Evaluation of a novel method for measuring CEA levels from pancreas cyst aspirates

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Introduction

- Cyst fluid carcinoembryonic antigen (CEA) and amylase help to discriminate neoplastic from benign pancreatic cysts.
- Often this evaluation is limited by the inability to obtain adequate fluid due to high fluid viscosity or limited volume of fluid in a small or septated cyst.
- A novel method is commercially available for measurement of CEA (RedPath Inc., Pittsburgh, PA) that requires 75µl of fluid compared to the amount previously required (1ml).
- The performance characteristics of this test have not been validated in the clinical setting.

Objective

- To examine the yield and diagnostic accuracy of CEA measurement of the commercial test compared to a standard academic institutional laboratory.

Methods

- Prospectively collected aspirates of pancreatic cyst of consecutive patients undergoing endoscopic ultrasound (EUS) with aspiration.
- All fine needle aspirates were performed with a 22g needle.
- 13 patients underwent EUS FNA during the study period with 8 male (mean age 71.5 years) and 5 female (mean age 63.6 years).
- Cyst characteristics were described in Table 1.

Results

- Cyst fluid aspirate
  - < 1 ml
  - > 1 ml
- CEA, Amylase and DNA analysis to the commercial lab
- 1 ml sent to institutional lab (1ml) for CEA, amylase and DNA analysis
- Remaining sample sent to commercial lab for CEA, amylase and DNA analysis

Figure 1. Algorithm for cyst fluid analysis

Table 1. Cyst characteristics

<table>
<thead>
<tr>
<th>Location</th>
<th>Body-3, Head-7, Uncinate-3</th>
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<tbody>
<tr>
<td>Mean cyst size</td>
<td>23.46 mm (11mm - 40 mm)</td>
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<tr>
<td>Fluid quantity</td>
<td>Mean 5.5 (&lt; 0.5 ml - 20 ml) Median 3.5 ml</td>
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<tr>
<td>Mean CEA level</td>
<td>Institutional lab- 187.06 ng/ml Commercial lab-186.5 ng/ml</td>
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Figure 2. The Pearson correlation between CEA measurements was 0.957, demonstrating an excellent agreement.

Conclusion

- The novel commercial method of cyst fluid analysis allows for accurate measurement of cyst fluid CEA even on cyst fluid aspirates of less than 1ml, and potentially less than 100µl of fluid.
- This measurement tool increases the yield of EUS FNA for pancreatic cysts, particularly for those in whom cyst fluid volumes are small.
- By optimizing specimen handling, it is possible to satisfy information needs more effectively thereby contributing to more comprehensive and better diagnosis and management.