Editorial

Rapid on-site cytological evaluation of transbronchial needle aspiration: Why not?

In this issue of Lung India, Walia and coworkers report their 1-year experience with conventional transbronchial needle aspiration (TBNA) in 26 patients with suspected lung cancer and mediastinal involvement.[1] The authors obtained a diagnosis with TBNA in 11 cases (42.3%), the sample was adequate in 57.7% of patients, TBNA was the sole diagnostic technique in 6 cases and no complications related to the sampling procedure were observed. Even if the study is performed retrospectively on a small number of subjects, it provides further evidence that conventional TBNA is a safe and useful technique and that it should be performed routinely during the first diagnostic bronchoscopy, when computed tomography (CT) scan shows a mediastinal involvement, expecially in settings where endobronchial ultrasound guidance (EBUS) is not available.

The authors must be congratulated for describing their nice experience, however, three main issues related to this paper deserve a discussion and some comments.

The first point is concerned with the relatively low diagnostic yield (42.3%) obtained by TBNA. There are several factors affecting the diagnostic yield of conventional TBNA and, of these, the size of target lesions is one of the strongest predictors.[2] Unfortunately, data about lymph nodes size are not available in this paper. The 42.3% yield would be quite good if patients with lymph nodes of any size were included, but it should be considered fair if TBNA was performed on large nodes, greater than 2 cm in size.

The second comment deals with the role of needle aspiration procedures in the new era of "targeted" lung cancer therapy. In fact, a specimen should be considered as adequate if enough material for tumor typing and biomolecular assessment is available (Epidermal growth factor receptor (EGFR), K-ras, echinoderm microtubule-associated protein-like 4 and anaplastic lymphoma kinase fusion-EML4-ALK). We do not know if the diagnostic samples obtained by TBNA in this paper were also suitable for a mutational status analysis, but we encourage anyone involved in this field to consider this relevant issue. In the future, every study evaluating sampling techniques in lung cancer should provide information on the adequacy of the obtained material in terms of tumor molecular assessment.

The third concern is related to the fact that Walia and coworkers performed TBNA without rapid on-site cytological evaluation (ROSE). Could ROSE have had improved TBNA accuracy and samples adequacy for molecular studies?

In the scientific community, there is a long-standing debate about the possible role of ROSE in optimizing the results of conventional and EBUS-guided TBNA.[3-5] ROSE has been carried out for many years in the diagnostic approach of mediastinal pathologies and peripheral pulmonary lesions.[6] Several studies have addressed the role of ROSE in the diagnostic yield of bronchoscopic procedures, reporting, however, conflicting results. Although uncontrolled studies on ROSE efficacy reported encouraging results,[7-9] two recent prospective trials[10-11] failed to show higher diagnostic yield or specimen's adequacy when this technique was added to TBNA. However, it must be underlined that these two studies were performed in expert centers with large experience and skill on TBNA, but it would be interesting to verify wheter these results could be reproduced in less- experienced or educational settings.[4] Furthermore, there is no study addressing the role of ROSE on sample adequacy in terms of tumor typing and/or molecular evaluation.

Considering the above-mentioned evidences, it is difficult to answer to the question about the effect that ROSE would have had on TBNA obtained by Walia *et al*.[1] However, in the studies by Trisolini[10] and Yarmus,[11] ROSE allowed to reduce the number of needle passes, avoiding additional sampling techniques and decreasing complication rate, time and costs. In any case, ROSE may lead to guide and to optimize the strategy of the bronchoscopic procedure. In the paper of Walia *et al*., it is reported that in five cases (about 20% of the procedures) TBNA was diagnostic along with other bronchoscopic samples (bronchoalveolar lavage, bronchial washing, bronchial biopsy and bronchoscopic lung biopsy). It could be easily speculated that a positive result of ROSE after TBNA could have avoided such supplementary sampling techniques.

Why is ROSE underutilized and why Walia and coworkers did not perform it?

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The main reason why ROSE is still not a widespread procedure is that cytopathologists are not routinely available in the bronchoscopic suite. In many centers, this is due to lack of time, personnel and resources.

To overcome this problem, we have recently performed a prospective study[12] to verify if a pulmonologist, after a short (3 months) intensive training on cytopathology, could be able to perform ROSE and to assess the adequacy of conventional TBNA samplings. We compared the evaluation of the trained pulmonologist with that of an experienced cytopathologist, deemed as gold standard, in 362 TBNA samples performed on 84 patients. Of course, the role of ROSE in this setting is not to formulate a definite diagnosis (that remains the task and responsibility of the pathologist), but to focus on a preliminary evaluation of sample adequacy for the best management of the bronchoscopic procedure. In other words, the role of pulmonologist is just to verify if there is diagnostic material on the slide and if it allows to perform further molecular studies. Our results showed that there was an 81% overall agreement between pulmonologist and cytopathologist in the evaluation of ROSE and this excellent value further increased in cases of malignant diseases.[12] It should also be underlined that ROSE does not require expensive tools to be performed, since rapid stain method is very cheap and a microscope is easily available in any hospital. Thus, this procedure could be implemented even in developing countries.

The success of TBNA is the final result of a complex process that involves several steps: the careful examination of CT scan and/or positron emission tomography (PET) images, a good bronchoscopic technique, and the management and the evaluation of the sampled material. While the pulmonologist is able to manage the first two steps (we do not need a "radiologist on-site" during bronchoscopy), there is a cultural bias that does not allow to include a basic cytopathological training in the educational pathway of the pulmonologists. I sincerely hope that in the future this bias could be overcome and that every future study on TBNA could include ROSE as a routine practice.

In 2005 we wrote an editorial for Respiration titled "It is time for this ROSE to flower".[3] Following this theme, we could say that adding an educational intervention in pulmonary cytopathology to the training program of pulmonologists could be the way to make this ROSE more red.

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