Diagnostic value of NPTX2 (neuronal pentraxin II) methylation in patients with pancreatic cancer: meta-analysis

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Abstract

Purpose: Pancreatic cancer (PC) is a devasting disease of which mortality almost parallels its incidence. Pancreatic cancer tissue may express aberrantly methylated NPTX2, but it is unclear what the consequences of this are. The purpose of the present study was to assess the diagnostic performance of methylated NPTX2 in PC diagnosis. Methods: We conducted a comprehensive search of PubMed, Web of Science, Chinese National Knowledge Infrastructure (CNKI), and the Cochrane Library for published studies from inception to July 15, 2020. Using STATA 13.0, diagnostic OR (DOR) and AUC (Area Under the Curve of Receiver Operating Characteristic) were calculated to evaluate the diagnostic efficacy. Results: Nine studies were found eligible for the meta-analysis. The overall results of DOR and AUC were 11 (95%CI: 4-26) and 0.80, respectively. These data indicate that aberrantly methylated NPTX2 can correctly predict PC. Subgroup analysis revealed that quantitative real-time methylation-specific PCR (QMSP) had the highest diagnostic value for differentiating pancreatic cancer from chronic pancreatitis using a laboratory method. Furthermore, the detection of hypermethylated NPTX2 found in plasma was suggested to be a promising diagnostic biomarker, though a meta-analysis was not feasible due to the limited number of samples. The Deeks' funnel map revealed no obvious public bias in the literature. Conclusion: aberrantly methylated NPTX2 has high sensitivity and specificity for the diagnosis of pancreatic cancer. However, further research is required to validate the use of methylated NPTX2 as a biomarker in the clinical diagnosis of pancreatic cancer.

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Figure 1 Flow diagram of the study selection process.

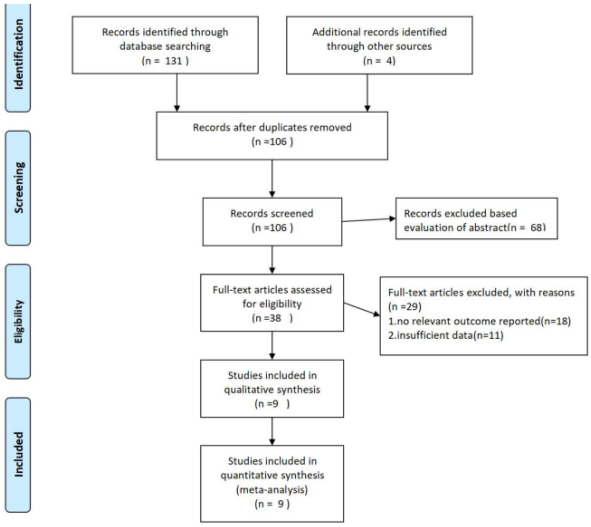

Table1 Characteristic of included studies

Author	year	Ethnicity	mean age	Specime	test method	diagnostic value		
						Sensitivity	Specificity	cut-off
Yao	2007	China	58.8	pancreatic juice	MSP	0.71	0.88	NA
Park	2007	Korea	63	cytogoly	QMSP	0.87	0.80	NA
Park2	2012	Korea	63	plasma	QMSP	0.80	0.76	0.015
MD	2013	China	56	pancreatic juice	QMSP/MSP	0.66	0.78	0.014
Hiroyuki	2006	American	68	pancreatic juice	QMSP/MSP	0.71	0.78	>0.01
Singh	2019	India	55	plasma	QMSP	0.73	0.60	NA
Yao2	2007	China	60	pancreatic juice	QMSP/MSP	0.63	0.84	NA
Sato	2003	American	59.2	pancreatic juice	MSP	0.67	1.00	NA
Mansour	2008	China	67.4	cytogoly	QMSP/MSP	0.76	0.85	NA

NA – not available; QMSP-quantitative real-time methylation-specific PCR ;MSP-real-time methylation-specific PCR