Correlation of Molecular Analysis of Pancreatic Cyst Fluid with Routine Cyst Fluid Analysis and Cytology to Characterize Pancreatic Cyst Pathology

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INTRODUCTION:

Characterization of pancreatic cysts with standard fluid analysis & cytology is suboptimal. It is unclear if the more costly molecular analysis of pancreatic cyst fluid (PathFinderTG, Redpath Integrated Pathology, Pittsburgh, PA) can function as a complement or alternative to the standard methods.

AIM:

To correlate the characterization of pancreatic cysts by molecular analysis with that obtained from standard fluid analysis & cytology.

METHODS:

- We retrospectively identified 90 pts (27 Males; mean age 68.8 yrs [SD = 12.6]) over a 12 month period who underwent EUS with fine needle aspiration & molecular analysis of cyst fluid.
- The standard criteria indicating a mucinous neoplasm (CEA ≥200ng/mL, atypical cells on cytology, or positive extracellular mucin staining) was compared with molecular analysis & interpretation.
- Kappa statistics was performed to determined agreement between the standard criteria & molecular analysis in distinguishing nonmucinous vs. mucinous lesions.

RESULTS:

- 74 (82%) pts had data available for both standard & molecular analysis.
- There was agreement regarding the mucinous nature of a cyst in 15 pts & nonmucinous nature in 25 pts. In 26 additional pts, molecular analysis indicated a mucinous lesion, however, the CEA & cytology were normal.
- In the remaining 8 pts standard methods indicated a mucinous lesion whereas molecular analysis indicated to a nonmucinous lesion. Kappa for distinguishing nonmucinous vs. mucinous lesions was 0.12 (95% CI, -0.08-0.32), indicating slight agreement.
- Molecular analysis could not be performed due to insufficient quantity of DNA in 4 (4%) pts.
- Standard fluid analysis & cytology was unable to be performed due to insufficient quantity of fluid in 12 (13%) pts, but molecular analysis, which requires less than half the volume, was able to be performed in each case; 8 (75%) were determined to be mucinous lesions.

CONCLUSION:

- There is slight agreement between molecular analysis of pancreatic cyst fluid & standard fluid analysis with cytology indicating a complementary role for molecular analysis in characterizing pancreatic cysts, especially in situations when the aspirated fluid volume is small & when a normal CEA does not correlate with a high clinical index of suspicion for mucinous neoplasm.
- Long-term follow-up of discordant cases, including surgical specimens will be necessary for validation of both standard methods & molecular analysis.

Test Performed	# of pts
Molecular Analysis & Standard Methods	74
Molecular Analysis Only	12
Standard Methods Only	4

Standard		Mucinous	Nonmucinous
	Mucinous	15	8
	Nonmucinous	26	25
	K 0.12 (95% CI, -0.08-0.32)		