical presentation.

23% of responders indicated that HRCT always or frequently obviated the tissue diagnosis; 53% that HRCT can sometimes do so, and 24% seldom or never. Most pulmonologists do not believe that HRCT is sufficiently specific to avoid biopsy, with a notable exception of UIP/IPF (2/3 of responders), coniosis and bronchiectasis. Thus, regarding UIP/IPF, the prevalent opinion was consistent with the more recent guidelines [7] stating that surgical biopsy is indicated only for patients without a typical HRCT and clinical presentation, mainly to differentiate between UIP and NSIP.

As a matter of fact, it is well known that the accuracy of a confident diagnosis of UIP on HRCT is upwards to 90% for experienced observers [8]. State of the art CT also allows a precise score of honeycombing and consistent

serial follow-up examinations to be made, which are both useful in predicting the prognosis [9].

Biopsy is also considered appropriate in symptomatic subjects with a clinical suspicion of DLDs when HRCT is normal, because the false-negative rate of this imaging method is about 10% for the entire group of DLDs and false-negative cases can even be found, albeit more rarely, in histologically proven UIP/IPF [10–12].

Notice that the article of Diette et al. [1] refers to chronic conditions, mainly characterized by interstitial or cystic patterns on HRCT. Admittedly, acute diseases or diseases presenting with a predominant ground glass opacity or consolidative pattern can be more difficult to characterize precisely using HRCT [2, 13]. The HRCT diagnosis of the remaining 13 subacute or chronic diseases, including lymphangioleiomyomatosis (LAM) and Langerhans cell histiocytosis (LCH), was not deemed an acceptable substitute for biopsy.

Pulmonologists poorly trained to interpret CT images were significantly more likely to believe that CT is seldom or never able to suggest the correct diagnosis, versus those referring 5 or more patients per month for HRCT studies.

The reticence to accept a HRCT diagnosis of the other entities included in the questionnaire, such as LAM or LCH, in lieu of biopsy was somewhat unexpected. In fact, HRCT is significantly more accurate than chest X-ray in the detection and characterization of DLDs [10, 11, 14], provided that the diagnostic approach also encompasses the time factor and the clinical context. HRCT diagnosis

is highly reliable in a substantial array of common and uncommon DLDs [9, 13–16].

Aziz et al. [17] demonstrated that there is good agreement between radiologists for HRCT evaluation of a number of DLDs in which the findings are rather typical, in the appropriate clinical context, although a lower confidence and agreement is typically found in the diagnosis of NSIP versus UIP/IPF.

The likely reason of the physicians' reticence reported by Diette et al. [1] is that certain diseases are relatively rare and most pulmonologists are not familiar enough with them. Therefore, further educational efforts should be made to increase the awareness of HRCT strengths and limitations in this field, helping to obviate unnecessary biopsies, at least in typical cases.

We, the radiologists, must educate pulmonologists and, of course, be educated by them, in a continuous interplay. This need seems somewhat at odds with the trend of contemporary radiology towards advanced technology (PACS, CAD programs and so on), separating radiologists more and more from other specialists by site and time in a sort of involuntary professional seclusion. However, the effort is definitely worth a try, because 'a decision team is always better than a decision tree' [18].

On the top of all that, we now acknowledge that, in the realm of DLDs and particularly in the diagnosis of IIPs, a pathologic gold standard simply does not exist. Fortunately, we are left with a useful silver standard, consisting of a dynamic, daily interaction between clinicians, radiologists and pathologists.

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