Accuracy of diagnostic ultrasound in detection of pancreatic head carcinoma

Naseera Khanum, Mamoona Chiragh and Ayesha Anjum

Children Hospital and Institute of Child Health, Pakistan E-mail: naseera.dr@gmail.com

Abstract

Background & Aim: The diagnosis of carcinoma of head of pancreas may be established by many modalities including X-radiation (CT) and Ultrasonography (USG). USG is taken into account a least invasive, readily available and cheap investigation as compared to CT scan. Aim of this study was to see the diagnostic accuracy of USG for detection of pancreatic head tumors taking Endoscopic Retrograde Cholangiopancreatography (ERCP) as gold standard. Method: This cross-sectional study of six months duration was conducted in New Radiology Department of Services Hospital, Lahore. Patients of both genders, 125 in number, having suspicion of pancreatic tumor supported clinical and laboratory findings were enrolled for the study. Ultrasound abdomen was done by consultant radiologist and findings were noted regarding presence or absence of pancreatic carcinoma.

Patients then underwent ERCP and ultrasonography findings were compared with ERCP findings, regarding detection of carcinoma head of pancreas. Result: The sensitivity, specificity and accuracy of USG for detection of pancreatic carcinoma were 88.3%, 86.4% and 88%, respectively. Conclusion: USG may be a reliable test for detection of pancreatic head carcinoma. Although the common survival time of patients resected for PC is approximately 12 to twenty mo, and there's a high probability of relapse because of the highly adverse and aggressive nature of the evolving disease, the first treatment offering the best potential for cure is that the complete, curative, surgical resectioning of the first carcinoma.

As surgical and oncological treatments for carcinoma have continually become more aggressive and complicated, the role of imaging has become more important, not just for initial diagnosis and staging, but also for determining both the resectability and therefore the optimal treatment monitoring of carcinoma. MDCT is currently the worldwide imaging modality of choice for evaluation of carcinoma, although ultrasonography, endoscopic US, contrast-enhanced US, and MRI with MRCP provide complementary, sometimes even more detailed, information. Each imaging modality has both its advantages and drawbacks in step with the four, different aspects regarding carcinoma imaging evaluation: identification of the first tumor; local tumor resectability; distant metastasis; and treatment monitoring. US is usually the first-line diagnostic tool for patients presenting with jaundice or abdominal pain, because it could be a non-invasive and cost-effective modality. A hypoechoic mass, dilatation of the canal, and dilatation of the epithelial duct are typical imaging features of pancreatic head tumor when seen on US. However, in cases of pancreatic body and tail cancers, tumor detection is sort of difficult thanks to the dearth of biliary dilatation and therefore the presence of gas bubbles within the stomach and colon, which cause posterior shadowing. during this situation, oral administration of water or other contrast agents may help to delineate the whole organ.

The sensitivity and accuracy of pancreatic US is additionally highly hooked in to the operator's experience, the degree of disease progression, and also the body habitus of patients. For these reasons, the US sensitivity for detecting carcinoma is controversial and has been reported as anywhere between 50%-90%. Using US without contrast media, it's difficult to differentiate carcinoma from other focal lesions, like neuroendocrine tumor or chronic pancreatitis, as they show the identical imaging features on conventional US. Overall, transabdominal US is an appropriate first-imaging method, although not a reliable method for a confident diagnosis or the exclusion of small pancreatic tumors, which are the sole ones with even a small chance for a cure. . specifically, among the cross-sectional imaging modalities, MDCT has shown the simplest performance for the evaluation of vascular involvement, which is that the most vital factor for predicting the tumor resectability.

The reported positive predictive value, sensitivity, and specificity for predicting the resectability of carcinoma were 89%, 100%, and 72%, respectively. In terms of treatment monitoring following chemotherapy or surgery, MDCT is that the primary imaging modality, and is employed in conjunction with PET/CT. However, MDCT might not depict small metastases to the liver or peritoneum, or perhaps a primary pancreatic tumor showing isoattenuation. As EUS offers excellent visualization of the pancreas from the duodenum or stomach and might produce

high-resolution images of the pancreas, it's been considered one in all the foremost accurate methods for the detection of pancreatic focal lesions, especially in patients with small tumors of three cm or less. EUS also has the unique ability to get specimens for histopathological diagnosis using EUS-guided FNA. Since its early introduction within the early 1990s, EUS-FNA has emerged as a secure and accurate imaging technique for tissue diagnosis in patients with pancreaticobiliary disorders, particularly those with diagnosed carcinoma. Furthermore, EUS-FNA has replaced endoscopic retrograde cholangiopancreatography (ERCP) with brush cytology because the endoscopic test of choice for tissue acquisition thanks to its higher success rates and decreased risk of post-procedural complications, especially in patients without obstructive jaundice. Although EUS alone has shown slightly disappointing accuracy for differentiating carcinoma from chronic pancreatitis the pooled sensitivity and specificity of EUS-FNA were 86.8% and 95.8%, respectively, for diagnosing a solid pancreatic mass.

Therefore, MRI with MRCP is currently used as a problem-solving tool for patients with pancreatic disease. Given the greater soft-tissue contrast of MRI compared therewith of CT, there are several specific situations during which MRI is superior to CT: small tumors, hypertrophied pancreatic head, isoattenuating carcinoma, and focal fatty infiltration of the parenchyma. Therefore, MRI has been proven to be outstanding for characterizing pancreatic masses. MRCP is additionally a awfully successful and classical MR technique for non-invasively delineating the pancreatic ductal system, additionally as a valuable alternative to ERCP. MRCP is additionally very useful for detecting subtle ductal narrowing which will suggest the presence of atiny low mass. Moreover, MRCP is incredibly useful for delineating the presence of stones as another reason for biliary or pancreatic ductal dilatation.

This work is partly presented at International Conference on Cancer Research & Diagnostics