

Pancreatectomy With Islet Auto-Transplantation

Sushela S. Chaidarun, MD, PhD, FACE, FACP,
Christopher M. Navas, MD, Kerrington D. Smith, MD,
Dawn A. Fischer, BS, Timothy B. Gardner, MD, MS.
Dartmouth-Hitchcock Medical Center, Lebanon, NH, USA.

Total pancreatectomy with intraportal islet cell autotransplantation (TPIAT) allows for the islets to be isolated and subsequently re-infused to prevent the complications associated with post-pancreatectomy diabetes in patients with chronic or recurrent pancreatitis. TPIAT requires a complex islet isolation process of the explanted pancreas, and historically required a specialized lab to perform islet cell isolation. We report our unique 5-year experience comparing our new technique of intra-operative islet isolation to the prior use of off-site specialized islet lab, thereby making the isolation process simpler, faster, and more accessible. **Method:** We performed a retrospective, comparative effectiveness analysis of 50 adult patients who underwent TPIAT at our tertiary care center from 2012 to 2020 (excluding patients with partial- or completion pancreatectomy with IAT). From 2012–2015, isolation occurred at a remote location 130 miles away in which the pancreas was explanted at our center, transported to the islet isolation lab, and returned the same day to our center for portal system infusion. From 2015–2020, islet isolation was performed using the novel intra-operative technique at our institution without a specialized islet isolation lab. We measured the islet equivalents per body weight (IEQ/kg), monitored glycemic control, and compared insulin-independent rate for patients in each group yearly up to 5 years. **Results:** Twenty patients underwent TPIAT with remote isolation while thirty patients underwent intra-operative isolation of islet cells. Baseline characteristics were similar between these groups. Mean islet yields-IEQ/kg (4,294 remote group vs. 3,015 intra-op group, $p=0.06$) were not different between the groups. Post-operative mean c-peptide levels at 1 and 3 years were stable over time and were not different between the groups (1.51 and 1.65 ng/mL remote group vs. 0.91 and 0.98 ng/mL intra-operative group, $p=0.1$ and 0.15 respectively). Mean HbA1c levels at 1–5 years were 7.5–8.2% in the remote group vs. 7.1–7.4% intra-op group, $p=0.67$, which suggests reasonable and durable glycemic control in both groups. Insulin independent rate was also very similar (43% vs 41%, $p=0.10$) at 3 years after the surgery when both groups reached the same number of patients ($n=20$) for the comparison. Average cost of hospitalization was less in the intra-operative group (\$104,398 remote vs \$78,986 intra-op). **Conclusion:** Intra-operative islet isolation has similar effectiveness in regard to glycemic outcomes and insulin independent rates but at a lower cost when compared with the use of a dedicated islet cell isolation lab. This technique can allow many more centers without a dedicated islet cell lab to offer islet cell auto-transplantation, which in turn will help reduce the burden of difficult diabetes care post-pancreatectomy and improve quality of life for the appropriate patients.

Diabetes Mellitus and Glucose Metabolism

DIABETES IN THE HOSPITAL

Diabetes Medication Reconciliation at Hospital Discharge

Nandi Shah, MD, Kristen Kulasa, MD.
University of California at San Diego, San Diego, CA, USA.

Background: During hospital discharge, patients are at high risk for medication discrepancies as they transition from hospital to home. This study aims to evaluate the prevalence of medication errors at hospital discharge for diabetes medications in patients who received an endocrinology consultation for diabetes and explore interventions to improve the accuracy of discharge medication reconciliation.

Methods: All patients ($n=3018$) who received an endocrinology consultation for diabetes at a tertiary care medical center from October 2017 to December 2019 were included. A retrospective chart review was performed to collect the following information on each patient: primary service from which the patient was discharged, hospital site, month and year of discharge date, and whether each patient's medication reconciliation for diabetes medications at hospital discharge was in agreement with the inpatient diabetes team's recommendations. Patients who were discharged on medications discordant from those recommended by the inpatient diabetes service were subcategorized into three groups: 1) one medication incorrect 2) more than one medication incorrect and 3) the primary service did not notify the consult team of patient's discharge or request final recommendations for diabetes medications prior to discharge. Based on the findings of this study, an educational intervention was implemented in November 2019 to the Hospital Medicine services regarding diabetes discharge medication reconciliation.

Results: Of the 3018 patients who received an endocrinology consultation for diabetes at a tertiary university medical center, 2279 patients (76%) were discharged on correct medications, 165 patients (5%) were discharged with one incorrect medication, 443 patients (15%) were discharged with more than one incorrect medication, and 121 patients (4%) were discharged without final discharge recommendations from the diabetes service. There was no significant variation based on discharging service or month of the year. After an educational intervention was implemented in November 2019 to the Hospital Medicine service on the existence and use of a comprehensive diabetes discharge order set, the percentage of patients discharged on correct medications improved to 92% (11/12 patients) compared to prior 81% (44/54 patients).

Conclusion: Despite detailed discharge medication recommendations including patient education detailing the recommended regimen by the endocrinology diabetes service, a significant number of patients were discharged by providers across all services on diabetes medications discrepant with the diabetes service's recommendations. Educational efforts improved the rate of correct medications at discharge on the Hospital Medicine service, and additional educational interventions with other services may be helpful in improving medication reconciliation accuracy.

Diabetes Mellitus and Glucose Metabolism

DIABETES IN THE HOSPITAL

Effect of Chronic Kidney Disease on Outcomes of Adult Patients Admitted With Hyperosmolar Hyperglycemic State: Analysis of National Inpatient Sample

Hafeez Shaka, MD¹, Genaro Velazquez, MD², Sujitha Velagapudi, MBBS¹, Ehizogie Edigin, MD¹, Mukunthan Murthi, MD¹, Hernan Gerardo Marcos-Abdala, MD¹, Iriagbonse Asemota, MD², Emmanuel Akuna, MD¹.

¹Cook County Health, Chicago, IL, USA, ²Cook County Health, CHICAGO, IL, USA.

Background: Treatment guidelines have been well established in patients with HHS and a normal renal function. The mainstay of treatment for patients with HHS includes intravenous volume replacement, potassium replacement, and blood glucose correction by administering insulin. However, this treatment protocol cannot be directly applied to a patient with decreased GFR as it increases the risk of hypoglycemic episodes due to decreased insulin clearance along with increasing the risk of hyperkalemia and volume overload. Hence titrating insulin, maintaining euvolemia and normokalemia becomes further challenging in a patient with HHS in the setting of CKD. Although the above-mentioned complications are well described in multiple studies, there is not enough evidence demonstrating the association between the inpatient mortality and secondary outcomes in patients with HHS with and without CKD.

Objective: To compare the inpatient mortality and secondary outcomes in patients admitted with HHS with CKD vs without CKD.

Methods: A retrospective cohort study was conducted using the Nationwide Inpatient Sample from 2016 and 2017. About 42 740 hospitalizations who had HHS as primary diagnosis were enrolled and further stratified based on the presence or absence of CKD as a secondary diagnosis using ICD-10 codes. The primary outcome was inpatient mortality and secondary outcomes included length of hospital stay, total Hospital charges, Sepsis, Septic Shock, Acute Kidney Injury (AKI), and Acute Respiratory Failure (ARF). Multivariate regression analysis was done to adjust for confounders.

Results: Out of the 42 740 hospitalizations with HHS, about 9 545 had CKD. The in-hospital mortality for patients with HHS was 305 overall, out of which 105 patients had Atrial Fibrillation as a secondary diagnosis. Compared with patients without CKD, patients with CKD had similar in-hospital mortality (aOR 0.93, 95% CI 0.48–1.8, p=0.83) when adjusted for patient and hospital characteristics. Patients with HHS and CKD had similar length of hospital stay, total hospital charges, rate of Sepsis, Septic Shock, and ARF in comparison to patients without CKD; however, patients with CKD had higher odds of developing AKI throughout hospitalization.

Conclusion: This study found that patients admitted with HHS and CKD have similar in-hospital mortality when compared to patients without CKD. However, the study group with CKD has higher odds of developing AKI when compared to the group without CKD. Although AKI is common and correctable in HHS, the above-mentioned association is possible due to the judicious IV fluid replacement in an HHS patient with CKD as a concern for volume overload. Further studies are needed to identify

contributing risk factors and establishing fluid replacement guidelines in a patient with HHS and CKD.

Diabetes Mellitus and Glucose Metabolism

DIABETES IN THE HOSPITAL

Impact of Atrial Fibrillation on In-Hospital Outcomes in Patients With Hyperosmolar Hyperglycemic State: Analysis of National Inpatient Sample

Genaro Velazquez, MD¹, Hafeez Shaka, MD², Mukunthan Murthi, MD¹, Hernan Marcos-Abdala, MD¹, Sujitha Velagapudi, MD¹, Emmanuel Akuna, MD¹, Iriagbonse Asemota, MD¹, Ehizogie Edigin, MD², Dimeji Williams, MD¹.

¹Cook County Health, CHICAGO, IL, USA, ²Cook County Health, Chicago, IL, USA.

Introduction: Atrial fibrillation (AF) is the most common cardiac arrhythmia and its negative prognostic impact on the morbidity and mortality of hospitalized patients has been well described. In patients with Hyperosmolar hyperglycemic state (HHS), mortality rates can reach up to 20% and poor outcomes have been reported in people with older age, presence of comorbid conditions and concurrent infections. However, the impact of atrial fibrillation on the hospital outcomes of patients admitted with HHS has not been well documented.

Objective: We wanted to compare the outcomes for HHS hospitalizations for patients with and without Atrial fibrillation.

Methods: A retrospective cohort study was conducted using the Nationwide Inpatient Sample from 2016 and 2017. About 42 740 hospitalizations who had HHS as primary diagnosis were enrolled and further stratified based on the presence or absence of Atrial Fibrillation as secondary diagnosis using ICD-10 codes. The primary outcome was inpatient mortality and secondary outcomes included length of hospital stay, total Hospital charges, Sepsis, Septic Shock, Acute Kidney Injury (AKI), and Acute Respiratory Failure (ARF). Multivariate regression analysis was done to adjust for confounders.

Results: Out of the 42 740 hospitalizations with HHS, about 3 295 had Atrial Fibrillation. The in-hospital mortality for patients with HHS was 305 overall, out of which 60 patients had Atrial Fibrillation as secondary diagnosis. Compared with patients without Atrial Fibrillation, patients with Atrial Fibrillation had a similar in-hospital mortality (aOR 0.77, 95% CI 0.39–1.52, p=0.45) when adjusted for patient and hospital characteristics. Patients with HHS and Atrial Fibrillation had similar length of hospital stay, total Hospital charges, rate of Sepsis, Septic Shock, AKI, and ARF in comparison to patients without Atrial Fibrillation.

Conclusion: Our study suggests that the presence of atrial fibrillation in hospitalized HHS patients is not associated with increased mortality or longer duration of hospital stay. This data is essential since it helps identify HHS patients with increased risk of complications. As previous reports have suggested that AF, especially of new onset in critically ill patients is a marker of increased disease severity, the lack of such impact in patients with HHS requires further studies.