

BACKGROUND

Endoscopic ultrasound-guided pancreatic FNA has become increasingly used in the diagnosis of pancreatic lesions. A common diagnostic dilemma occurs with the presence of suspected gastrointestinal epithelial contamination (GIC). Gastric contamination is more problematic due to its similar appearance to low-grade mucinous lesions. B72.3 showed promise in the differentiation between benign and malignant ductal epithelium in a baseline study of direct smears obtained from surgical specimens (Nawgiri, 2007). Immunohistochemical staining for CEA distinguished non-malignant cyst lining of intraductal papillary mucinous neoplasm (IPMN) from contaminating duodenal and gastric epithelium in a tissue microarray analysis (Pitman, 2009). The goal of the present study is to determine whether B72.3 and CEA can identify both duodenal and gastric contamination in cell blocks of clinically proven cases of pancreatic ductal carcinoma, IPMN, and mucinous cystic neoplasm (MCN).

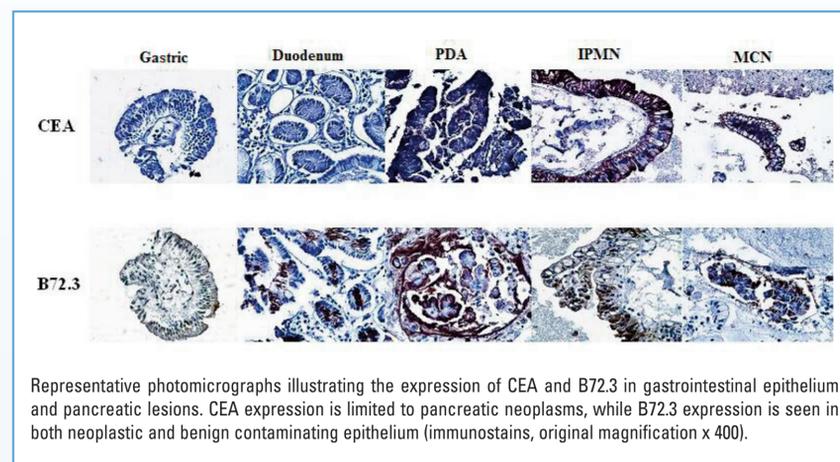
DESIGN

Cell blocks of pancreatic FNAs from 19 ductal adenocarcinomas, 8 IPMNs, 5 MCNs, and 22 cases containing GIC (7 gastric, 15 duodenal) were obtained. The material aspirated for the cell block had been immediately placed in Sacomanno fixative (containing ethanol, methanol, isopropyl alcohol and carbowax) and fixed in 10% formalin following centrifugation.

The slides were stained with antibody to CEA (Dako) and B72.3 (Santa Cruz Biotechnology).

RESULT

CEA was positive in 89% of adenocarcinomas and 92% of mucinous lesions. It was never expressed in gastric contamination, and positive in 2/15 (13%) duodenal contaminants. B72.3 was positive in 95% of adenocarcinomas and 85% of mucinous lesions. It was positive in 2/7 (28%) gastric and 7/15 (47%) duodenal contaminants.



Cases Expressing B72.3 or CEA

	B72.3	CEA
Adenocarcinoma	17/19 (89%)	18/19 (95%)
IPMN	7/9 (78%)	8/9 (89%)
Mucinous cystic neoplasm	5/5 (100%)	4/4 (100%)
Gastric contamination	2/7 (28%)	0/7 (0%)
Duodenal contamination	7/15 (47%)*	2/15 (13%)**

* 4/7 cases showed expression limited to apical cytoplasm

** 2/2 cases showed expression limited to apical cytoplasm

DISCUSSION

Transgastric FNAs are generally used for lesions in the body and tail, while a transduodenal approaches are better suited to sample lesions in the head and uncinata. While knowing the FNA approach is important in the evaluation of suspected GIC, this remains one piece of clinical information to be used in conjunction with cytologic findings. Gastric mucosa exhibits monolayered, glandular-like formations with round-oval bland nuclei and no brush border. Duodenal mucosa appears as strips of columnar epithelium with bland nuclei, luminal brush borders, and many interspersed goblet cells.

In contrast to previous work, our preliminary results indicate B72.3 expression cannot be reliably used to identify GIC. Although B72.3 was consistently expressed in tumor, expression was also found in >25% of GIC cases. A lack of CEA expression, however, was able to identify both gastric and duodenal contamination. Importantly, no cases of gastric contamination showed CEA expression, and 13% of duodenal contamination were positive. Our preliminary findings indicate gastric contamination, which may appear cytologically identical to a low-grade mucinous lesion, can be distinguished by a lack of CEA expression.

The staining characteristics of B72.3 in our study are similar to prior work that utilized a cytobrush to obtain material from Whipple resections. In each study, goblet cells showed a diffusely granular pattern, benign epithelial cells stained in a punctate perinuclear fashion, and PDA showed strong cytoplasmic staining. The previous studies used both air-dried and ethanol-fixed smears. Our results show similar B72.3 staining with Sacomanno fixative followed by centrifugation and fixation in 10% formalin. With regards to GIC staining, our study found one case of gastric contamination showing positive expression of apical mucin in foveolar cells. This finding had been previously been described by Nagle et al. Furthermore, duodenal contamination also demonstrated expression limited to apical mucin in 4/7 (57%) cases of B72.3 expression, and 2/2 (100%) cases of CEA expression. As apical positivity was only noted in GIC, B72.3 or CEA expression limited to apical cytoplasm should be interpreted as negative staining and supportive of GIC.

CONCLUSION

In contrast to previous work, our preliminary results indicate B72.3 expression cannot be reliably used to identify GIC. A lack of CEA expression, however, may be used to identify both gastric and duodenal contamination. This represents an important diagnostic aid in the evaluation of suspected low-grade mucinous lesions.