Cystic lesions of the pancreas - are we good enough at predicting the right diagnosis in order to make a suitable treatment choice?

The incidence of pancreatic cystic lesions (PCL) is steadily increasing, most likely due to the common use of cross-sectional abdominal imaging and its technical improvements during the past decade. The majority of these lesions are benign at the time of initial presentation which means that they do not harbor cancerous cells (malignancy). However, some harbor malignant potential that requires constant surveillance or surgical removal. Despite their distinct features under the microscope, clinical and radiographic characteristics the various cystic lesions of the pancreas overlap substantially. The correct prediction of their nature and biology herein remains difficult. However, the decision whether to remove or observe these lesions mandates correct prediction of their nature and biology. Moreover, high diagnostic accuracy may permit parenchyma-sparing resection of these lesions-that is resection of only parts of the organ, preventing the substantial risk of long-term health limitations, in particular a lack of hormonal and digestive secretions such as insulin, glucagon, lipase and amylase, which are associated with major pancreatic resections. The aim of this study was therefore to determine whether past and present diagnostic accuracy permits parenchyma - sparing therapy of these lesions.

We analyzed clinical data from 232 patients with cystic lesions of the pancreas from 2001-2011, of these 141 were surgically removed. Preoperative assumptive diagnosis was compared to postoperative histological diagnosis defined by the pathologist under the microscope. Also, a radiological specialist for pancreatic images retrospectively evaluated all images of a specific cystic lesion that is called intraductal papillary mucinous neoplasm (IPMN), which is the second most common cystic lesion of the pancreas and can bear malignant potential.

Specific diagnostic accuracy in determining the exact diagnosis was poor (17-57%) for all cystic lesions of the pancreas except benign pancreatic pseudocysts (77%), which can develop after inflammation of the pancreas. When the accuracy of the lesion's *biology* was analyzed, we found much better results (Tab. 1). Diagnostic accuracy for benign lesions was 95% and 89% patients who underwent surgery, however accuracy for malignant lesions (all and resected) were only moderate with 42% and 41% of correctly predicted lesions, respectively, which means that only 41% of lesions that were assumed to be malignant ended up being malignant on pathology and 59% of lesions were actually benign. This was similar for the subgroups of IPMN (Tab. 1). However, when specific criteria (SENDAI criteria) were utilized by a trained radiologist, diagnostic accuracy was much better with 96% accuracy for benign resected IPMN and 81% of malignant resected IPMN.

General accuracy of biology			
		Definite biology	
		benign	malignant
Suspected biology	benign	95 (89)%	5 (11)%
	malignant	58 (59)%	42 (41)%
General accuracy of biology in IPMN			
		Definite biology	
		benign	malignant
Suspected biology	benign	91 (80)%	9 (20)%
	malignant	45 (46)%	55 (54)%
Expert accuracy of biology in IPMN			
		Definite biology	
		benign	malignant
Suspected biology	benign	92 (96)%	8 (4)%
	malignant	19 (19)%	81 (81)%

Tab. 1. Accuracy of biology in percent. Percentage of correctly identified cases is calculated for all patients, numbers in parenthesis are calculated for all resected patients.

In summary, our study shows that a considerable amount of benign lesions of the pancreas was treated more aggressively than warranted if malignancy was suspected prior to surgery, thus our treatment choices were suboptimal. Techniques where only the affected part of the organ is resected might be an option, but prospective multicenter studies need to follow. Experienced pancreatic radiologists, who use standardized criteria to evaluate imaging studies, can improve accuracy of preoperative biology.

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