

EP02.18: Cryobiopsy (CRYO) and use of rapid on-site evaluation (ROSE) slides for molecular analyses in lung cancer diagnosis

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INTRODUCTION

The optimal management of diagnostic samples is critical for the appropriate treatment of non-small cell lung cancer (NSCLC) patients. Slides from ROSE might be comparable to fixed diagnostic samples for performing molecular analyses. CRYO samples might be more representative of tumor compared to cell block and more adequate for PD-L1 determination.

METHODS

Patients with suspected thoracic malignancy underwent concurrent endobronchial ultra-sound (EBUS) and CRYO. During each procedure, ROSE and touch imprint ROSE (TIR) were performed. In case of cancer diagnosis, molecular analyses by next generation sequencing for clinical decisions (clinical NGS) and PD-L1 assessment were performed. We retrospectively evaluated feasibility of NGS on ROSE/TIR sample (ROSE/TIR-NGS) and compared it with clinical NGS for each patient; additionally, we compared PD-L1 expression on CRYO and EBUS for each patient.

CONCLUSION

ROSE/TIR-NGS is a feasible and reliable method for molecular characterization, potentially saving tissue and starting NGS earlier, while pathologic diagnosis is ongoing. However, caution is warranted regarding RNA-based test (e.g. rearrangements/fusions).

Furthermore, CRYO improves PD-L1 evaluability compared to EBUS cell blocks. Integrating these techniques can optimize the diagnostic workflow, ensuring comprehensive biomarker testing even with limited sample availability.

REFERENCES & ACKNOWLEDGEMENTS

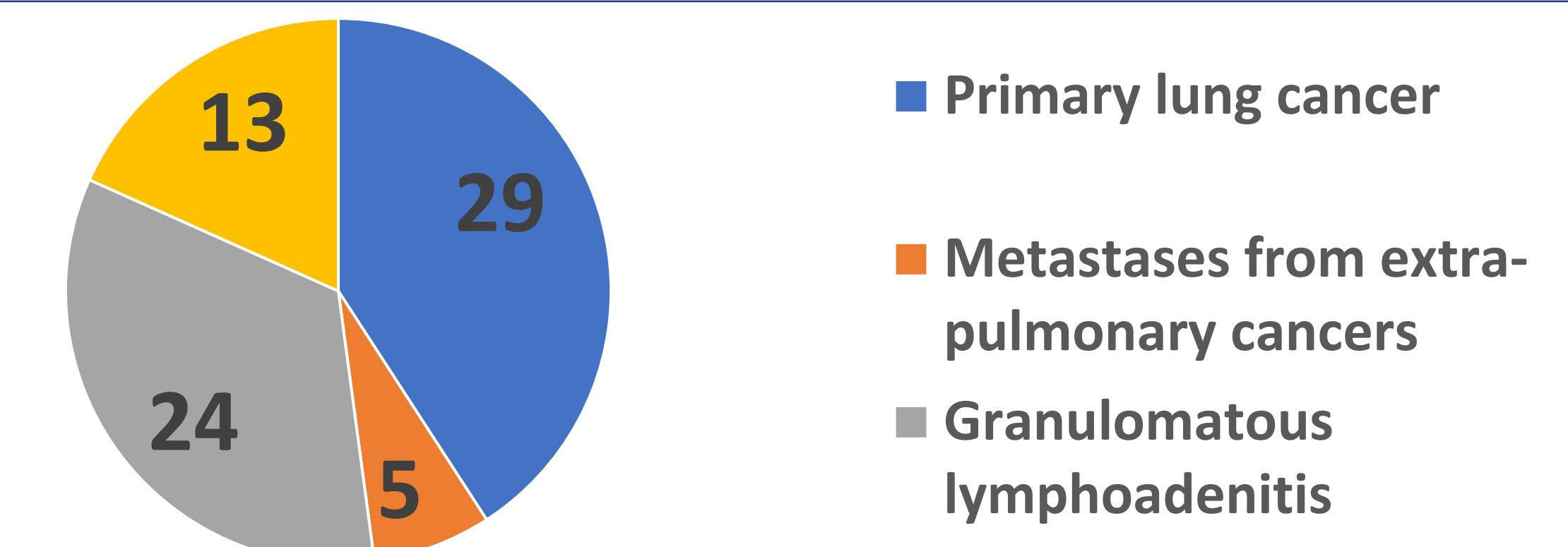
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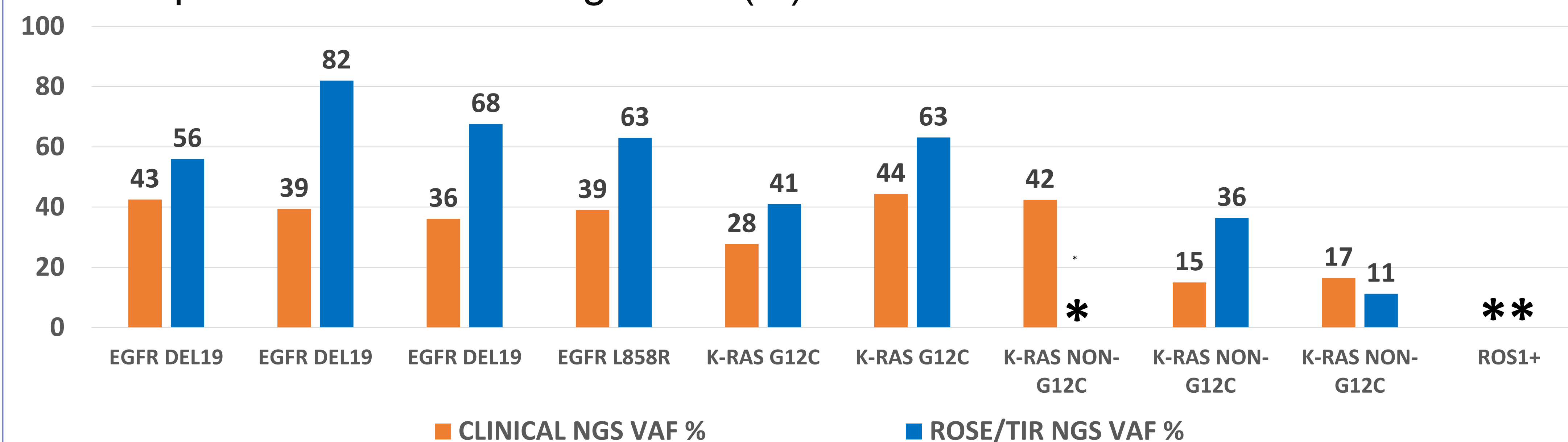
No AI was used in the generation of the content; AI tools were utilized strictly for proofreading and grammatical correction (Google Gemini PRO).

RESULTS

71 consecutive patients underwent EBUS/CRYO.



For 10 diagnostic samples in which clinical NGS detected oncogenic drivers, slides from ROSE/TIR were available for retrospective NGS. ROSE/TIR-NGS showed high concordance (9/10), often yielding higher variant allele frequencies (VAF) compared to clinical NGS. In one case, K-RAS non G12C mutation was observed in clinical and ROSE/TIR NGS, but not reported in the latter (*). Notably, in the single case in which ROSE/TIR-NGS failed, clinical NGS reported ROS1 rearrangement (**) and VAF was not available.



In 14 cases, PD-L1 expression was determined either on CRYO or EBUS sample and complementary sample for tissue comparison was available. PD-L1 expression was generally higher for CRYO. In 4 cases, EBUS cell block was not adequate for PD-L1 determination (NE), while in two cases, CRYO showed high PD-L1 expression while cell block showed low PD-L1 expression.

