[症例報告]Nonfunctioning islet cell tumor associated with concurrent renal cell carcinoma : A case report

Nonfunctioning islet cell tumor associated with concurrent renal cell carcinoma: A case report

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ABSTRACT

A case of concurrent nonfunctioning pancreatic islet cell tumor and renal cell carcinoma of the right kidney in a 62-year-old woman is reported. She initially presented with a complaint of right flank pain at a hospital where she was suspected to have a tumor in the right kidney. Subsequently, the patient was referred to our University Hospital for further examination. A tumor in the head of the pancreas was incidentally detected during the examination of the renal tumor. On sophisticated imaging studies (US, CT, and MRI), both pancreatic and renal tumors showed similar findings. Only proton density weighted MRI allowed for a differentiation of the two tumors, but the tumor of the pancreatic head could not be definitely diagnosed. An exploratory laparotomy revealed a renal tumor in the right kidney and a well encapsulated tumor in the uncinate process of the pancreatic head. A right radical nephrectomy and an enucleation of the pancreatic tumor were easily performed. The right kidney showed renal cell carcinoma (clear cell type), while the pancreatic tumor was determined to be an islet cell tumor. Both tumors showed a grossly similar appearance on a cut surface, that was attributed to the similar imaging features.

Since this concurrence of these two tumors is extremely rare, in our opinion, it is valuable to report this case so that more information can be gathered for assessing the diagnosis and providing best treatment. *Ryukyu Med. J., 18(1, 2)33~36, 1998*

Key words: nonfunctioning islet cell tumor, renal cell carcinoma

INTRODUCTION

The simultaneous occurrence of two distinct neoplasms of different origin occasionally presents in all organs, however, the combination of this phenomenon is very rare between the pancreas and kidney. Nonfunctioning islet cell tumor[1,2] and renal cell carcinoma[3-6] are rarely concurrent or coincident. To our knowledge, such concurrent two tumors have never been previously reported.

We report a rare instance of a concurrent nonfunctioning islet cell tumor of the pancreatic head and renal cell carcinoma of the right kidney. Since each primary tumor exhibited similar diagnostic images except for the findings of proton density weighted magnetic resonance imaging (MRI), we could not make a precise diagnosis before operation. The rarity and diagnostic difficulty of this case prompted us to describe our findings.

CASE REPORT

A 62-year-old woman presented at Ryukyu University Hospital for thorough examination in October 1996. She had been receiving medical treatment for hypertension in a local clinic. A dull pain in the right flank developed in August 1995 which was diagnosed as a tumor of the right kidney. Her past medical history revealed that she had undergone a hysterectomy for uterine myoma in 1974 and a subtotal thyroidectomy for goiter in 1989.

After a thorough examination at the University Hospital, two distinct tumors were identified: one was in the right kidney while the other was found. Each tumor revealed the same findings, that is, a hypoechoic mass on ultrasonography, a hyperdense mass on enhanced CT, and a hypervascular mass on angiography. These similar findings thus made it difficult to differentiate one from the other. Subsequently MRI demonstrated the same image in each tumor. However, only the proton

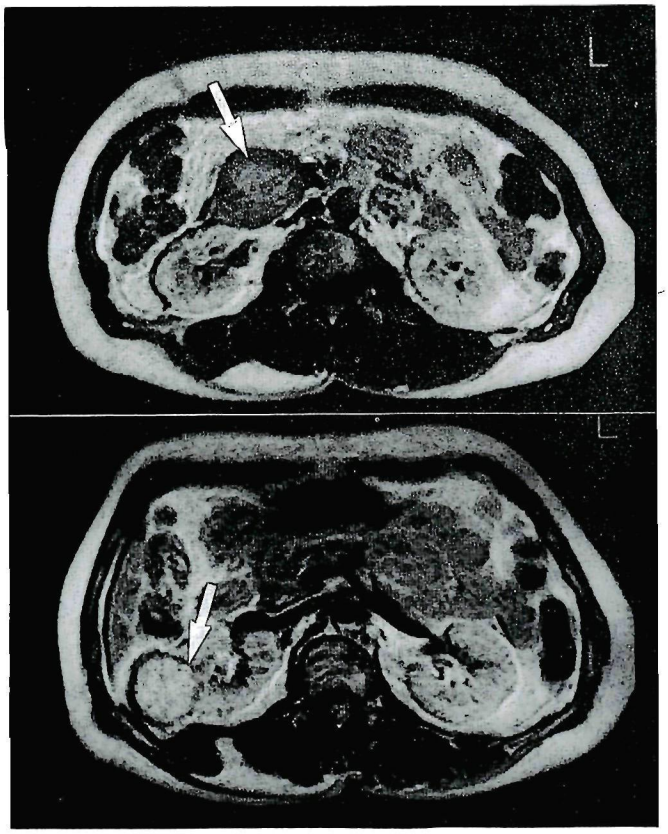

Fig. 1 Proton density weighted MRI demonstrating low intensity of pancreatic tumor (top, arrow) compared with high intensity of renal cell carcinoma (bottom, arrow).

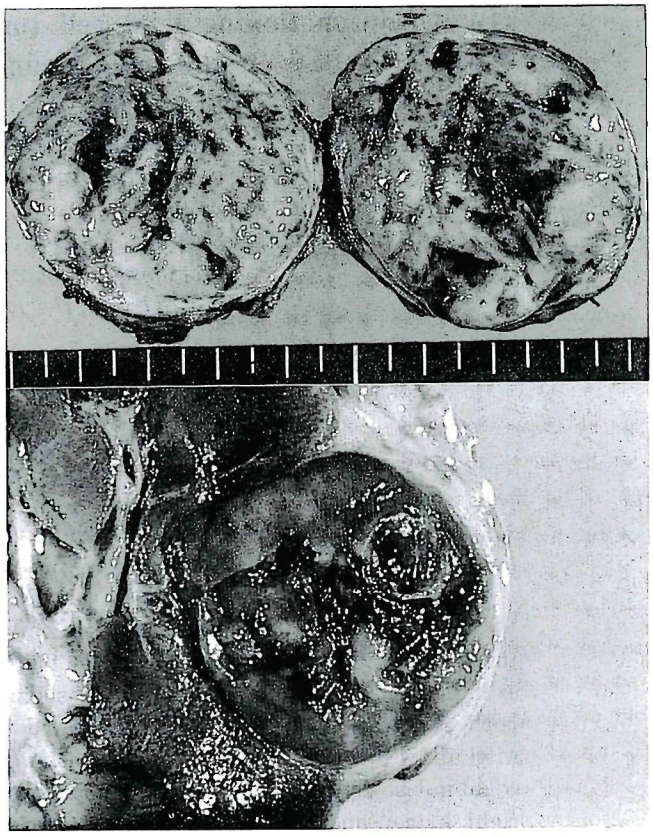

Fig. 2 Macrophotographs of the cut surface of islet cell carcinoma (top) and renal cell carcinoma (bottom). Both tumors show hemorrhaging, necrosis and cystic change.

density weighted MRI findings demonstrated a tumor of low intensity in the pancreatic head and a tumor of high intensity in the right kidney (Fig. 1). Based on these fin dings, the tumor of the right kidney was diagnosed as renal cell carcinoma, while that in the pancreatic head could not be definitely diagnosed. Both the laboratory data and tumor markers (CEA, CA19-9, elastase I, and DUPAN) were within the reference ranges. In addition, the patient did not present with any clinical manifestation of functioning islet cell tumors (insulinoma, glucagonoma, gastrinoma, somatostatinoma, vipoma).

The patient underwent an exploratory laparotomy on January 10, 1997. Both tumors bulged out and were confined to each organ without any spread to the surrounding or adjacent tissue. A radical nephrectomy and enucleation of the pancreatic tumor in the head (uncinate process) were thus performed with no difficulty.

GROSS PATHOLOGY

The enucleated tumor from the uncinate process of the pancreatic head was encapsulated, and measured 5 X 4 cm in size. Its cut surface was pink-purple with areas of hemorrhage and necrosis (Fig. 2, top).

The tumor of the kidney bulged out and measured 4 X 3 cm in size. On a cut section, it was found to be a well-circumscribed, spherical, orange tumor with areas of hemorrhage, necrosis, and cystic change (Fig. 2, bottom). In addition, no thrombus was found in the renal veins.

MICROSCOPIC PATHOLOGY

The pancreatic tumor cells were arranged in a ribbon pattern mimicking an acinar or tubular structure (Fig. 3, top; HE, X 25). The cells were small, round and uniform with small nuclei. The tumor cells were positive for Grimelius's silver impregnation and chromogranin-A (Fig. 3, bottom; HE, X 50).

The renal tumor cells were large with clear cytoplasm in the tubular structures and stained slightly for eosin. They were uniform in size and shape with small dense nuclei (Fig. 4, HE, X50).

The patient was uneventful postoperatively, and remains disease free at the time of this writing.

DISCUSSION

We report the findings of a patient with two concurrent common neoplasms. Renal cell carcinoma[2] arises from the proximal tubular cells, and islet cell tumor[4]

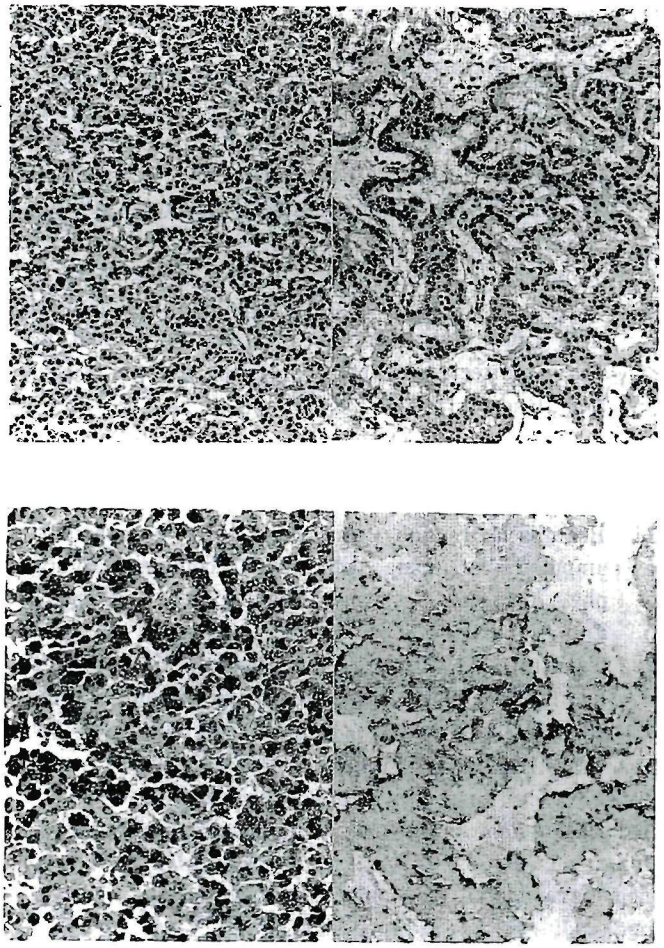

Fig. 3 Microphotographs of the islet cell tumor showing the typical histology (top; HE,X 25), with both positive argyrophil cells (bottom, left; Silver impregnation, X 50) and positive chromogranin cells (bottom, right; X 50).

originates from the islet cells of the pancreas. However, this concurrence of two distinct tumors is extremely rarely reported. In this patient, renal cell carcinoma of the right kidney was initially diagnosed. On the other hand, nonfunctioning islet cell tumor was also incidentally detected during further imaging examinations of the kidney tumor.

The concurrence of the two tumors may be an incidental occurrence because there is no definite evidence of a known genetic predisposition to these tumors and both tumors do not tend to occur in familiar forms. Moreover, they may not be part of any recognized neoplasia syndrome hitherto described[5-7].

In clinical practice, we were confronted with a diagnostic problem in this case. Renal cell carcinoma could easily be diagnosed by the characteristic findings using imaging studies[5, 8-10]. However, the tumor in the head (uncinate process) of the pancreas demonstrated identical features to those of renal cell carcinoma using sophisticated imaging studies[11-12]. Consequently, the pancreatic tumor could not be clearly diagnosed before surgery. Only

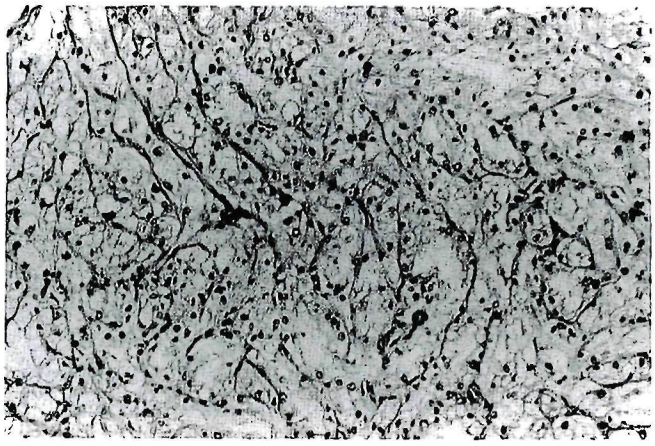

Fig. 4 Microphotograph of the renal cell carcinoma showing a clear cell type (HE, X 50).

proton density weighted MRI findings enabled us to differentiate these two tumors without any definite diagnosis of the pancreatic tumor. This differentiation was largely attributed to the difference in the water content[5].

Regarding the spread of renal cell carcinoma, the direct extension of renal cell carcinoma into the renal vein allows this tumor access to the blood stream which is unique among carcinomas. Thus, the early metastasis of renal cell carcinoma to the lung is a characteristic finding. Other common sites of metastasis are the lymph nodes, bones, liver and adrenal glands. Regarding the lymph nodes, those in the para-aortic chain are the most common sites of metastasis[3]. As a result, we were inclined to believe that the pancreatic tumor was a metastatic lesion of the renal cell carcinoma. Other differential diagnoses included nonfunctioning pancreatic islet cell tumor and pancreatic mucinous cystadenocarcinoma.

The rarity of pancreatic islet cell tumors and cystadenocarcinoma reported in the literature means that no pathologist has yet had the opportunity to study any great number of these tumors. Therefore, the isolated case reports that have so far been published do not provide reasonable data from which to extract percentages of metastasis to the kidney. To the best of our knowledge, no previous case with concurrent pancreatic islet cell tumor and renal cell carcinoma has yet been reported in the literature (Medline 1990-1997). Although an analysis of the pancreatic islet cell tumors previously reported in the literature does not represent the whole experience, this may indeed be the first case with these two tumors concurrently.

In conclusion, since concurrent pancreatic islet cell tumor and renal cell carcinoma is an uncommon phenomenon, more information on such cases should be gathered in order to better assess and diagnose such cases and thus develop an optimal treatment strategy.

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