Macroscopic on-site evaluation during EUS-fine needle biopsy with combined cyto and histological analysis may overcome the need of rapid on-site evaluation

Dear Editor,

We read with great interest the article of Oh *et al.*[1] about the use of macroscopic on-site evaluation (MOSE) as an adjunct technique in EUS guided fine-needle biopsy (FNB). The authors reported that MOSE can improve the diagnostic accuracy of FNB samples of up to 94.5%. Due to the limited availability of rapid-onset site evaluation (ROSE), they argued that EUS-guided FNB with MOSE can replace EUS-FNA with ROSE in terms of optimal histological obtaining and diagnostic accuracy. However, the direct comparison of the two techniques was not previously reported.

In our center, we aimed to assess the accuracy of simultaneous cytological/histological analysis after MOSE in EUS-guided FNB, as well as to compare the diagnostic yield of this method with the use of ROSE during EUS-FNA.

For this purpose, we performed a prospective study with a consecutive cohort of patients who underwent EUS-FNB for solid upper gastrointestinal lesions, from January to December 2018, in a single, tertiary center. After EUS-FNB, the biopsy specimen was expressed entirely onto a slide. The macroscopic visible core (MVC) was then fixed in formalin for histological evaluation, and the residual sample was used in a smear for cytological assessment (combined cytological-histological analysis), as described by Iwashita *et al.*[2] Control cases were obtained using a historical cohort from the same center, of patients submitted to ROSE during EUS-FNA of pancreatic solid lesions. The final diagnosis was based on the pathology report.

We included 52 cases (mean age 61.1 ± 6.5 years, 58% males) with pancreatic solid lesions (51.9%), lymph nodes (19.2%), and subepithelial lesions of the digestive tract (28.8%). Lesions had a mean diameter of 37.1 ± 18.0 mm. For EUS-FNB we used mostly "Franseen" (65.4%) and "Fork-tip" (25.0%) type FNB needles, with a median number of 3 (IQR 2-3) passes.

The obtained MVC was satisfactory for histological evaluation in 82.7%. The combined cytological-histological analysis revealed a diagnostic yield of 86.5%. MOSE followed by combined cytological-histological analysis showed a sensitivity of 93.3%, specificity of 85.7%, and a positive predictive value of 97.7% to obtain an adequate sample for pathological diagnosis.

When compared with the cohort submitted to EUS-FNA with ROSE (61 lesions, with a mean diameter of 37.6 mm ± 35 mm), the combined cytological-histological analysis revealed similar diagnostic accuracy (MOSE: 86.5%, ROSE: 83.6%, $P = 0.66$).

Our results support that EUS-guided FNB with MOSE and combined cytological-histological analysis allow an overall diagnostic yield similar to ROSE. With this easy-to-perform technique, many difficulties related to the use of ROSE can be overcome, without decreasing the accuracy of pathological diagnosis.

Of note, in our cohort, the percentage of identified histological core was lower than the results presented by Oh *et al.*[1] (86.5% *vs.* 94.9%, respectively), what in part can be justified by the absence, in our protocol, of the use of the paper filter to absorb the blood clots after expelling FNB samples.

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Conflicts of interest
There are no conflicts of interest.

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