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Pancreatic Head Mass: What Can Be Done ? Diagnosis: Surgery

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A wide spectrum of benign and malignant diseases can produce a mass in the head of the pancreas. It can be solid (ductal adenocarcinoma, chronic pancreatitis, endocrine tumor) or a cystic lesion (cystic neoplasm, true cyst or pseudocyst). The most important question is whether or not it is a malignant or benign tumor. There is no doubt that, whenever possible, preoperative histological confirmation of the diagnosis of malignancy is advantageous [1].

The need for surgical intervention is often determined by the presence or absence of jaundice or duodenal obstruction. In a patient with obstructive symptoms secondary to a pancreatic head mass, resection may be the treatment of choice regardless of the diagnosis. In these cases, preoperative histological confirmation is not essential before surgical intervention. By contrast, the management of a relatively asymptomatic tumor of the body or tail, or the non-operative treatment of an advanced case, is dependent on an accurate diagnosis. It is also important for a frank discussion with the patient or relatives concerning the prognosis. Thus, the need for an accurate diagnosis is inversely proportional to the degree of resectability of the lesion [1-3].

Cystic lesions are easily identified by computed tomography or magnetic resonance imaging. Fine-needle aspiration biopsy cannot sufficiently differentiate between malignant and benign cystic tumors, with a failure rate of about 30%. Rapid tumor enhancement and specific biochemical features may suggest an endocrine tumor. The vast majority of malignant head tumors are ductal carcinomas (80-90%), which are almost always solid masses in radiologic imaging studies. Even though nonductal tumors are often solid, cystic components demonstrated radiographically in an isolated pancreatic mass suggest a nonductal tumor, which has a far better prognosis with a 5-year survival of 30% to 50% [2, 4].

The first step in a case of suspected pancreatic head cancer is the staging of the disease and the evaluation of the fitness of the patient. In unresectable cases (advanced tumors or distant metastases), histological confirmation and non-operative procedures (stenting) are the optimal treatment of choice. Various imaging techniques may suggest the diagnosis or the potential for resectability (ultrasound, computed tomography, magnetic resonance imaging, angiography, endosonography) but even with all of the cytological techniques (brush cytology during endoscopic retrograde cholangio-pancreatography, percutaneous fine-needle aspiration (FNA) or core biopsy) in 15-20% of the cases it is impossible to differentiate between cancer and chronic pancreatitis. This means that in practice one in five patients with a suspected pancreatic carcinoma may have no confirmed diagnosis after having completed a staging protocol.

The reported sensitivity of percutaneous FNA cytology for diagnosing malignancy varies between 55% and 97%. inasmuch as false positive results are rare, the specificity in most studies is 100%. The occurence of false negative results poses a great limitation of the method, since a negative result should not influence the decision-making if the clinical suspicion of cancer is high and the mass seems to be resectable. The preoperative histological confirmation is not of great

importance in patients in whom exploration has already been planned, even if for palliation of gastric outlet obstruction. Based on these arguments, percutaneous FNA cytology is recommended only for advanced cases where non-operative palliation is feasible [3, 5].

Therefore, the case of a suspected malignant tumor of the head of the pancreas is a fairly common problem faced by surgeons. What can we do with a pancreatic head mass intraoperatively without previous cytologic or histologic verification? When must we strive to establish definite diagnosis at all costs, and how can we achieve it?

Intraoperative FNA cytology is the most common method. The sensitivity is reported to be 70 to 100%, most often it is around 90%. Tissue biopsy of pancreatic lesions can be done as incisional or wedge biopsies or by use of Trucut needles. The sensitivity of pancreatic biopsy for histological evaluation has been reported to be 83-92%. False positive results are extremely rare. The reported rate of complications related to the biopsy varies from 0% to 10% and the mortality rate from 0% to 4% [3].

The reason that the sensitivity of intraoperative tissue biopsies is not better than FNA cytologies is the surgeon's fear of complications. Cautious wedge biopsies, obtaining specimens which are too superficial, can result in false negative reports because pancreatic cancer is often surrounded by a large rim of pancreatitis. Therefore, needle biopsy is recommended for masses located deep in the head of the pancreas, reserving tissue biopsy only for superficial lesions [3].

When should pancreatic biopsies be done? If pathological confirmation alters our decision about resection, all efforts should be made to confirm the diagnosis. In the case of a mass resulting in obstructive symptoms, cytology does not alter the need for surgical decompression, and some kind of resection is a reasonable treatment option. Moreover, the inflammatory head mass is a special clinical entity. It always has a higher pain score and the association between chronic pancreatitis and pancreatic cancer is a well-known phenomenon [2]. Epidemiological studies indicate that patients with chronic pancreatitis have a risk of developing pancreatic carcinoma 3-15 times greater as compared to a control population. The recent work of Löwenfels represented a 1.8% and 4.0% risk of cancer for chronic pancreatitis patients at 10 and 20 years respectively [6]. Based on these data resection remains a valuable form of treatment for painful or complicated chronic inflammatory head mass; therefore, if the tumor seems to be resectable, it should be resected when this is feasible with a low mortality rate.

The most questionable cases are those patients who have a discrete mass lesion in the pancreatic head without any obstructive symptoms. It may also be a chance finding of suspected pancreatic cancer. On the other hand, an asymptomatic focal mass secondary to chronic pancreatitis may require no surgical treatment. In these cases accurate biopsy should be done. If the biopsy is positive, resection may be done. However, if the biopsy is negative, the abdomen should be closed and further diagnostic tests done. In evaluating the result of an intraoperative cytologic or histologic examination, we have to take into consideration that a benign finding in itself never excludes the presence of a malignancy [1, 7, 8].

Differentiation between chronic pancreatitis and carcinoma is difficult, even intraoperatively. Intraoperative biopsy has a false negative rate of about 10 % for detecting pancreatic cancer. These results show that a nihilistic approach in the case of pancreatic head mass with suspected but unproven malignancy is not justified. Pancreatoduodenectomy should be performed for any tumor even without histologic confirmation if an experienced pancreatic surgeon cannot exclude pancreatic carcinoma.

Key words Diagnosis, Differential; Pancreatic Neoplasms; Pancreatic Cyst; Pancreatic Pseudocyst; Histology; Biopsy, Needle

Abbreviations FNA: fine-needle aspiration

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