ROLE OF MR(A) IN ASSESSMENT OF PANCREAS TRANSPLANT COMPLICATIONS

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Introduction

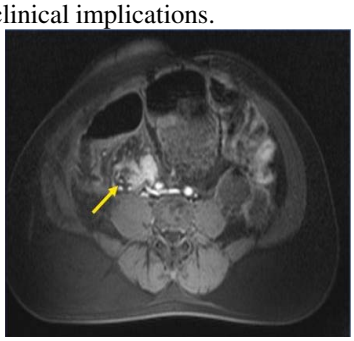
Since its first description four decades ago, pancreas transplantation has continued to evolve and now provides life-saving treatment to those with diabetes mellitus. However, despite the numerous improvements in surgical techniques and immunosuppression, complications are not infrequently encountered post-operatively. Some commonly encountered complications in these settings include, but not limited to, rejection, pancreatitis, hematoma, and thrombosis. While ultrasound (US) serves as the primary mode of assessment in these patients today, it is associated with a number of limitations. Currently MR imaging is relatively infrequently used in this setting, and its role has not been clearly established. To this end, we carried out a retrospective review to assess the value of MR imaging in evaluation of pancreas transplant complications.

Methods

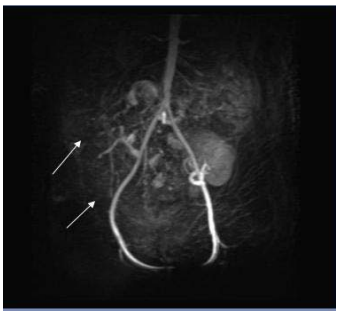
After obtaining the Institutional Review Board approval, records of 191 patients who underwent pancreas transplantation at our institution from March 1996 to May 2007 were obtained for review. For each patient, data, including the different modes of imaging studies (US, CT(A), and MR(A)) and there findings, were collected. Of the 191 patients, 30 had received MR imaging studies of abdomen or pelvis since their transplant surgeries. The reports of these MR studies were reviewed for their findings and whether or not they translated into clinical intervention.

Results

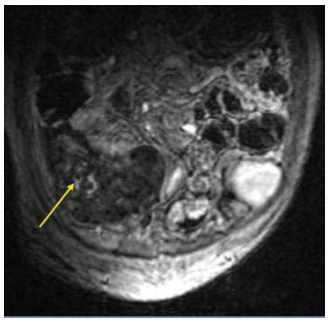
Of the 191 patients, 175 received US to evaluate for transplant related complications. Of these, 30 had MR(A) in addition. Of the total, 131 patients received CT(A) for transplant evaluation. Of these, 26 underwent MR(A) in addition. Of the 30 total MR studies performed, six showed significant findings that led to clinical intervention, such as treatment for pancreatitis and pancreatectomy for acute rejection, four studies showed findings which argued against clinically suspected complications, and the rest had no apparent clinical implications.



Contrast-enhanced axial T1WI with fat-saturation image demonstrates heterogeneous enhancement of transplant pancreas (arrow) with adjacent complex peripancreatic fluid, compatible with transplant pancreatitis.



Contrast-enhanced coronal MIP images demonstrate no enhancement of the transplant pancreas, consistent with rejection (arrows).



Coronal source contrast-enhanced MRA flash-3D gradient T1WI shows an acute thrombus in the distal splenic artery (yellow arrow). There is no enhancement of the pancreatic transplant.

Number of patients total	191
Number of patients with MR(A)	30
Number of cases of MR(A) leading to intervention	6
Number of patients with US (plus MR(A))	175(27)
Number of patients with CT(A) (plus MR(A))	130(24)
Number of patients with MR(A) without CT(A)	5
Number of patients with MR(A) without US	0

Conclusion

Pancreas transplantation provides definitive treatment for some with diabetes mellitus. However, complications of the transplantation are not uncommon. While US serves as the primary mode of imaging in this setting, it is associated with disadvantages such as limited parenchymal evaluation and nonspecificity of gray-scale sonographs. Similarly, while it provides more detailed images than US, CT is limited by use of nephrotoxic iodine-based contrast. The present study suggests that MR imaging, despite the recent concern of nephrogenic systemic fibrosis, may serve as alternatives to US and CT, allowing radiologists to safely evaluate the transplant pancreas and detect abnormalities that may lead to clinical interventions.

Reference

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