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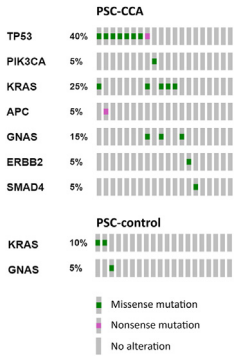

ORIGINAL ARTICLE

Next-generation sequencing mutation analysis on biliary brush cytology for differentiation of benign and malignant strictures in primary sclerosing cholangitis

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Differentiation of benign and malignant biliary tract strictures on brush material remains highly challenging but is essential for adequate clinical management of patients with primary sclerosing cholangitis (PSC). In this case-control study, biliary brush cytology samples from PSC patients with cholangiocarcinoma (PSC-CCA) were compared with samples from PSC patients without CCA (PSC controls) using next-generation sequencing (NGS). Cells on archived slides were dissected for DNA extraction. NGS was performed using a gene panel containing 242 hotspots in 14 genes. Repeated brushes from the same patient were analyzed to study the consistency of NGS results. In PSC-CCA cases that underwent surgical resection, molecular aberrations in brushes were compared with NGS data from subsequent resection specimens. A total of 40 patients (20 PSC-CCA/20 PSC controls) were included. The gene panel detected 22 mutations in 15/20 PSC-CCA brushes, including mutations in *TP53* (8 brushes), K-*ras* (5), G-*nas* (3), *ERBB2* (1), *APC* (1), *PIK3CA* (1), and *SMAD4* (1). One G-*nas* and 3 K-*ras* mutations were found in 3/20 PSC-control brushes. The sensitivity of the NGS panel was 75% (95% confidence interval [CI], 62%-80%) and specificity 85% (95% CI, 64%-95%). Repeated brushes showed identical mutations in 6/9 cases. Three repeated brushes demonstrated additional mutations compared with the first brush. In 6/7 patients, mutations in brush samples were identical to mutations in subsequent resection specimens. NGS mutation analysis of PSC brush cytology detects oncogenic mutations with high sensitivity and specificity and seems to constitute a valuable adjunct to cytological assessment of brush samples.

Read this article on pages 456-65 in this issue.

ORIGINAL ARTICLE

Telecytology versus in-room cytopathologist for EUS-guided FNA or fine-needle biopsy sampling of solid pancreatic lesions

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Rapid on-site evaluation (ROSE) with an in-room pathologist (ROSE-P) has been shown to improve the diagnostic yield of specimens obtained from patients undergoing EUS-FNA or biopsy (EUS-FNAB) of pancreatic lesions. Recently, there has been an increased interest and utilization of telecytology (ROSE-T) to optimize clinical workflows and address social-distancing mandates created during the COVID-19 pandemic. The purpose of this study was to compare diagnostic outcomes of ROSE-P and ROSE-T. A single-center cohort study of patients who underwent EUS-FNAB of solid pancreatic lesions with ROSE was conducted. The primary outcome was overall diagnostic yield of cancer. All patients who underwent EUS-FNA were entered into a prospectively maintained database. Statistical analyses were performed using descriptive statistics and univariate analysis. There were 165 patients in each arm. There was no difference in diagnostic yield between ROSE-P and ROSE-T (96.4% vs 94.5%, $P = .428$). ROSE-T was associated with increased use of 22-gauge needles ($P = .006$) and more needle passes ($P < .001$). There was no significant difference in age, gender, lesion size, needle type, procedure times, or adverse events between the 2 groups ($P < .05$ for all). There were more pancreatic tail lesions sampled in the ROSE-P group ($P < .001$). ROSE using telecytology was not associated with any difference in final histologic diagnosis for EUS-FNAB of solid pancreatic masses. This has important implications for optimizing clinical workflows.

Read this article on pages 466-71 in this issue.