

# Gastrointestinal and Liver Pathology at Rush

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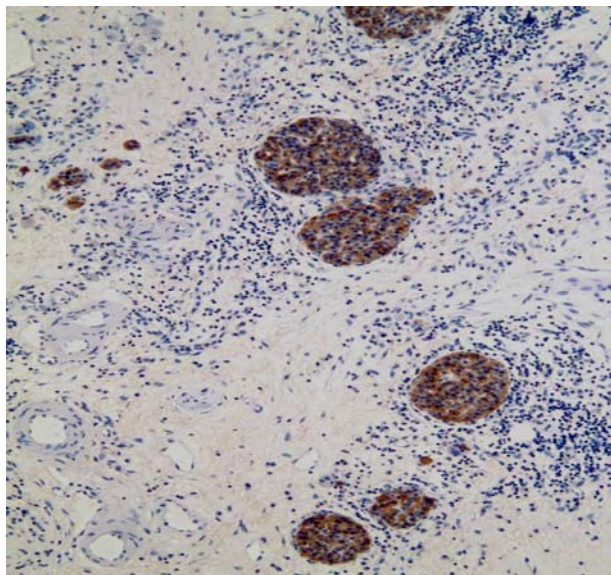
## Case of the Month Answer – February 2008

*Contributed by Drs. Maria McIntire and Shriram Jakate*

### **Diagnosis: Recurrent type 1 diabetes mellitus and insulinitis**

Immunohistochemical studies revealed that the islets stained with antibody to human glucagon (Fig. 1) and did not show any staining with antibody against human insulin (Fig. 2). Electron microscopy (EM) revealed round, densely staining alpha cell granules but no beta cell granules with densely staining angular, rhomboidal or rectangular cores were found (Fig. 3). The histologic, immunohistochemical, and EM evidence of insulinitis and the selective beta cell destruction, along with the clinical history of hyperglycemia supported the clinical picture of recurrence of the patient's type I diabetes.

Cadaveric pancreatic transplantation is performed for treatment of type 1 diabetes mellitus. Despite adequate immunosuppression, selective beta cell destruction with recurrence of diabetes may occur following pancreatic transplantation. Graft biopsy in such cases may be helpful in distinguishing this from chronic rejection, which is the main cause of late graft loss presenting with hyperglycemia. Ultrasound guided percutaneous needle biopsy of the graft remains the only definitive method, other than removal, of determining the cause of dysfunction or failure in the pancreas graft. The histological features of chronic rejection are those of vascular sclerosis with intimal hyperplasia and fibrosis with variable mononuclear inflammation. This causes a distortion in the architecture with loss of acini. Recurrent diabetes in the graft, on the other hand, shows a mononuclear cell infiltrate of the islets, "isletitis" with associated selective loss of the beta cells seen on immunohistochemistry and electron microscopy, which is necessary for establishing the diagnosis.

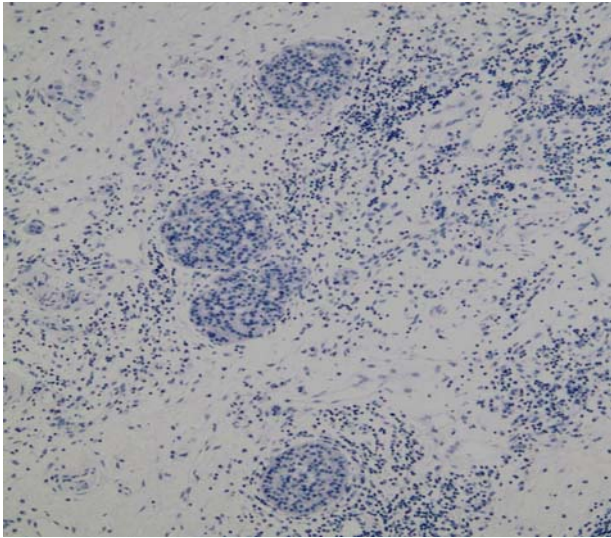


**Figure 1.** Immunohistochemistry of antibodies against human glucagon (40x magnification).

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**Figure 2.** Immunohistochemistry of antibodies against human insulin (40x magnification).

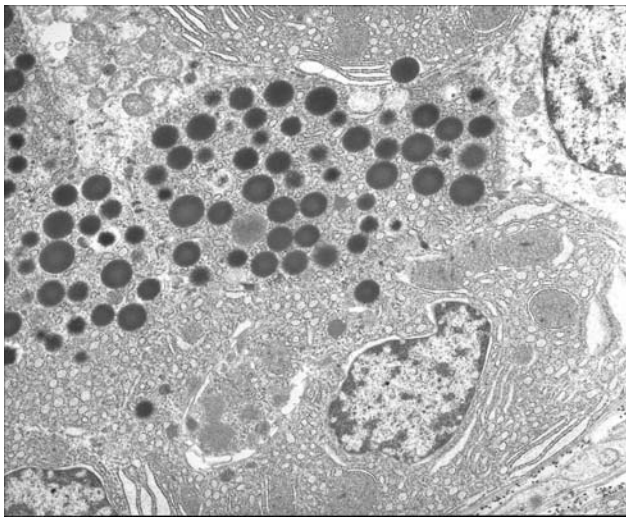


Figure 3 Electron micrograph showing round, densely staining alpha cell granules but no beta cell granules were present which contain densely staining angular, rhomboidal or rectangular cores with a distinct wide halo)

## References

1. Sutherland DE, Goetz FC, Sibley RK. Recurrence of disease in pancreas transplants. *Diabetes* 1989;39(Suppl. 1):85-87.
2. Petruzzo P, Andreelli F, McGregor B, et al. Evidence of Recurrent Type I Diabetes Following HLA-Mismatched Pancreas Transplantation. *Diabet & Metab* 2000;26:215-218.