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CASE REPORT

Pancreatic Cancer Presents as Inguinal Mass: A Case Report and Literature Review

Haiyan Zhu[1], Min Dai[2]*

[1]Department of Oncology, [2]Department of General Surgery, Haian Hospital Affiliated to Nantong University, Jiangsu 226600, China

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Abstract A 70-year-old male presenting with a mass in the right inguinal area was treated with surgery, and was diagnosed pathologically as spermatic cord metastasis of pancreatic cancer. He was given systemic chemotherapy. Unfortunately, he died of ascites and cachexia three months later.

SPERMATIC cord metastasis of pancreatic cancer is a rare condition found in clinical practice. Its clinical manifestation is atypical, so its misdiagnosis rate is relatively high. In this study, we report a case with spermatic cord metastasis originating from pancreatic cancer, meanwhile searched the previously reported literatures on spermatic cord metastasis from pancreas and summarized the clinical manifestations, surgical methods, treatment and prognosis of this issue, hoping for improving the diagnosis and treatment of this disease.

CASE DESCRIPTION

A 70-year-old male farmer, who had presented right reducible inguinal hernia appearing as a swelling as large as a table tennis ball without obvious inducement for three years, and in the past two months who suffered from persistent pain caused by the suddenly bulged swelling almost like an egg in size, was admitted to our hospital. He had undergone left inguinal hernia surgery in his childhood. He had no history of right groin and abdominal surgery. He had an accessible mass about 5 cm×4 cm in size with slightly tough texture in the right inguinal area, which cannot be completely returned to the abdominal cavity. The tests of leukocyte, erythrocyte and liver function were normal. Color Doppler ultrasonography showed a mixed echo area in the right inguinal region (**Figure 1A**). No space-occupying lesions were found by liver color Doppler ultrasound. The initial diagnosis of right inguinal hernia was made.

On March 7, 2018, during the operation was performed under lumbar anesthesia, we found that a tumor about 2 cm×1 cm with the distal hernia sac wall thickening, yellow hydrops in the hernial sac, and the tumor attaching to the spermatic vessels (**Figure 1B**). The tumor was hard, compact and difficult to be separated from the surrounding tissues. Intraoperative diagnosis was spermatic cord space-occupying with infection: clinical suspicion of Tuberculosis or Tumor. Then, spermatic cord resection plus high ligation of right inguinal hernia sac was performed.

As shown in **Figure 1C**, the postoperative pathological result revealed adenocarcinoma infiltrating the spermatic cord fibrous tissue. Immunohistochemistry showed villin (+) (**Figure 1D**), which indicated the mass possibly originated from the pancreas. On March 15, 2018, the tracked CA199 result was > 500 U/ml.

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*Corresponding author E-mail: daimin12@126.com

Enhanced CT scan of the abdomen showed that a space-occupying lesion in the body and tail of the pancreas likely with omentum metastasis and mild ascites (**Figure 2A**). Therefore, a diagnosis of spermatic cord metastasis of pancreatic cancer, right inguinal hernia, and advanced tumors was considered.

On March 17, "SOX" regimen chemotherapy (oxaliplatin 130 mg/m^2 IVGTT 1D + tegiol 40 mg Po bid 2w) began. However, abdominal pain and abdominal distention were intolerable on May 29, and symptomatic pain relief was given. CA199 was above 2000 U/ml. Abdominal enhanced CT was performed again and showed that a tumor in the tail of the pancreas was accompanied by intrahepatic metastasis and massive ascites (**Figure 2B**). He died on June 12, 2018.

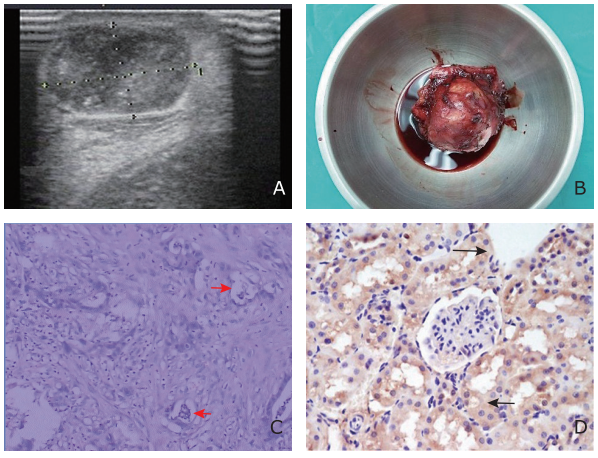

Figure 1. A 70-year-old male patient of pancreatic cancer accompanied with spermatic cord metastasis and inguinal hernia.

A. Color Doppler ultrasound indicates a mixed echo mass in the right inguinal area. B. The resected mass. C. The postoperative pathological examination showed adenocarcinoma infiltrates the spermatic cord (HE, ×40). The red arrows indicate adenocarcinoma cells. D. The black arrows indicate villin (+) detected by immunohistochemical analysis (×100).

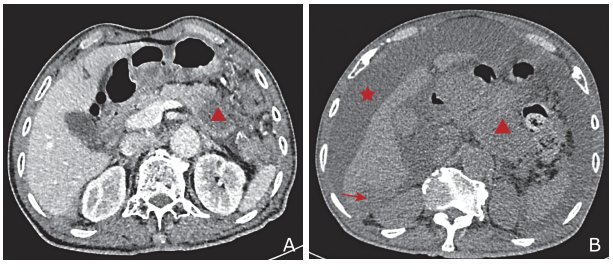

Figure 2. Enhanced CT scan showing a mass in the body and tail of the pancreas (A, B red triangle) with liver metastases (B, red arrow) and ascites (B, red star).

DISCUSSION

Sperm cord metastatic tumors are rarely occurred in urology. Only 9.7% of spermatic cord tumors are metastatic tumors, which mostly originate from the gastrointestinal tract, testis, prostate and kidney, however rarely from the pancreas.

In this paper, we retrieved the studies published in the past 20 years indexed in PubMed, Web of Science, Cochrane, Embase, Wanfang, and CNKI databases, on spermatic cord metastasis as the main clinical manifestation of pancreatic cancer, and finally found 11 cases in 10 studies.[1-10] We analyzed the clinical data of the above cases plus our case in the aspects of clinical manifestations, surgical methods, cancer treatment and prognosis (**Table 1**), aiming to improve the diagnostic rate and therapeutic effect of this condition.

Clinical manifestations

The average age of onset of pancreatic cancer was 61 years old. The first symptoms of pancreatic cancer cases mentioned above were groin or penile cyst mass. Half of them were accompanied by pain and discomfort. Tracing the history of the disease, few of them had symptoms such as abdominal pain, abdominal distention and jaundice. 92% (11/12) of the patients failed to be diagnosed accurately before operation,[1-10] and the rate of misdiagnosis was very high. Only one case had scrotal cysts 2 years after pancreatic cancer surgery.[3] 75% (9/12) of pancreatic cancer with spermatic cord metastasis occurred in the right spermatic cord.[1-10] The cause is still unclear and needs further study. The median course of disease was two months, which was same as that reported in this case. Four cases with inguinal hernia were first diagnosed in abdominal wall hernia surgery or general surgery,[6, 9, 10] and the other eight cases were first diagnosed in urology with "spermatic cord or scrotal mass".[1-5, 7, 8]

Methods of surgery

All patients underwent spermatic cord resection or orchiectomy in part at the same time. Even if one patient had been diagnosed with advanced pancreatic cancer before operation, he still underwent the operation because of inguinal pain.[3] In addition, Bandyopadhyay *et al*.[8] reported that a patient underwent pancreatectomy immediately after spermatic cord resection, but the prognosis was not reported.

Table 1. Clinical data of 12 cases with spermatic cord metastasis of pancreatic cancer

References	Country or province	Year of publication	Age (yrs)	Clinical manifestations	Course of disease	Metastasis site	Primary focus	CA199 (U/ml)	Further treatment	Survival time
Di *et al*.[1]	Italy	2018	70	Right scrotal mass	-	Right spermatic cord and liver	Pancreas	-	Gemcitabine+ Abraxane	-
Our case	Jiangsu	2018	70	Right groin mass and pain	2 months	Right spermatic cord	Tail of pancreas	>500	Oxaliplatin+ Tegio	2 months
Guo *et al*.[2]	Heilongjiang	2016	39	Right groin mass and pain	15 days	Right spermatic cord	Tail of pancreas	High	-	-
Wang *et al*.[3]	Beijing	2015	56	Right scrotum cyst 2 years after pancreatic cancer	10 months	Right spermatic cord and epididymis	Body and tail of pancreas	13.6	Radiotherapy+ Tegio	1 month
Xu *et al*.[4]	Hebei	2015	61	Right scrotal mass	2 months	Sheath of right spermatic cord	Tail of pancreas	>1000	-	6 months
Shin *et al*.[5]	Japan	2015	71	Right groin mass and pain	-	Right spermatic cord, liver and peritoneum	Pancreas	744	-	12 months
Yang *et al*.[6]	Shanghai	2014	60	Right scrotal mass	-	Sheath of right spermatic cord and liver	Pancreas	-	Chinese medicine treatment	3 months
Yang *et al*.[6]	Shanghai	2014	60	Left scrotal mass	-	Left spermatic cord, liver and retroperitoneum	Pancreas	High	Chinese medicine treatment	6 months
Cao *et al*.[7]	Shanghai	2011	51	Left inguinal mass	10 days	Right spermatic cord	Tail of pancreas	618	-	4 months
Bandyopadhyay *et al*.[8]	India	2005	67	Right groin mass and pain	1 month	Right spermatic cord	Body and tail of pancreas	-	Body and tail pancreatectomy plus chemotherapy	-
Jiang *et al*.[9]	Zhejiang	2004	71	Right groin mass	5 months	Sheath of right epididymis	Body and tail of pancreas	1189	Chemotherapy	-
Tanaka *et al*.[10]	Japan	1999	58	Left groin mass and pain	1 month	Right spermatic cord	Pancreas	6040	-	1 month

-: not mentioned.

Tumor treatment and prognosis

Postoperative pathology showed infiltration of spermatic cord or epididymal adenocarcinoma. Since direct biopsy or puncture of pancreatic tumors is of high risk, the necessity of the above invasive operation for advanced pancreatic cancer is low. Therefore, spermatic cord specimens provide the only pathological basis for the following treatment. Postoperative follow-up of CA199 showed a significant increase in most patients. Tumors usually occur in the body and tail of the pancreas, but rarely in the head and neck. Some patients had hepatic or peritoneal metastasis when tracing CT. Just like our reported case, on March 15, 2018, enhanced CT indicated no liver metastasis, but 2 months later, liver metastasis occurred. According to the above clinical data, spermatic cord metastasis of pancreatic cancer in some patients can be considered earlier than liver metastasis. Because once advanced pancreatic cancer has been diagnosed, the adherence of patients to the next cancer treatment is not high. Among them, 5 patients received chemotherapy after operation,[1, 3, 8, 9] but 3 patients gave up treatment halfway.[4, 5, 10] Most of them gave up treatment in the later stage.

The disease progressed rapidly, and the median survival period was only 3-4 months. Shin *et al*.[5] re-

ported that the longest survival time was 12 months, and no adjuvant therapy was performed after operation. In this case, the patient received a cycle of "SOX" chemotherapy and gave up treatment halfway. He died three months later.

In a word, spermatic cord metastasis of pancreatic cancer is easy to be misdiagnosed due to no obvious abdominal symptom happened before operation. For patients having inguinal hernia or spermatic scrotal cyst presenting with atypical symptoms, enhanced abdominal CT scan before operation would be recommended.

Conflict of Interests Statement

The authors have no conflict of interests to disclose.

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