DOI: 10.7860/JCDR/2020/43051.13635

Case Report

Surgery Section

Co-existent Periampullary Adenocarcinoma with Serous Cystadenoma of the Pancreas: Case Report and Review of Literature

JMV AMARJOTHI[1], J JEYASUDHAHAR[2], VILLALAN RAMASAMY[3], OL NAGANATH BABU[4]

ABSTRACT

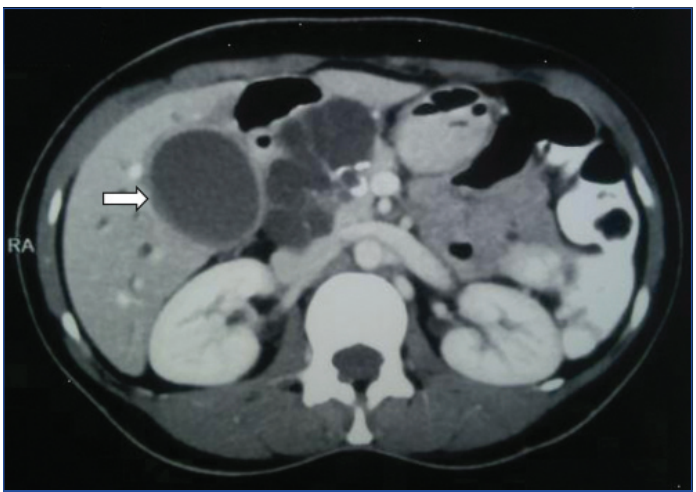
Serous Cystadenoma (SCA) are benign, cystic lesions of the pancreas. They are rarely known to occur in association with other pancreatic conditions which include malignancies like pancreatic neuroendocrine tumour and adenocarcinoma. Asymptomatic benign lesions of the pancreas like serous cystadenomas can be followed with surveillance. However, the problem arises when they are associated with other co-existent pancreatic lesions. We present a rare case of serous cystadenoma pancreas in association with a periampullary carcinoma for which Whipple Pancreaticoduodenectomy was done. This report emphasises thorough clinical, radiological investigations must be done in all cases of serous cystadenomas so that any co existent lesions can be picked up and treatment tailored appropriately.

Keywords: Benign, Prognosis, Whipple pancreaticoduodenectomy

CASE REPORT

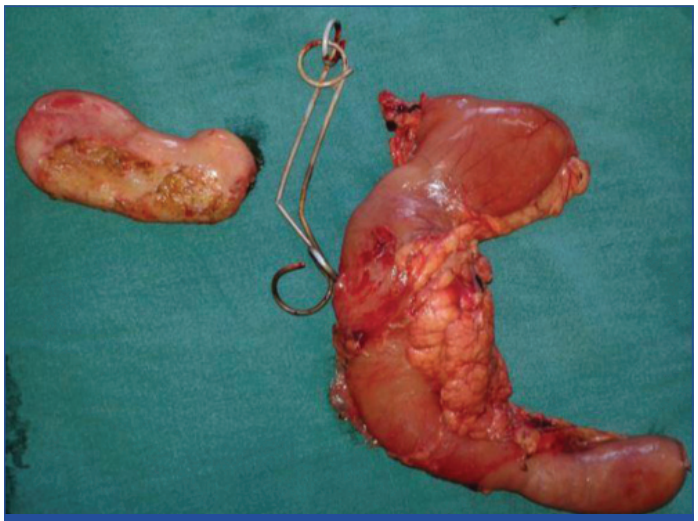
A 32-year-old female patient presented for routine health screening. There were no symptoms prior to presentation. Ultrasonography (USG) was done and the patient was initially found to have Space Occupying Lesion (SOL) of size 4 cm in the head of pancreas, which was suggestive of microcystic type of Serous Cystadenoma (SCA). Laboratory investigations were normal except for slight elevation of alkaline phosphatase: 300 iu/mL (N-30- 140 iu/mL). There was no history of similar complaints in other family members. Forward viewing Oesophagoduodenoscopy (OGD) done revealed no abnormalities. Hence, based on the above findings, no further investigations were done.

Six months later, she presented with jaundice, mild chills and rigor. There was no history of fever. Serum Bilirubin was 3.2 mg% from 1 mg% six months back (normal- <1 mg%) with alkaline phosphatase of 527 iu/mL (normal: 30-140 iu/mL). The direct component of bilirubin was 2.4 mg% reflective of an obstructive pattern. CECT revealed serous cystadenoma with dilated common bile duct, pancreatic duct and gall bladder suggestive of dilation at the distal end of the biliary tree [Table/Fig-1]. Side Viewing Oesophagoduodenoscopy (SVS), which gives a wider and more accurate field of vision than forward viewing OGD, revealed a proliferative periampullary growth. As the patient had features of cholangitis, the lesion was stented with plastic stents. Multiple biopsies of the mass taken were inconclusive.

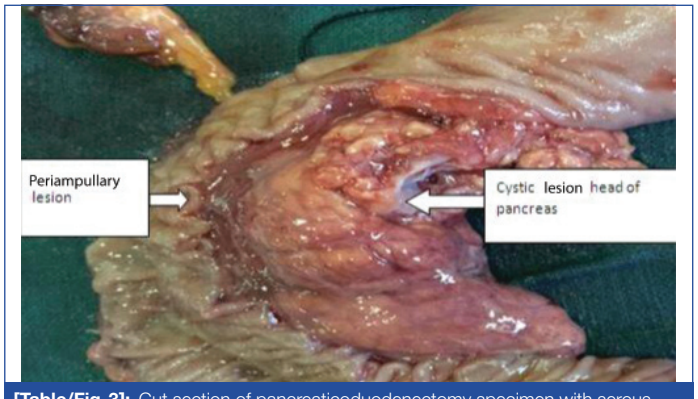


[Table/Fig-1]: Characteristic oligocystic pattern of serous cystadenoma with periampullary Ca. Note the distended gall bladder.(arrow)

The periampullary growth and serous cystadenoma in the head of pancreas was managed by Whipples Pancreaticoduodenectomy after subsidence of the acute episode of cholangitis in two months. Intra operative sections revealed co-existent periampullary growth, macroscopically separated from SCA in head of the pancreas by 2 cm [Table/Fig-2,3].



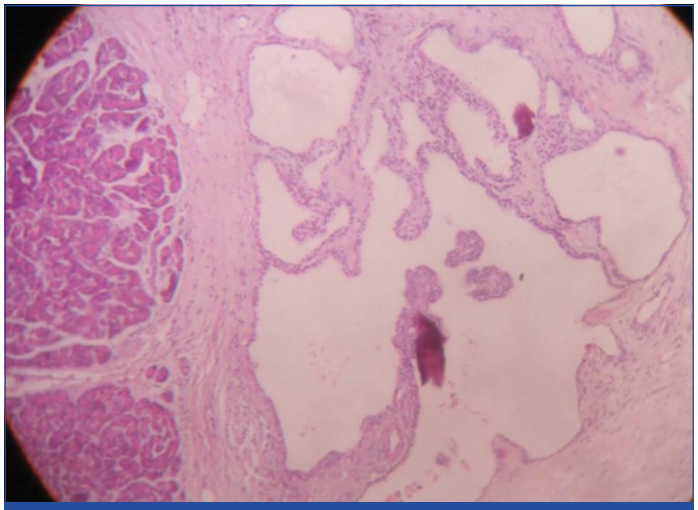
[Table/Fig-2]: Serous cystadenoma with periampullary CA. Note the distended GB and retrieved stents.



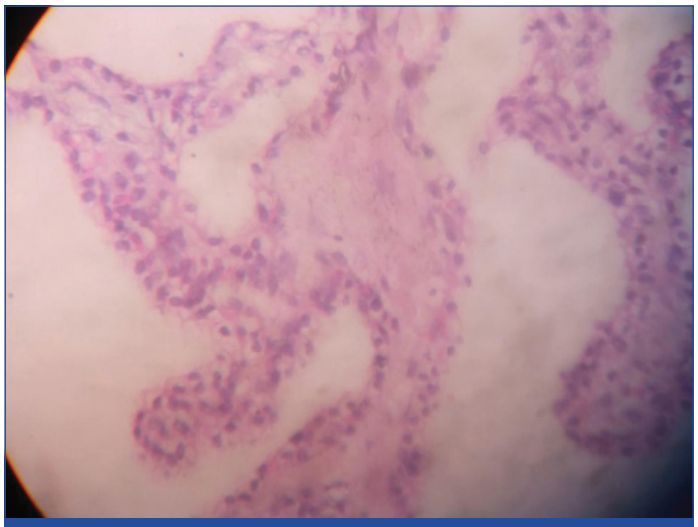
[Table/Fig-3]: Cut section of pancreaticoduodenectomy specimen with serous cystadenoma and co-existent periampullary carcinoma.

Microscopy revealed glycogen containing PAS+ cells suggestive of serous cystadenoma in the head of pancreas with well differentiated

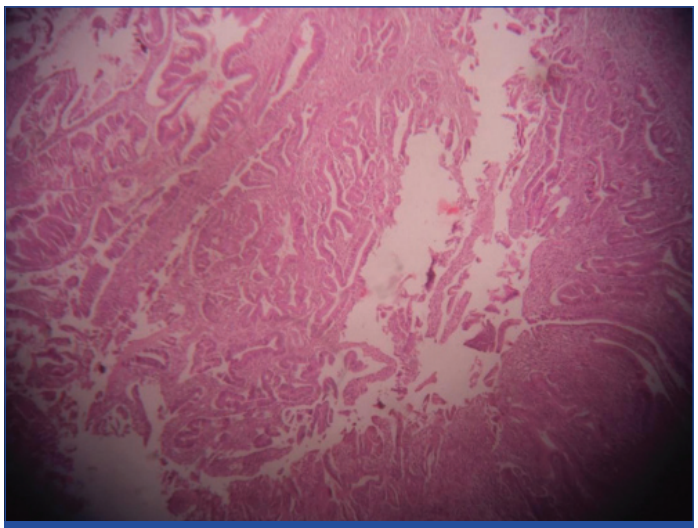
periampullary adenocarcinoma of pancreatic type with CEA+, mucin+. Four peripancreatic lymph nodes, retrieved in the Pancreaticoduodenectomy specimen, were reactive [Table/Fig-4-6]. Patient is on annual CECT surveillance.



[Table/Fig-4]: A 100x. HPE showing pancreatic tissue with cystic spaces lined by cuboidal epithelium.



[Table/Fig-5]: A 400X HPE showing cystic spaces with benign cuboidal epithelium suggestive of serous cystdenoma.



[Table/Fig-6]: An 100x. HPE of Well differentiated adenocarcinoma of periampullary lesion with infiltrating epithelium and glandular differentiation.

DISCUSSION

Serous Cystadenoma

SCA are relatively rare, account for about 25% of all cystic neoplasms of pancreas [1] and were first described by Compagno J and Oertel JE in 1978 [2]. In a large surgical series, SCA comprise 16% of all resected cystic tumours of the pancreas [3]. They are epithelial tumours of unknown origin, sharing some morphologic and immunohistochemical features with centroacinar and ductular cells of the pancreas. They are most commonly seen in middle aged women (60-75%) [4] and are characteristically lined by glycogen rich, non mucinous small cuboidal cells, producing watery fluid akin to serum.

The Indications for surgery in SCA include symptomatic lesions and asymptomatic lesions more than 4 cm. In a study of the growth rates of twenty four patients of SCA at Massachusetts General Hospital, Tseng JF et al., reported SCA more than 4 cm in size as an indication for surgery as these patients are more likely to be symptomatic (72% vs. 22%), with rapid growth (2 cm/yr vs. 0.12 cm/yr), increased risk of malignant transformation and complications than those with size less than 4 cm [5].

Typical imaging findings on CECT in SCA include a polycystic microcystic pattern (70%), honey comb pattern (20%) and macrocystic pattern (10%) [6,7]. Cytological analysis in SCA reveal high glycogen, low CEA, CA19-9 and mucin. However, cytological analysis results are disappointing, compounded by operator dependence, accessibility of lesions, low yield and sensitivity [8]. The best surveillance strategy for follow-up of asymptomatic serous cystadenoma less than 4 cm is not standardised yet.

Incidental Periampullary CA

Periampullary Carcinomas (PAC) are often diagnosed at an early stage because of precocity of symptoms due to their unique location at the intersection of duodenum, distal CBD, head of pancreas and ampulla itself [9]. Hence the term "periampullary" has been referred to these tumours, which occur at the junction of these sites within 1-2 cm from the ampulla. Most of these tumours are well to moderately differentiated and are amenable to curative resection [10].

In a study of 1944 Pancreaticoduodenectomies (PD) from a single center, it was seen that 6% of all PD had an incidental finding of periampullary or pancreatic mass. The three most common incidentalomas include Intraductal Papillary Mucinous Neoplasm (IPMN) followed by cystadenoma and pancreatic adenocarcinoma. Though three fourth of these lesions were malignant or pre malignant, they are usually amenable to curative resection [11].

Co-existent Lesions

SCA are known to co-exist or "collide" with other pancreatic lesions. It is known to co-exist with hepatoid carcinoma which is similar to Hepatocellular carcinoma [12]. It is also found along with pancreatic endocrine tumours [13-17]. Patients with Von Hippel-Lindau disease (VHL) commonly develop Pancreatic cysts and Neuroendocrine Tumours (PNETs) [18]. SCA occur with other congenital pancreatic lesions also [19,20]. The existence of pancreatic serous cystadenoma and pancreatic adenocarcinoma has been described in three cases so far in English literature [Table/Fig-7] [21,22].

The chance occurrence of a benign lesion like SCA having a co-existent pancreatic adenocarcinoma is in order of 10^4, making repeated occurrence of such tumours unlikely to be purely due to chance [19]. Though both the lesions have histologial, immunohistological and spatial distinctness in presentation, the theory that both these lesions are co-existent due to genetic alteration in a precursor stem cell which differentiates into either of the two is due to Phosophatase and Tensin Homolog (PTEN), a tumour suppressor gene on 10q. It is to be noted that loss of chromosome 10q is the most frequent genetic abnormality seen in SCA. Loss of heterozygosity in 10q is also seen in about 50% of patients with SCA [20].

Author	Patient age/ gender	Presentation	Size of co-existent lesions	Histology	Site of lesions in pancreas	Distance between the two lesions	Surgery done
Montag AG et al., [21]	62/M	Symptomatic- abdominal pain and weight loss.	SCA-4 cm (microcystic) PAC-diffuse with peripancreatic involvement (MDAC)-	PAS + (+/- diastase) + CEA+, mucin+	Body Body	Adjacent	Total pancreatectomy with Splenectomy.
Montag AG et al., [21]	59/F	Symptomatic- abdominal pain with epigastric mass	SCA-7 cm (microcystic) PAC- 3 cm (MDAC)	PAS + (+/- diastase) + CEA+, mucin+	Body Tail	3 cm	Total pancreatectomy with Splenectomy.
Nitta H et al., [22]	79/F	Asymptomatic- evaluation for elevated transaminases	SCA-3 cm (microcystic) PAC- 3 cm (MDAC)	PAS + (+/- diastase) + CEA+, mucin+	Head Head	Adjacent	Pancreaticoduodenectomy

[Table/Fig-7]: Coexistent Pancreatic Serous Cystadenoma (SCA) and Periampullary Carcinoma described in English literature [21,22].
MDAC: Moderately differentiated adenocarcinoma

CONCLUSION(S)

Concomitant lesions can occur in serous cystadenomas resulting in change in management strategy. Exclusion of other lesions is a necessity when planning detailed management strategy for serous cystadenomas.

REFERENCES

[1] Yamaguchi K, Enjoli M. Cystic neoplasms of the pancreas. Gastroenterology. 1987;92:1934-43.
[2] Compagno J, Oertel JE. Microcystic adenomas of the pancreas (glycogen-richcystadenomas): A clinicopathologic study of 34 cases. Am J Clin Pathol. 1978;69:289-98.
[3] Valsangkar NP, Morales-Oyarvide V, Thayer SP. 851 resected cystic tumours of the pancreas: A 33-year experience at the Massachusetts General Hospital. Surgery. 2012;152(3Suppl1):S4-12. doi:10.1016/j.surg.2012.05.033.
[4] Kimura W, Moriya T, Hirai I. Multicenter study of serous cystic neoplasm of the Japan pancreas society. Pancreas. 2012;41:380-87.
[5] Tseng JF, Warshaw AL, Sahani DV. Serous cystadenoma of the pancreas: tumour growth rates and recommendations for treatment. Ann Surg. 2005;242:413-19.
[6] Sarr MG, Murr M, Smyrk TC. Primary cystic neoplasms of the pancreas: Neoplastic disordersof emerging importance-current state-of the-art and unanswered questions. J Gastrointest Surg. 2003;7:417-28.
[7] Choi JY, Kim MJ, Lee JY, Lim JS, Chung JJ, Kim KW, et al. Typical and atypical manifestations of serous cystadenoma of the pancreas: Imaging findings with pathologic correlation. AJR Am J Roentgenol. 2009;193(1):136-42. doi: 10.2214/AJR.08.1309.
[8] Pelaez-Luna M, Chari ST. Cyst fluidanalysis to diagnose pancreatic cystic lesions: An as yet unfulfilled promise. Gastroenterology. 2006;130(3):1007-09.
[9] Ahn DH, Bekaii-Saab T. Ampullary cancer: An overview. Am Soc Clin Oncol Educ Book. 2014;112-15.
[10] Johnson CD. Guidelines for the management of patients with pancreatic cancer periampullary and ampullary carcinomas. Gut. 2005;54:v1-16. (doi:10.1136/gut.2004.057059).
[11] Winter JM, Cameron JL, Lillemoe KD. Periampullary and pancreatic incidentaloma: A single institution's experience with an increasingly common diagnosis. Ann Surg. 2006;243(5):673-83.
[12] Veerankutty FH, Yeldho V, Tu SA, Venugopal B, Manoj KS, Vidhya C. Hepatoid carcinoma of the pancreas combined with serous cystadenoma: A case report and review of the literature. Hepatobiliary Surg Nutr. 2015;4(5):354-62.
[13] Hsieh MS, Liu KL, Tien YW, Shun CT. Combined pancreatic endocrine tumour and serous cystadenoma. J Formos Med Assoc. 2009;108(9):739-45.
[14] Baek SY, Kang BC, Choi HY. Pancreatic cystadenoma associated with islet cell tumour. Br J Radiol. 2000;73:83-86.
[15] Ustun MO, Tugyan N, Tunakan M. Coexistence of an endocrine tumour in a serous cystadenoma (microcystic adenoma) of the pancreas, an unusual association. J Clin Pathol. 2000;53:800-02.
[16] Keel SB, Zuckerberg L, Graeme Cook F. A pancreatic endocrine tumour arising within a serous cystadenoma of the pancreas. Am J Surg Pathology. 1996;20:471-75.
[17] Kim YW, Park YK, Lee S. Pancreatic endocrine tumour admixed with a diffuse microcystic adenoma: A case report. J Korean Med Sci.1997;469-72.
[18] Turcotte S, Turkbey B, Barak S, Libutti SK, Alexander HR, Linehan WM, et al. von Hippel-Lindau disease-associated solid microcystic serous adenomas masquerading as pancreatic neuroendocrine neoplasms. Surgery. 2012;152(6):1106-17. doi:10.1016/j.surg.2012.08.010.
[19] Masatsugu T, Yamaguchi K, Chijiiwa K, Nishiyama K, Tanaka M. Serous cystadenoma of the pancreas associated with pancreatic divisum. J Gastroenterol. 2002;37:669-73.
[20] Juadome N, Yamaguchi K, Shimizu S. Serous cystadenoma of the pancreas with hypoplasia of the pancreas. Report of a case. Nippon Shokakibyo Gakkai Zasshi. 1998;95:455-59.
[21] Montag AG, Fossati N, Michekassi F. Pancreatic microcystic adenoma coexistent with pancreatic ductal carcinoma. A report of two cases. Am J SurgPathol. 1990;14:352-55.
[22] Nitta H, Hirota M, Ohkado A, Motomura Y, Chikamoto A, Shibata M, et al. Coexistence of serous cystadenoma and ductal adenocarcinoma in the pancreas: A case report. Pancreas. 2008;36(2):218-19.

PARTICULARS OF CONTRIBUTORS:
1. Registrar, Department of SGE, MMC, Chennai, Tamil Nadu, India.
2. Registrar, Department of SGE, MMC, Chennai, Tamil Nadu, India.
3. Registrar, Department of SGE, MMC, Chennai, Tamil Nadu, India.
4. Head, Department of SGE, MMC, Chennai, Tamil Nadu, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
JMV Amarjothi,
EVR Salai, Park Town, Chennai, Tamil Nadu, India.
E-mail: drmosesvikramamarjothi@hotmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Oct 19, 2019
- Manual Googling: Feb 17, 2020
- iThenticate Software: Mar 24, 2020 (8%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Oct 18, 2019**
Date of Peer Review: **Nov 08, 2019**
Date of Acceptance: **Feb 24, 2020**
Date of Publishing: **Apr 01, 2020**