Clinicopathological studies on solid and cystic tumors of the pancreas

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Summary: Three cases of pancreatic tumor in two females (case 1, case 3) and one male (case 2) were reported. Macroscopically cases 1 and 3, which were surrounded by a thick fibrous capsule, developed toward the outside of the pancreas and the cut surface showed mainly cystic degenerative areas filled with necrotic and hemorrhagic materials. In contrast with these two cases, case 2 was buried in the pancreatic tissue and the cut surface showed cystic degenerative areas in its center with a thick fibrous capsule and tumor cell nests invading beyond the capsule to the parenchyma of the pancreas. Microscopically each tumor was identical. The solid areas on the periphery were composed of sheets of polygonal uniform cells subdivided by delicate fibrovascular stalks. Near the degenerative areas, tumor cells lay on a delicate fibrovascular core in one or two layers, with pseudopapillary patterns. Mitotic figures were very rare. All three cases demonstrated immunoreactivity for alpha-1-antitrypsin, but not for islet hormones, tumor markers nor neuron-specific enolase. Although electronmicroscopically, zymogen granules were detected in cases 2 and 3, and annulate lamellae in cases 1 and 3, ductal cell character features were not so developed. From the above, these tumors were diagnosed as solid and cystic tumors of the pancreas. Furthermore, it was suggested that they differentiated in the direction of acinar cells. Gastroenterol Jpn 1991;26:497-502

Key words: alpha-1-antitrypsin; pancreatic tumor; solid and cystic tumor; zymogen granule

Introduction

Among pancreatic tumors, “solid and cystic tumor” is a rare tumor characterized by its predominance in young women and a favorable prognosis 1. Furthermore, because of its characteristic gross features and light microscopic findings, this tumor has come to occupy a certain position in clinicopathology. Recently, reports of this tumor have increased, but its histogenesis has not been explicated 2-5. We report here the results of clinicopathological studies of three cases of this tumor which we experienced and discuss their histogenesis with reference to past reports.

Patients and Methods

Tissues were fixed in 10% formalin and processed for light microscopic examination. Hematoxylin and eosin (HE), periodic acid-Schiff (PAS) with and without diastase digestion, Grimelius and Masson-Fontana stains were applied to each case. Immunohistochemical staining by the avidin-biotin-peroxidase complex method was applied to deparaffinized sections to detect antigens by use of antibodies to alpha-1-antitrypsin (AAT), carcinoembryonic antigen (CEA), carbohydrate antigen (CA) 19-9, Dupan II, insulin, glucagon, somatostatin, pancreatic polypeptide, neuron-
specific enolase (NSE) (all antibodies supplied by Dako, Copenhagen, Denmark).

Multiple samples of peripheral tissues of each case in paraffin blocks were also deparaffinized and processed for electron microscopic study.

Case 1
A 37-year-old woman without symptoms was admitted for evaluation of a fist-sized palpable tumor with calcification in the left upper quadrant, which was pointed out in a mass survey. Serum tumor markers, such as α-fetoprotein (AFP), CEA and CA19-9 were all negative. Abdominal ultrasonography (US) revealed a globular hypoechoic lesion with an echogenic rim at the tail of the pancreas. Abdominal computed tomography (CT) demonstrated a low density globular mass at the tail of the pancreas with calcification around the mass. At laparotomy, the tumor appeared well-defined and no intraabdominal metastases were noted. Distal pancreatectomy and splenectomy were performed. The patient has now been followed for 5 years and 5 months with no evidence of recurrence.

Case 2
A 39-year-old man without symptoms was admitted for evaluation of a calcified pancreatic tumor which was pointed out on US at a clinical survey. Serum tumor markers, such as AFP, CEA and CA19-9 were all negative. US revealed a hypoechoic mass, measuring 4.0 × 2.5 cm, with a strong echo in its center at the body of the pancreas. CT demonstrated a low density globular mass at the body of the pancreas with ringed calcification in the mass. At laparotomy, the tumor appeared well defined and no intraabdominal metastases were noted. A total pancreatectomy was performed. The patient has now been followed for 2 years and 10 months with no evidence of recurrence.

Case 3
A 16-year-old girl was admitted with a chief complaint of abdominal pain in the left upper quadrant. Serum tumor markers, such as AFP, CEA and CA19-9 were all negative. US revealed a hypoechoic mass, measuring 4.0 × 2.5 cm, at the tail of the pancreas. CT demonstrated a low density globular mass, measuring about 5 cm, at the tail of the pancreas, without calcification. At laparotomy, the tumor appeared well-defined and no intraabdominal metastases were noted. Distal pancreatectomy and splenectomy were performed. The patient has now been followed for 5 years with no evidence of recurrence.

Results
Macroscopic findings
The tumors measured 7.5 × 7.5 × 6.0 cm in case 1, 4.5 × 4.5 × 3.5 cm in case 2 and 6.0 × 5.5 × 5.5 cm in case 3 in diameter. The tumors of cases 1 and 3 which were surrounded by a thick fibrous capsule developed toward the outside of the pancreas and were well separated from the normal pancreatic tissue. The cut surface of the tumors of cases 1 and 3 showed mainly cystic degenerative areas filled with necrotic and hemorrhagic materials. On the peripheral portions of the tumor, solid areas with parenchymatous tissues were found (Fig. 1). In contrast with these two cases, most of the tumor of case 2 was buried in the pancreatic tissue and the tendency to develop toward the outside was mild. The cut surface of the tumor of case 2 showed cystic degener-