Pancreatic transplant pseudoaneurysm is a rare but important cause of lower gastrointestinal bleeding, best diagnosed on angiogram and treated interventionally. In those with enteric-drained allografts, a pseudoaneurysm of the arterial Y graft may fistulize with the donor duodenum, then bleed through the bowel anastomosis. Journal of Nature and Science, 1(4):e73, 2015

Bleeding | pancreas transplant | pseudoaneurysm

Background
Massive lower gastrointestinal bleeding is a relatively common cause for presentation to the emergency department. The top diagnoses include diverticulosis, arteriovenous malformations, and colon cancer [1]. The next tier of diagnoses involves the small intestine, such as Meckel’s diverticulum and lymphoma. The usual first step in diagnosing and managing a patient with massive lower GI bleed, after stabilization and transfusion as needed, involves CT angiogram or bleeding scan. In a few particular cases, such as ours, proceeding directly to angiogram is imperative [2].

Case history
A 64 year old man presented to the emergency department with syncope following a massive lower gastrointestinal bleed. On admission he was hypotensive and unresponsive. Medical history is significant for insulin-dependent diabetes mellitus, hypertension, significant coronary artery disease, and diverticular disease. He has no prior history of gastrointestinal bleeding. He is s/p pancreas transplant 5/02, with recent failure of the transplant and return to insulin therapy (C-peptide 0.5 ng/mL, hemoglobin A1C 9.5%). He was intubated and aggressively resuscitated, including multiple blood transfusions (admission Hb 7.0 g/dL, pH 7.12). Once appropriately stabilized, the patient was taken to interventional radiology.

Abdominal aortic angiogram was immediately performed. Interrogation of the mesenteric vessels demonstrated no bleeding source. Angiogram of the right iliac system revealed a 1 cm pseudoaneurysm off the distal right common iliac artery (figure 1), which was excluded with a covered stent, as demonstrated (figure 2). The pseudoaneurysm was at the site of the arterial anastomosis of the pancreatic Y graft to the recipient common iliac. Following this procedure, the patient’s hemodynamics and hemoglobin stabilized. He had no further hematochezia, and required no additional transfusions. He was subsequently discharged home, and is doing well.

Discussion
Pancreatic transplant pseudoaneurysm is a rare but important cause of lower gastrointestinal bleeding [2-5]. In those with enteric-drained allografts, a pseudoaneurysm of the arterial Y graft may fistulize with the donor duodenum, then bleed through the small bowel anastomosis. This will present as sudden, painless, massive lower gastrointestinal bleeding. At the time of transplant, the two arteries supplying the pancreas, namely the splenic and superior mesenteric, are customarily anastomosed end-to-end to the donor external and internal iliac arteries, thus creating the Y graft, providing the donor common iliac artery for a single anastomosis to the recipient’s common iliac artery. The portal vein is either anastomosed to the recipient’s common iliac vein for systemic drainage, or to the superior mesenteric vein for portal system drainage. The exocrine secretions of the pancreas which empty from the pancreatic duct into a section of donor duodenum may be drained either to the enteric system (roux-en-Y or side-to-side Anastomosis to ileum) or the bladder.

There are sporadic case reports published in the literature detailing the presentation and options for management [3-6]. In addition, this scenario has been shown to be associated with recent failure of the allograft and recent treatment of rejection or infection [3]. The pathophysiology leading to pseudoaneurysm and fistula formation is not well understood at this time, but may be related to the enzymatic secretions of the allograft. Infectious complications may also contribute to these developments.

Rather than proceed with CT angiogram, a nuclear scan, or endoscopy, the choice to proceed with angiography provides the capability to be both diagnostic and therapeutic [2,4,5]. Options for interventional radiology management of this situation include embolization with coils or gelfoam and exclusion with a covered stent [4,5].

Conclusions
As there are many potential etiologies of lower gastrointestinal bleeding, more unusual causes may not be routinely considered. Unless this potentially fatal entity remains at the top of one’s differential diagnosis, it may easily be missed.
Table 1. Results of literature review of pancreatic transplant pseudaneurysms & fistulae

<table>
<thead>
<tr>
<th>Reference</th>
<th># cases</th>
<th>Presentation</th>
<th>Diagnosis</th>
<th>Management</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lubezky et al [3]</td>
<td>8</td>
<td>5 massive GIB, 1 acute renal failure, 2 asymptomatic</td>
<td>2 CT scan, 2 screening duplex</td>
<td>6 pancreatectomy, 4 extra-anatomic bypass, 1 endovascular</td>
<td>1 death</td>
</tr>
<tr>
<td>Saad et al [4]</td>
<td>1</td>
<td>GIB</td>
<td>CTA &amp; MRA</td>
<td>Coil embolization</td>
<td>Rebleed requiring further coiling</td>
</tr>
<tr>
<td>Fridell et al [5]</td>
<td>7</td>
<td>GIB, 1 abdominal pain</td>
<td>CTA, angiogram</td>
<td>4 covered stent, 1 coil embolization, 5 pancreatectomy</td>
<td>1 death</td>
</tr>
<tr>
<td>Tamam &amp; Mintz [6]</td>
<td>1</td>
<td>GIB</td>
<td>RBC scan</td>
<td>Aneurysm coiling, surgery</td>
<td></td>
</tr>
<tr>
<td>Green et al [7]</td>
<td>1</td>
<td>Massive GIB</td>
<td></td>
<td>Coel embolization</td>
<td></td>
</tr>
<tr>
<td>Lopez et al [8]</td>
<td>2</td>
<td>Massive GIB</td>
<td>Angiogram</td>
<td>Coil embolization &amp; transplant pancreatectomy</td>
<td></td>
</tr>
<tr>
<td>McBeth &amp; Stern [9]</td>
<td>1</td>
<td>Massive GIB</td>
<td>Angiogram</td>
<td>Coel embolization</td>
<td>Rebleed requiring further coiling</td>
</tr>
</tbody>
</table>

GIB = gastrointestinal bleeding