

Table SI. Summary of individual clinical cases of sarcomatoid carcinoma of the pancreas.

First author/s, year	Case	Age, years	Sex	Tumor location	Tumor size, cm	Imaging findings (diagnosis)	Surgery	Resection margin status ^a	Adjuvant therapy	Carcinoma	LN status	LVI	PI	Tumor extent	Sarcomatoid compartment	Follow-up, months	Outcome	(Refs.)
Higashi <i>et al</i> , 1999	1	74	M	PH	4.5x4x3	Hypovascularity. Leiomyoma or leiomyosarcoma	Pylorus-preserving pancreatoduodenectomy	R0	NA	PD adenocarcinoma	No	Yes	Yes	Duodenal invasion	Pan-CK, EMA, MUC1-ARA, S-100, SMA (+); vimentin, NSE, desmin (-)	3	Died of disease	(7)
De la Riva <i>et al</i> , 2006	2	72	F	PH	NA	Dilation of the CBD and pancreatic duct.	Biopsy	NA	NA	NA	NA	NA	NA	NA	CK, vimentin (+)	9	Died of disease	(8)
Yao <i>et al</i> , 2013	3	48	M	PT	10x8x5	Cystic and solid mass. Cystadenoma	Laparoscopic spleen-preserving left pancreatectomy	R0	Gemcitabine	PD adenocarcinoma	NA	NA	NA	NA	Vimentin (+); CK 18 (-)	3	Died of disease	(9)
Ren <i>et al</i> , 2013	4	48	M	PT	10x8x3.5	Cystadenoma	NA	NA	Interventional chemotherapy	MD adenocarcinoma	No	NA	NA	NA	AACT, CK19, CK18, pan-CK, vimentin (+)	36	Alive and well	(10)
Kane <i>et al</i> , 2014	5	85	M	PB	3.3x3.0x2.6	Cystic mass. Homogeneously enhanced. MPD obstruction. Adenocarcinoma or neuroendocrine tumor	Laparoscopic distal pancreatectomy, splenectomy and partial gastrectomy	R0	NA	PD adenocarcinoma	Yes	No	Yes	Stomach invasion	Pan-CK, CK5.2, vimentin (+); MUC-1, S-100, SMA, EMA (-); Ki-67 (50%)	26	Alive and well	(11)
Lu <i>et al</i> , 2014	6	58	F	PT	16x18	Solid-cystic mass. Heterogeneous enhancement. Cystadenocarcinoma	En bloc resection of the distal pancreatic tumor	R0	Chinese medicine and thymosin	WD squamous adenocarcinoma	17/22	NA	NA	Stomach and spleen invasion	CK7 and Vimentin (+); E-cadherin (-)	5	Alive	(12)
Yepuri <i>et al</i> , 2018	7	64	F	PH	3.7x3.6	NA	Biopsy	NA	Palliative radiotherapy	NA	NA	NA	NA	NA	CD56, vimentin (+); epithelial markers (-)	3	Died of disease	(13)
Xie <i>et al</i> , 2018	8	63	M	PH	2.5x2x1.8	Dilation of bile ducts and gallbladder with abrupt narrowing at the distal CBD	Pancreatoduodenectomy	R0	Thymopetide	MD adenocarcinoma	No	No	Yes	Distal CBD invasion	CK7, CK19, vimentin (+)	18	Died of disease	(14)
Bukhari <i>et al</i> , 2019	9	64	M	PH	2.4x2x1.9	NA	Pancreatoduodenectomy with cholecystectomy	R0	Gemcitabine	PD adenocarcinoma	0/12	No	No	No	Vimentin (+); CAM 5.2 (-)	19	Alive and well	(15)
Zhou <i>et al</i> , 2019	10	59	M	PH	2.5x2.5x2.0	Dilation of bile duct and pancreatic duct	Pancreatoduodenectomy	R0	NA	NA	3/22	NA	NA	NA	CK19, vimentin (+); S-100, HMB45, SMA (-); Ki-67 (50%)	6	Died of disease	(16)

Toledo <i>et al</i> , 2021	11	61	F	PT	3.2×2.9	Solid mass. Hypovascular. Dilation of the MPD.	Pancreatectomy with splenectomy	R0	No	MD adenocarcinoma	1/30	Yes	No	No	Pan-CK, SMA, vimentin (+); CD68 (-)	35	Alive and well	(17)
Lim <i>et al</i> , 2021	12	64	F	PT	5.4×4	Solid-cystic mass. Heterogeneously enhanced. Mucinous cystadenocarcinoma	Distal pancreatectomy with splenectomy and colonic segmental resection		Gemcitabine and abraxane	PD mucinous cystic neoplasm	NA	NA	NA	NA	Pan-CK, vimentin (+); CD56(-)	10	Died of disease	(18)
Hara <i>et al</i> , 2022	13	63	M	PH	NA	MPD obstruction with MPD dilation	Subtotal stomach-preserving pancreatoduodenectomy	R0	NA	Adenocarcinoma	NA	NA	NA	NA	CAM5.2, pan-CK (+); S-100, desmin (-)	120	Alive and well	(19)
Zhang <i>et al</i> , 2023	14	83	M	PH	4.1	Calcified mass	Pancreatoduodenectomy	R0	NA	Osteosarcomatous	NA	No	No	No	Pan-CK, CK19, CAM5.2 (+)	4	Alive and well	(20)
Chen <i>et al</i> , 2014	15	48	M	PT	10x8x3.5	Cystic mass Cystadenoma	Biopsy	NA	No	NA	NA	NA	NA	Colon invasion	AACT, pan-CK, CK8-18, CK19, vimentin (+)	3	Died of disease	(21)
Hu <i>et al</i> , 2015	16	61	M	PH	4.5x7.1	Cystic mass. Cystadenocarcinoma	Puncture biopsy	NA	Radiation therapy	NA	NA	NA	NA	NA	CK7, CK, CAM5.2, vimentin (+); CK20, SMA, Desmin (-); Ki-67(30%)	13	Alive	(22)
Zhao <i>et al</i> , 2018	17	60	M	PT	12.5x9.4	Heterogeneously enhanced	Puncture biopsy	NA	Docetaxel, oxaliplatin and tegafur	NA	NA	NA	NA	NA	Pan-CK, CAM5.2, vimentin (+); S-100, HMB45, SMA (-); Ki67(50%)	2	Died of disease	(23)
Jiang <i>et al</i> , 2019	18	73	M	PH	2.5×2.0×2.0	Heterogeneously enhanced. Dilation of bile duct and pancreatic duct	Pancreatoduodenectomy	R0	Traditional Chinese medicine	NA	No	NA	NA	NA	CK, CK19, vimentin (+); SMA, E-cadherin, desmin, S-100 (-); Ki-67 (30%)	14	Alive	(24)
Ren <i>et al</i> , 2019	19	58	M	PT	20x18	Solid-cystic mass. Heterogeneously enhanced	Radical resection of pancreatic tail tumor	NA	Traditional Chinese medicine and thymosin	NA	Yes	NA	Stomach and spleen invasion	CK7, vimentin (+)	9	Died of disease	(25)	
	20	60	M	PB	3.5x4.5	Circle wise enhanced	Distal pancreatectomy with splenectomy	R0	NA	NA	No	NA	NA	CK7, EMA, vimentin (+); Ki-67 (30%)	4	Died of disease		

Kimura <i>et al</i> , 2020	21	58	M	PB	Diameter:5	Cystic and solid mass. MPD obstruction with distal MPD dilation	Distal pancreatectomy with splenectomy	NA	Gemcitabine	MD adenocarcinoma	3/4	NA	NA	Splenic artery and vein invasion	CK, vimentin, p-Smad2/3, snail, fibronectin, γ -H2AX, p53, p21 (+); Ki-67 (11%)	120	Alive and well	(26)
Kimura <i>et al</i> , 2021	22	68	M	NA	Diameter:4	NA	Distal pancreatectomy	NA	Chemotherapy	NA	NA	NA	NA	NA	p-Smad2/3, snail, fibronectin (+); Ki-67 (19%)	18	Died of disease	(27)
	23	65	F	NA	Huge tumor	NA	Biopsy	NA	Cisplatin	NA	NA	NA	NA	NA	p-Smad2/3, snail, fibronectin (+); Ki-67 (32%)	2	Died of disease	
Blair <i>et al</i> , 2017	24	67	F	NA	Diameter: 4	NA	Pancreatoduodenectomy	R2	None	NA	1/7	No	No	No	NA	2	Died of disease	(28)
	25	80	F	NA	Diameter: 5	NA	Pancreatoduodenectomy	R0	No	NA	1/20	Yes	Yes	No	NA	1	Alive	
	26	63	F	NA	Diameter: 5.7	NA	Distal pancreatectomy	R1	No	NA	2/32	No	Yes	No	NA	1	Died of disease	
	27	56	F	NA	Diameter: 5	NA	Total pancreatectomy	R0	Capecitabine	NA	0/10	No	No	No	NA	3	Alive	
	28	79	M	NA	Diameter:4	NA	Pancreatoduodenectomy	R0	No	NA	13/17	Yes	Yes	No	NA	3	Died of disease	
	29	54	M	NA	Diameter: 3	NA	Distal pancreatectomy	R0	Gemcitabine, capecitabine and radiation	NA	0/27	No	No	No	NA	61	Alive and well	
	30	65	M	NA	Diameter: 15	NA	Distal pancreatectomy	R0	No	NA	29/38	Yes	Yes	No	NA	3	Died of disease	
Present study	31	73	F	NA	Diameter: 9	NA	Pancreatoduodenectomy with total gastrectomy	R0	Radiation	NA	1/24	No	No	No	NA	188	Alive and well	
	32	76	F	PT	11x10x9	Cystic-solid mass. Heterogeneously enhanced	Distal pancreatectomy, splenectomy and partial enterectomy	R0	Olaparib and tislelizumab	MD adenocarcinoma	0/8	Yes	Yes	Colon invasion	Pan-CK, CK7, CK19, EMA, vimentin (+); Ki-67 (90%)	24	Alive and well	-
	33	65	M	PB	4.1x2.8	NA	Biopsy	NA	Paclitaxel, gemcitabine, camrelizumab and thymosin	Adenocarcinoma	NA	NA	NA	NA	Pan-CK, CK8/18, AACT, vimentin (+); Desmin, S-100, SMA (-); Ki-67 (40%)	25	Alive and well	
	34	71	F	PH	4x4x3	Heterogeneously enhanced. Dilation of bile duct and pancreatic duct. Cholecystectasia	Pancreatoduodenectomy with cholecystectomy	R0	Paclitaxel and gemcitabine	PD adenocarcinoma	5/25	Yes	Yes	Duodenal invasion	Pan-CK, CAM5.2, EMA, CK7, CK19, CK5/6,	10	Died of disease	

35	64	M	PH	4x3x3	CBD obstruction with dilation of bile duct and pancreatic duct	Pancreatoduodenectomy with cholecystectomy	R0	No	PD adenocarcinoma	6/28	Yes	Yes	No	Muc-1 (+) NA	10	Died of disease
36	69	M	PB	3x2.5x2	Dilation of pancreatic duct	Laparoscopic distal pancreatectomy with splenectomy	R0	Tegafur	PD adenocarcinoma	1/24	Yes	Yes	No	NA	21	Alive and well
37	88	F	PB	12x4x3	NA	Total pancreatectomy with splenectomy	R0	No	Adenocarcinoma	1/6	Yes	Yes	Stomach invasion	Pan-CK, CAM5.2, CK7, CK19, vimentin (+); Desmin, S-100, SMA (-); Ki-67 (30%)	3	Died of disease
38	51	M	PH	2.5x2	NA	Pancreatoduodenectomy with cholecystectomy	R0	Folfinirox	PD adenocarcinoma	0/8	Yes	Yes	Duodenal invasion	NA	8	Died of disease

^aThe tumor status following treatment is described by the residual tumor classification: R0, no residual tumor; R1, microscopic residual tumor; R2, macroscopic residual tumor, according to the literature (36). PH, pancreatic head; M, male; F, female; PB, pancreatic body; PT, pancreatic tail; NA, not available; CK, cytokeratin; AACT, anti-alpha-1-antichymotrypsin; EMA, epithelial membrane antigen; SMA, smooth muscle actin; MUC1, transmembrane glycoprotein mucin 1; NSE, neuron-specific enolase; p, phosphor; LVI, lymphovascular invasion; PNI, perineural invasion; LN, lymph node; CBD, common bile duct; MPD, main pancreatic duct; PD, poorly-differentiated; MD, moderately-differentiated; WD, well-differentiated