

Pancreatic metastasis of renal cell carcinoma

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BACKGROUND: Renal cell carcinoma (RCC) is a common cancer, but pancreatic metastasis of RCC is unusual. Because of the rarity and peculiarity, pancreatic lesions from RCC metastasis were described mostly in case reports which highlight the importance of a systematic analysis of this clinical condition.

DATA SOURCES: Data of 7 patients with pancreatic metastasis of RCC treated in the Peking Union Medical College Hospital were extracted and 193 similar patients reported in the past 10 years from the literature were analyzed. Epidemiological, pathological and follow-up information were investigated. Potential prognostic factors were compared with corresponding data reported 10 years ago.

RESULTS: Multivariate Cox regression showed that asymptomatic metastasis and surgical procedure were independent factors associated with better survival. Compared with the data reported 10 years ago, follow-up of RCC patients has been emphasized in recent years, and atypical surgery is frequently used since it has similar effect as typical surgery on tumor resection while it is able to preserve more pancreatic function.

CONCLUSION: Surgical treatment should be an option as long as the pancreatic metastasis of RCC is resectable.

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KEY WORDS: pancreatic metastasis;
renal cell carcinoma;
surgery;
prognostic factor;
survival analysis

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Introduction

According to the American Cancer Society report, renal cell carcinoma (RCC) is the sixth most common cancer in the United States, accounting for an estimated 13 860 deaths in 2014.^[1] Among patients with RCC, 20%-30% have metastases at presentation and up to 40%-50% develop widespread metastatic disease after nephrectomy.

The pancreas is an uncommon location for metastasis from other primary cancers and pancreatic metastases account for less than 5% of all pancreatic malignancies.^[2, 3] A variety of cancers have been shown to metastasize into the pancreas, such as colon cancer, non-small cell lung cancer, and melanoma. In particular, RCC shows, besides metastases to lymph nodes, lung, liver and bones, an increased disposition for metastasis to rare sites, such as the thyroid gland and the pancreas.^[4, 5]

Finding reliable prognostic factors for patients with RCC metastatic to the pancreas would facilitate selection of different treatment strategies. A number of articles have proposed several prognostic models to predict the survival of these patients and showed different results. Some suggested that surgeons should preserve as much pancreatic tissue as possible to protect exocrine and endocrine function of the pancreas,^[6] whereas others suggested atypical tumor resection might lead to higher morbidity and recurrence rates.^[7]

Due to the rarity and peculiarity, pancreatic lesions for RCC metastasis were described mostly in case reports. In 2006, Sellner and colleagues^[8] conducted a high volume systemic research which thoroughly reviewed the literature of RCC with pancreatic metastasis from 1952 to 2003. In this study, we reviewed cases reported at the Peking Union Medical College Hospital (PUMCH) in the past decade and compared the relevant factors between our data and Sellner's, attempting to identify the differences which could help investigate the underlying changes during the past 10 years. This study is to perform a systematic review of previous reports on patients with RCC metastasized to the pancreas and those with this condition admitted to our center, to portrait the characteristics of this condition, and to investigate the

prognostic factors in this population.

Methods

Study selection

Firstly, we performed a literature search in PubMed (2003 to 2014). The key words used were as follows: pancreatic metastasis, renal cell carcinoma, kidney cancer and surgery. The search was conducted using the term “related article”. All selected articles were studied and then screened to match pre-defined criteria. Articles containing duplication of case descriptions were excluded. Articles not containing individual patient data were excluded. And patients who were pathologically proved to have tumor other than clear cell carcinoma were excluded. As a result, 70 articles were included in the study.^[6, 8-76] Secondly, patients treated for pancreatic metastasis of RCC at our center (PUMCH) were included to expand patient population. Data for each patient were collected retrospectively, and the patients were followed up with clinical visits and telephone.

Data extraction

A total of 200 patients (193 from the literature and 7 from our center) were included in this study. The following data were extracted from the literature or our patients: patient characteristics, primary RCC, pancreatic metastasis, pancreatic surgery or other therapies performed, overall survival and date of death. Surgery strategies were classified into two categories: typical resection (pancreatoduodenectomy, distal pancreatectomy, total pancreatectomy) and atypical resection (enucleation and others).

Statistical analysis

All these data were analyzed with SPSS statistical

software (version 13.0; IBM Corporation, Armonk, NY). Continuous data were present as mean and standard deviation. Potential risk factors for survival were first analyzed with univariate Cox regression. Variables with $P < 0.10$ by univariate analysis were further analyzed by multivariate Cox regression. The clinically significant parameters ($P < 0.05$) were then considered independent predictors of survival. The Kaplan-Meier method was then applied to depict survival curves and to compare the survival of patients with different distributions of these significant parameters. A subgroup evaluation utilizing the Kaplan-Meier method and the log-rank test was conducted to compare the prognosis of patients with typical surgery and atypical surgery. Moreover, to delineate the changes in the management of this patient population, we compared the patient characteristics and treatment options using Student’s *t* test (continuous variables) and binomial distribution test (categorical variables). For all analyses, a *P* value < 0.05 was considered statistically significant.

Results

Cases from PUMCH

A total of 7 patients with RCC metastatic to the pancreas, 4 men and 3 women with a mean age of 59 years (range 45-68), were treated in our center (Table 1). All the pancreatic metastases were metachronous. The average interval time between the renal tumor resection and the finding of pancreatic lesions was 6.91 years (range 1.17-17.00). Six patients presented with right renal tumors, 5 were symptomatic when metastatic lesions were found: two had abdominal pain, two had jaundice, and one suffered from upper gastrointestinal bleeding. The lesions were solitary in 3 patients, located in the head of the pancreas in 5 patients, and had a mean size of 3.81 cm (range

Table 1. Characteristics of the patients with pancreatic metastasis of RCC in PUMCH

Variables	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7
Age (yr)	62	68	55	65	66	45	53
Gender	Male	Female	Female	Male	Male	Male	Female
RCC location	Right	Right	Right	Right	Right	Left	Right
Interval time (yr)	1.17	17	6	6	5	12	1.17
Symptom on finding	Ab pain	UGIB	Ab pain	-	Jaundice	-	Jaundice
Mt location	Head	Head	Diffuse	Head	Head, tail	Head	Head
Mt number	Multiple	2	Multiple	1	2	1	1
Mt size (cm)	1	4	2.5	5.2	4	6	4
Surgical procedure	-	Atypical surgery	Atypical surgery	Atypical surgery	Atypical surgery	Typical surgery	-
Adjuvant treatment	-	-	-	-	-	-	Chemotherapy
Status	Dead	NED	AWD	AWD	AWD	AWD	Dead
Follow-up (mon)	2	7	14	1	76	48	11

Ab: abdominal; UGIB: upper gastrointestinal bleeding; Mt: metastasis; NED: no evidence of disease recurrence; AWD: alive with disease.

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