Fig. 3. *CT scan of resectable pancreatic ductal adenocarcinoma (PDAC) within the pancreatic head*

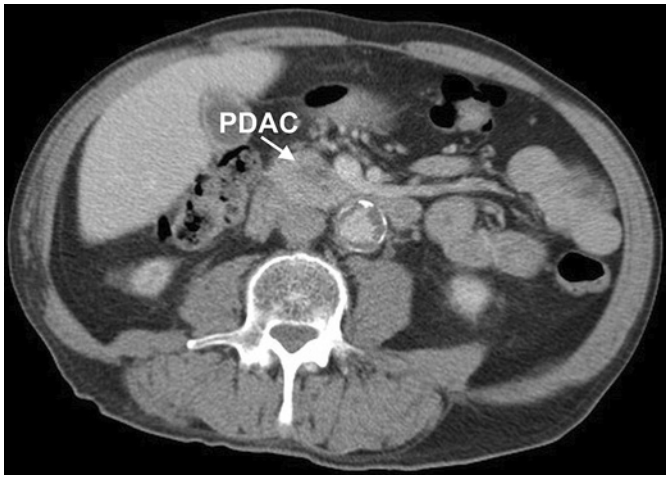


Fig. 4. *CT scan of locally advanced pancreatic ductal adenocarcinoma (PDAC) of the pancreatic body with infiltration of the celiac trunk*

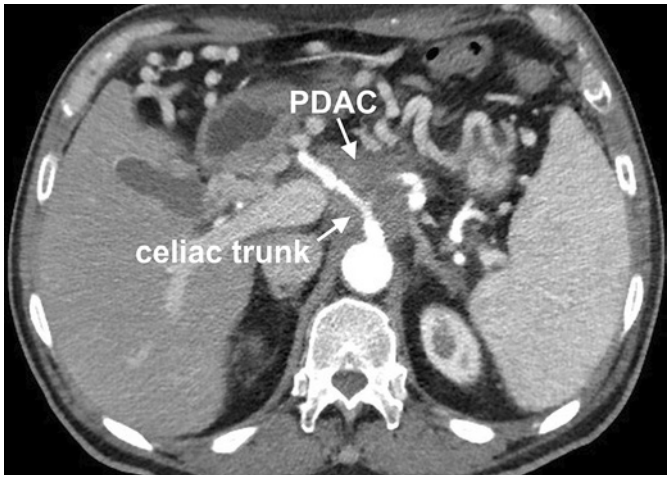
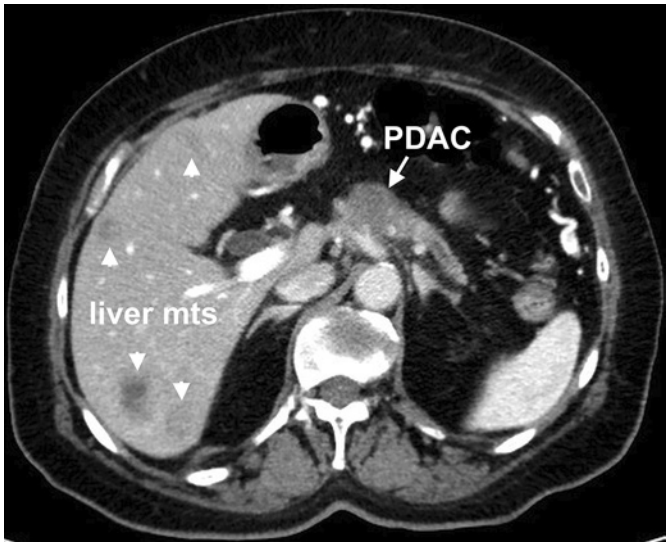


Fig. 5. *CT scan of generalized pancreatic ductal adenocarcinoma (PDAC) of the pancreatic body with liver metastases (arrowheads)*



on to the tumor-vessel contact, the size of the tumor itself also predicts resectability. Significantly more positive resection margins are described in tumors measuring >4 cm than in tumors measuring <2 cm on CT (70). Thrombosis, vascular deformation, and collateral vessel development are other features increasing the likelihood of vascular invasion (68, 71).

The anatomical (radiological) definition of borderline PDAC is not fully uniform. It is generally described as a locally advanced tumor without distant metastases that affects the mesentericoportal veins or potentially resectable arteries (68, 72, 73). In addition to the anatomical definition, it is necessary to evaluate the risk of distant metastases, CA 19-9 levels, and the patient's performance status or comorbidities (68, 73).

PDAC typically becomes hypodense on postcontrast CT. However, in 5–14% it can be directly indistinguishable, i.e, isodense compared to the surrounding parenchyma (74). EUS with fine-needle tissue acquisition can confirm these isodense tumors with a sensitivity of 90.5% (75). As an early predictor of a malignant tumor before development of a focal pancreatic lesion on CT, a novel feature may be suggestive – the "K sign". It is a localized narrowing of the pancreatic parenchyma on an axial CT scan resembling the shape of the letter K (76). Advances in the use of artificial intelligence also represent a great potential, offering new opportunities not only for the detection but also for the classification of pancreatic lesions (67).

Magnetic resonance (MR) imaging of the pancreas along with MR cholangiopancreatography (MRCP) allow for accurate detection of early PDAC by facilitating morphological analysis of pancreatic ductal changes (64). A recent study found that incipient MPD stenosis on pre-diagnostic MRCP can be detected 26–49 months prior to pancreatic tumor detection on any of the imaging methods (CT, MR, or EUS) (77). The advantages of MR include the ability to identify isodense tumors or tumors within a hypertrophic pancreatic head, distinguish neoplasm from mass-forming pancreatitis, and also to detect small liver metastases unrecognized on CT (64, 73). Its sensitivity and specificity in assessing vascular invasion is comparable to CT (73). Nonetheless, MR imaging might not be routinely done in some centers due to its lower availability and higher costs compared to CT. Therefore, MR is not currently used as the primary imaging method in PDAC (64).

Positron emission tomography (PET)/CT is not routinely indicated in the diagnostic evaluation of PDAC, but it should be considered in patients with a high risk for occult metastatic disease, such as those with CA 19-9 concentrations out of proportion to their suspected stage (19).

Endoscopy

The role of endoscopic retrograde cholangiopancreatography (ERCP) in patients with suspected PDAC has evolved into a mainly therapeutic modality for patients with biliary obstruction requiring placement of a biliary stent. However, routine preoperative decompression for obstructive malignant jaundice should not be performed in patients who are eligible for resection; it has not been proven to be beneficial in regard to patient outcome, and there is evidence for increased postoperative complications (78). Strict indication criteria should thus apply, e.g., concurrent acute cholangitis.

EUS is considered the most sensitive method for detecting early pancreatic neoplasms (79). The median sensitivity of EUS for the detec-