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TITLE: Vascular Endothelial Growth Factor Levels in Bile Distinguishes Pancreatic Cancer from Other Etiologies of Biliary Stricture

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ABSTRACT STATUS: Sessioned

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ABSTRACT BODY:

Purpose: Determining the benign or malignant nature of biliary strictures can be challenging. Vascular endothelial growth factor (VEGF) plays an important role in tumor angiogenesis. Our objective is to investigate whether VEGF levels in bile aspirated during endoscopic retrograde cholangiography (ERCP) can distinguish pancreatic cancer from other causes of biliary stricture.

Methods: From March 2012 to October 2012, bile was directly aspirated in 53 consecutive patients during ERCP from the common bile duct, including 15 with pancreatic cancer, 18 with primary sclerosing cholangitis (PSC), 9 with cholangiocarcinoma (CCA), and 11 with benign biliary conditions (sphincter of Oddi and choledocholithiasis). Levels of VEGF in bile were measured. To confirm the concordance of expression of VEGF in a resected pancreatic cancer with the corresponding bile juice sample, immunohistochemistry was performed. The diagnostic performance was then validated in a second, independent validation cohort of 18 patients (pancreatic cancer n=10, benign n=8).

Results: A total of 53 consecutive patients were recruited. The median bile VEGF levels were significantly elevated in patients with pancreatic cancer (1.9 ng/mL; interquartile range [IQR] 0.7, 2.2) compared to those with benign biliary conditions (0.3 ng/mL; IQR 0.2, 0.6; p<0.001), PSC (0.7 ng/mL; IQR 0.5, 0.9; p=0.02), or CCA (0.4 ng/mL; IQR 0.1, 0.5; P<0.001). A VEGF cut-off value of 0.5 ng/mL distinguished pancreatic cancer from CCA with a sensitivity and specificity (93.3%, 88.9%, respectively; area under curve [AUC] 0.93) and from benign conditions with a sensitivity and specificity (93.3%, 72.7%, respectively; AUC 0.89). The diagnostic accuracy of biliary VEGF was confirmed in the second independent validation cohort. We also confirmed the concordance of expression of VEGF in resected pancreatic cancer with elevated VEGF in bile in a patient with pancreatic cancer.

Conclusion: This study suggests that measurement of biliary VEGF-1 levels distinguishes patients with pancreatic cancer from other etiologies of biliary stricture. This may be particularly relevant in approaching patients with indeterminate biliary stricture.

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