

Pancreatic tumor: DSA diagnosis and treatment

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Subject headings pancreatic neoplasms/diagnosis; pancreatic neoplasms/therapy; angiography, digital subtraction

Abstract

AIM To study the clinical significance of the diagnosis and catheterized interventional treatment of digital subtraction angiography (DSA) for pancreatic tumors.

METHODS Ninety-two patients with pancreatic tumor, 69 males and 23 females, aged from 41 to 70 years (mean 57.1 years) were diagnosed with DSA. Sixty-one patients with pancreatic cancer were treated with transcatheter celiac and superior mesenteric arterial anticancer agents (MMC 20mg, EADM 40 mg and 5-FU 2.0 g) infusion (TCSAI).

RESULTS The DSA diagnoses were confirmed by operations and pathological examinations, with a coincidence 82.6% rate of, and a therapeutic effective rate of 42.6%.

CONCLUSION DSA is of diagnostic value for pancreatic tumors, and helpful in understanding the course of the disease, judging the prognosis and selecting the therapeutic regimen, and could improve the chemotherapeutic effect as well.

INTRODUCTION

In order to study the clinical significance of the diagnosis and catheterized interventional treatment of digital subtraction angiography (DSA) for pancreatic tumors, 92 cases of pancreatic tumor were diagnosed with DSA, and 61 cases of pancreatic cancer were treated with transcatheter celiac and superior mesenteric arterial infusion of anticancer agents (TCSAI) from Nov. 1987 to April 1997, with satisfactory results.

MATERIALS AND METHODS

Patients

Ninety-two patients (69 men, 23 women, aged from 41 - 70 years, averaging 57.1 years), were diagnosed as having pancreatic tumor through history of disease, B-ultrasonography, PTC and/or ERCP and CT.

Methods

Abdominal aortography was performed in the 92 cases 8 times, selective celiac arteriography 18 times, combined angiographies of superior mesenteric artery 22 times, common hepatic artery 22 times, proper hepatic artery 15 times and gastroduodenal artery 11 times (Siemens Angiotron-CMP Bicolor DSA System) by percutaneous transfemoral-artery catheters in Seldinger's way, 10 ml - 50 ml 76% meglucamine diatrizoate for each case. Among them, 61 cases of pancreatic cancer were treated with TCSAI for a total of 93 times. The anticancer agents (MMC 20 mg - 40 mg, FADM 40 mg, 5-Fu 2 g) were divided into 2 equal parts, and infused into the celiac artery and superior mesenteric artery, respectively. The cases of early and intermediate cancer were infused after resection and the cases of late and recurrent cancer were infused immediately after arteriography. In accordance with the patient's condition and curative effect, TCSAT was performed once every 3-4 weeks, but not more than 3 times in 61 patients.

RESULTS

Diagnosis

DSA diagnoses of 92 cases were confirmed by operations and pathological examinations. Among them, 89 cases had pancreatic cancer, which was located in the head of pancreas in 67 cases, in body of pancreas, 18 cases and in tail, 4. Thirty-nine were complicated with metastatic hepatic cancer, 21 had metastatic celiac cancer and 3 cases had pancreatic cystadenocarcinoma. The diagnostic coincidence rate was 82.6% (76/92), without

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*Reported at International Meeting of Exchange of HUAXIA Medical Academic Thesis, Hangzhou, China, 1997.

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Received 1997-07-22

positive misdiagnosis rate, and the negative rate was 17.4%(16/92), which may be caused by less blood supply and underdevelopment. DSA examination had no obvious adverse reactions.

Treatment

The therapeutic effective rate (including the cases whose subjective symptoms were improved) was 42.6% (26/61). Tumors were either put under control or reduced in size in 31.1%(19/61). In 39 advanced cases of complicated with metastatic hepatic cancer, the 1-year survival rate was 51.3% (20/39), 3-year survival rate, 15.4% (6/39), and one patient died of late failure within 30 days. The main adverse reactions of TCSAI were nausea, vomiting anorexia, abdominal distention and so on, which usually disappeared in 1-3 days, and WBC decreased temporarily in 1-2 weeks. No severe complications happened.

DISCUSSION

To define the relationship between cancer and branches of gastroduodenal, hepatic artery, superior mesenteric vessels, portal vein and abdominal aorta is the key to decide whether to perform radical resection or enlarging resection (including superior mesenteric vessels resection). The other examinations used now for pancreatic tumors include B-ultrasonography, hypotonic duodenography, PTC, ERCP, CT and so on. However, B-ultrasonography can be disturbed easily by intra-abdominal gas and obesity hypotonic duodenography, PTC and ERCP can not show the range and diffusion of pancreatic cancer and relation of the tumor to peripheral vessels and CT can reveal involved vessels, but only the cross sections and not the whole length, while DSA was of the peculiar diagnostic value, which could not be substituted by the other examinations, in understanding the relationship between cancer and vessels.

Although DSA is more advanced than common angiographies, DSA originally does not belong to selective angiography^[1], so that the crisscross and overlap of the vascular images may often hinder the diagnosis when there are many vessels in the examined size at the same time. In order to remedy this defect, we have improved the contrast techniques and methods to combine DSA with selective angiography so as to greatly raise the image quality and spatial resolution. That DSA is applied to celiac, superior mesenteric, hepatic and gastroduodenal arteriographies can continuously show the arterial,

capillary and venous phases of the tumors in turn, so as to know size, shape, infiltrative range, metastasis and vascularity of the cancer, and further define the pathologic quality, disease course and assist in the colocalization of cancers.

Pancreatic cancers belong to ischemic tumors, therefore DSA arterial phase is the most important in the diagnosis of the cancer. Capillary phase and venous phase are of the significance of assistant diagnosis, the arterial phase mainly shows abnormal flexion, irregular dilatation, plexiform aggregation or interruption of gastroduodenal artery, superior and inferior pancreaticoduodenal arteries caused by compression and erosion of the cancer. In early stage, the appearance of gastroduodenal artery is normal or mildly stiff and displaced. In advanced stage, cancer infiltrates peripheral arteries, even hepatic artery and its branches, through pancreatic capsules. Carcinoma of body and tail of pancreas usually infiltrates superior mesenteric artery and splenic artery so that they can be irregular, flexional, stiff, constrictive or interrupted. Capillary phase usually shows filling defect in the site of cancer when pancreatic parenchyma is stained. Normal pancreatic head has so rich blood circulation that the staining is deeper in the head than in the body and tail. Early carcinoma of pancreatic head makes the staining of the head light. In late stage the staining disappear. Venous phase can show that portal vein, superior mesenteric vein and splenic vein are involved in advanced cancers. Pancreatic cystadenoma is also an ischemic lesion, the peripheral blood vessels are compressed and displaced outward and dilated, without the signs of stiffness, constriction and interruption, and the tumor margin is clear.

DSA high-quality images greatly raise the accuracy, safety and chemotherapeutic effect of TCSAI. Higher concentration anticancer agents act directly on the cancer and the lymph nodes to produce cytotoxins, block the synthesis of DNA in cancer cells and reduce the ineffective distribution of the agents in general normal tissues. The infusion can also give a better therapeutic effect to hepatic metastasis^[2], resulting in inhibiting cancer growth, metastasis and recurrence, and increasing the possibility of resection.

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