Endoscopic Management of Peripancreatic Fluid Collections Using Lumen-Apposing Metal Stents: Single Center Experience

Aida Rezaie, MD,1 Paul Muna Aguon, MD,1 Layth Al-Jalilahmi, MD,2 Natasha Nargor, DO,2 Shojat Ahmed, MD,2 Sarabdeep Mann, MD,1 Mustafa A. Alani, MD,1 Nael Haddad, MD,2 Sakulwan Suchartkitkong, MD,4 Paul Kang, PhD,1 Rawad Mouzner, MD,2 Teodor Pitea, MD,2 "Banner Good Samaritan Medical Center, Mesa, AZ;2 University of Arizona College of Medicine, Phoenix, AZ;3 St Joseph’s Hospital and Medical Center, Creighton University School of Medicine, Phoenix, AZ;4 Banner Good Samaritan Medical Center, Phoenix, AZ;5 Banner University Medical Center, Phoenix, AZ.

INTRODUCTION: EUS guided cystenterostomy with lumen-apposing metal stents (LAMS) and endoscopic necrosectomy is now preferred for managing large pancreatic fluid collections (PFCs). Nevertheless, management of walled off necrosis (WON) demands adequate expertise. This study describes our institutional protocol on endoscopic management of WON and pancreatic pseudocyst (PP) using LAMS.

METHODS: A retrospective analysis was performed on patients with PFCs who underwent EUS-guided drainage with LAMS from January 2015 to December 2019. Following deployment of LAMS, delayed necrosectomy was performed to allow the stent to fully expand. Subsequent necrosectomy sessions were completed until resolution of the PFC. Double-pigtail plastic stents were placed across the cystenterostomy to prevent stent occlusion or fistula closure. Technical and clinical success was measured by adequate resolution of PFC.

RESULTS: 89 patients (mean age 53 yrs, 62% male) were included in the study. Average time from initial pancreatitis to LAMS placement was 30 days. Almost 60% of the patients had WON (38 PP, 56 WON). The mean number of follow up necrosectomy sessions was 3 (2 PP, 3 WON). The average interval time between necrosectomy sessions was 3.5 days for all PFCs. The average duration of follow up necrosectomy sessions was 4.23 days for PP. The mean number of follow up necrosectomy sessions was 3 days for WON and 4.23 days for PP. The mean number of follow up necrosectomy sessions was 3 days for all PFCs. The average interval time between necrosectomy sessions was 3.5 days for WON and 4.23 days for PP. The average duration of follow up necrosectomy sessions was 4.23 days for WON and 4.23 days for PP.

CONCLUSION: Based on our data, we recommend considering endoscopic PFC drainage on average at 30 days post pancreatostomy and then repeat endoscopic necrosectomy every 3 days until clearance of WON. LAMS should be removed by day 21 or as soon as the WON is cleared of necrosis to prevent bleeding. Placing 2 double-pigtail plastic stents across the cystenterostomy prevents recurrence of PFC by maintaining long term firmula patency. ERCP is not mandatory to assess for pancreatic duct disruption.

S0088
Outcomes of Malnutrition in Acute Pancreatitis

Amandeep Singh, MD1,2, Tajjat Garg, MD3, Mohamed Tawfiq Siddiqui, MD3, Pravallika Chadalavada, MD4, Wael Al Yaman, MD1, Donald F. Kirby, MD, FACG, CNCS, CPNSP5, Tyler Stevens, MD1, Prabhleen Chahal, MD2,6,7
1 Cleveland Clinic, Cleveland, OH; 2 Cleveland Clinic Foundation, Cleveland, OH.

INTRODUCTION: Acute pancreatitis (AP) is a condition of high metabolic stress and presence of malnutrition can worsen this condition leading to various complications. However, data are lacking on this particular matter. We aimed to assess the prevalence and outcomes of malnutrition in patients with AP.

METHODS: Using ICD-9 codes all patients with the diagnosis of AP between 2005 and 2014 were identified from National Inpatient Sample (NIS) database. Malnutrition was identified and degree of malnutrition was assessed using ICD-9 codes. Unadjusted and adjusted analyses were performed to assess overall mortality associated with malnutrition, its impact on hospitalization cost and length of stay, use of total parenteral nutrition (TPN) and its impact on mortality.

RESULTS: A total of 2,293,852 patients were admitted between 2005-2014 with the diagnosis of AP and 4.2% (n = 109,113) had malnutrition. Severe malnutrition was present in 14.2%, moderate in 10.0%, mild 5.0% and 70.7% had unspecified degree of malnutrition. Alcohol abuse was not associated with any difference in the patterns of malnutrition in patients with AP. Compared to patients without malnutrition in in-hospital mortality in AP with malnutrition was more than 4-fold higher (0.8% vs. 3.5%, P < 0.005). Out of 109,113 malnourished AP patients 19.9% (n = 21,776) received TPN during their in-patient hospitalization. After adjusting for confounding effects of age, gender, race, primary payer/insurance status, hospital factors (region, location/teaching status, hospital bed size) and all of the Elixhauser comorbidities except weight loss in-hospital mortality association with TPN use in AP patients was more than 2 times higher than in patients who did not receive TPN (adjusted odd ratio [aOR] 2.195, P < 0.01). Compared to patients with no malnutrition, mean LOS and cost of hospitalization increased with severity of malnutrition. In AP patients with severe malnutrition, compared to AP with no malnutrition LOS was —3 fold (15.38 vs. 5.04 days, P < 0.01) and cost of hospitalization (P = 0.001) was 3.7-fold higher.

CONCLUSION: Our study suggests that in patients with AP, presence of malnutrition increases the in-hospital mortality by 4-fold, LOS by —3 fold and hospitalization cost by 3.7 times than in AP without TPN. TPN use in these patients was also associated with increased in-hospital mortality.

S0089
Acute Pancreatitis and Metabolic Syndrome: Prevalence, Trends, and Outcomes

Amandeep Singh, MD1,2, Tajjat Garg, MD3, Mohamed Tawfiq Siddiqui, MD3, Pravallika Chadalavada, MD4, Hassan Siddiqi, MD, Amit Bhatt, MD, Mohammad Arif, MD, Muhammad Shafique, MD5, Wael Al Yaman, MD1, Donald F. Kirby, MD, FACG, CNCS, CPNSP5, Tyler Stevens, MD1, John Vargo, MD, FACG2, Prabhleen Chahal, MD2,6,7
1 Cleveland Clinic, Cleveland, OH; 2 Cleveland Clinic Foundation, Cleveland, OH.

INTRODUCTION: The rising prevalence of obesity and diabetes prevalence of metabolic syndrome (MetS) is on the rise. Data on the association between acute pancreatitis (AP) and MetS are limited. We aimed to assess the prevalence, trends, outcomes and outcomes of AP in patients with MetS.

METHODS: Using ICD-9 codes all patients with the diagnosis of AP between 2005 and 2014 were identified from National Inpatient Sample (NIS) database. Malnutrition was defined as the presence of 3/4 of criteria. Demographics, prevalence and mortality trends were assessed for patients with AP and MetS. A multivariate analysis was done to assess differences in acute kidney injury (AKI), systemic inflammatory response syndrome (SIRS), shock, portal vein thrombosis (PVT), mechanical ventilation (MV), cost of hospitalization, and length of stay (LOS) amongst AP patients with and without MetS.

RESULTS: A total of 345,448 patients were admitted between 2005 and 2014 with the diagnosis of AP and MetS. The prevalence of patients admitted with AP and MetS has doubled in the last decade (8.2 % vs. 16.4%, P < 0.01) (Figure 1). There has also been a slight but significant uptrend in mortality (P < 0.01) (Figure 2). Compared to AP patient with MetS, AP patients without MetS were younger in age (56.9 vs. 50.7 years), had more females (44.8 vs. 48.6%) and had higher percentage of Caucasians (65.5 vs. 62.5%) but lesser AA (17.6 vs. 16.4%) and Hispanics (13.9 vs. 12.6%) (P < 0.001 for all). They also had significantly higher Charlson Co-morbidity index (CCI) (1.77 vs. 0.76, P < 0.001). After adjusting for age, gender, race, alcohol use and CCI, the odds of AKI, SIRS and shock were significantly higher in AP patients with MetS than without (adjusted odds ratio [aOR] 1.26, 1.68 and 1.08, respectively, P < 0.01 for all). But, presence of MetS was associated with lesser mortality, MV, and PVT in AP patients than without MetS (aOR: 0.49, 0.89, and 0.79, respectively, P < 0.001 for all). The overall cost of hospitalization and LOS were significantly higher amongst AP patients with MetS than without MetS ($34112 vs. $31085 and 5.12 vs. 5.07 days, respectively, P < 0.001). After adjusting for age, gender, race, alcohol use and CCI, the odds of AKI, SIRS and shock were significantly higher in AP patients with MetS than without (adjusted odds ratio [aOR] 1.26, 1.68 and 1.08, respectively, P < 0.01 for all). But, presence of MetS was associated with lesser mortality, MV, and PVT in AP patients than without MetS (aOR: 0.49, 0.89, and 0.79, respectively, P < 0.001 for all). The overall cost of hospitalization and LOS were significantly higher amongst AP patients with MetS than without MetS ($34112 vs. $31085 and 5.12 vs. 5.07 days, respectively, P < 0.001 for both).

CONCLUSION: Our study suggests that the prevalence of hospitalized AP patients with MetS has doubled in the last decade with an increase in mortality trend. Presence of MetS in patients with AP is
The ONE allows modeling of expected metastatic PC survival and average PC incidence by age. The concept of the at-risk group is critical: being able to estimate the size of the at-risk population actually develops PC. As colorectal cancer and PC are both adenocarcinoma, we applied all other CRC assumptions: PC incidence by age will be modeled by omnipresent neoplasia equations (ONE). The equation CE(p) = X^p states that the chance that a random event occurs p times is the event chance X to the power p. A derivative from this equation is f(p) = X^p/\left(\sum_{p=0}^{X} X^p\right) where f(p) is the fraction in the population at-risk for neoplasia for a specific value of p. The total at-risk fraction of the population is defined by \sum_{p=0}^{X} f(p).

METHODS: We elected to investigate whether the ONE also applies to survival. To investigate this, we searched the literature for case series of pancreas cancer (PC) describing survival over time in numeric format. For survival analysis we chose death as the random event, and analyzed the number of deaths per 0.5 year. In order to investigate whether the ONE also models PC incidence we extracted PC average incidence by age for women from the Cancer Incidence in Five Continents databases from the World Health Organization (CI5). The congruency of observed and modeled data was analyzed by Pearson correlation coefficient (PCC); a PCC > 0.9995 was rounded up to 1.0.

RESULTS: A report was identified on the Cancer Treatment Centers of America (CTCA) website with numeric data about cases with metastatic PC. The CTCA PC cohort, 1,555 cases, included only metastatic PC patients who had been initially diagnosed at CTCA and/or received at least part of their initial course of treatment at CTCA. The ONE modeled the data with near perfect accuracy; the PCC was 0.998 (Figure 1A). Based on results related to colorectal cancer, we estimated that 50% of the at-risk population actually develops PC. As colorectal cancer and PC are both adenocarcinoma, we applied all other CRC assumptions: PC incidence by age will fit a logistic pattern defined by presence of one or more colorectal polyps, a form of neoplasia, among cases follows a predictable pattern that can be modeled by omnipresent neoplasia equations (ONE). The equation CE(p) = X^p states that the chance that a random event occurs p times is the event chance X to the power p. A derivative from this equation is f(p) = X^p/\left(\sum_{p=0}^{X} X^p\right) where f(p) is the fraction in the population at-risk for neoplasia for a specific value of p. The total at-risk fraction of the population is defined by \sum_{p=0}^{X} f(p).

CONCLUSION: The ONE allow modeling of expected metastatic PC survival and average PC incidence by age. The concept of the at-risk group is critical; being able to estimate the size of the at-risk group allows application of the ONE for the entire cohort or population under study. Individual risk is defined by duration in the at-risk group.

INTRODUCTION: We discovered that the distribution of one or more colorectal polyps, a form of neoplasia, among cases follows a predictable pattern that can be modeled by omnipresent neoplasia equations (ONE). The equation CE(p) = X^p states that the chance that a random event occurs p times is the event chance X to the power p. A derivative from this equation is f(p) = X^p/\left(\sum_{p=0}^{X} X^p\right) where f(p) is the fraction in the population at-risk for neoplasia for a specific value of p. The total at-risk fraction of the population is defined by \sum_{p=0}^{X} f(p).

METHODS: We elected to investigate whether the ONE also applies to survival. To investigate this, we searched the literature for case series of pancreas cancer (PC) describing survival over time in numeric format. For survival analysis we chose death as the random event, and analyzed the number of deaths per 0.5 year. In order to investigate whether the ONE also models PC incidence we extracted PC average incidence by age for women from the Cancer Incidence in Five Continents databases from the World Health Organization (CI5). The congruency of observed and modeled data was analyzed by Pearson correlation coefficient (PCC); a PCC > 0.9995 was rounded up to 1.0.

RESULTS: A report was identified on the Cancer Treatment Centers of America (CTCA) website with numeric data about cases with metastatic PC. The CTCA PC cohort, 1,555 cases, included only metastatic PC patients who had been initially diagnosed at CTCA and/or received at least part of their initial course of treatment at CTCA. The ONE modeled the data with near perfect accuracy; the PCC was 0.998 (Figure 1A). Based on results related to colorectal cancer, we estimated that 50% of the at-risk population actually develops PC. As colorectal cancer and PC are both adenocarcinoma, we applied all other CRC assumptions: PC incidence by age will fit a logistic pattern defined by presence of one or more colorectal polyps, a form of neoplasia, among cases follows a predictable pattern that can be modeled by omnipresent neoplasia equations (ONE). The equation CE(p) = X^p states that the chance that a random event occurs p times is the event chance X to the power p. A derivative from this equation is f(p) = X^p/\left(\sum_{p=0}^{X} X^p\right) where f(p) is the fraction in the population at-risk for neoplasia for a specific value of p. The total at-risk fraction of the population is defined by \sum_{p=0}^{X} f(p).

CONCLUSION: The ONE allow modeling of expected metastatic PC survival and average PC incidence by age. The concept of the at-risk group is critical; being able to estimate the size of the at-risk group allows application of the ONE for the entire cohort or population under study. Individual risk is defined by duration in the at-risk group.

S0090

Pancreas Cancer Survival and Incidence Can Be Modeled Using Omnipresent Neoplasia Equations

Piet de Groen, MD1.

1University of Minnesota, Rochester, MN.

INTRODUCTION: We discovered that the distribution of one or more colorectal polyps, a form of neoplasia, among cases follows a predictable pattern that can be modeled by omnipresent neoplasia equations (ONE). The equation CE(p) = X^p states that the chance that a random event occurs p times is the event chance X to the power p. A derivative from this equation is f(p) = X^p/\left(\sum_{p=0}^{X} X^p\right) where f(p) is the fraction in the population at-risk for neoplasia for a specific value of p. The total at-risk fraction of the population is defined by \sum_{p=0}^{X} f(p).

METHODS: We elected to investigate whether the ONE also applies to survival. To investigate this, we searched the literature for case series of pancreas cancer (PC) describing survival over time in numeric format. For survival analysis we chose death as the random event, and analyzed the number of deaths per 0.5 year. In order to investigate whether the ONE also models PC incidence we extracted PC average incidence by age for women from the Cancer Incidence in Five Continents databases from the World Health Organization (CI5). The congruency of observed and modeled data was analyzed by Pearson correlation coefficient (PCC); a PCC > 0.9995 was rounded up to 1.0.

RESULTS: A report was identified on the Cancer Treatment Centers of America (CTCA) website with numeric data about cases with metastatic PC. The CTCA PC cohort, 1,555 cases, included only metastatic PC patients who had been initially diagnosed at CTCA and/or received at least part of their initial course of treatment at CTCA. The ONE modeled the data with near perfect accuracy; the PCC was 0.998 (Figure 1A). Based on results related to colorectal cancer, we estimated that 50% of the at-risk population actually develops PC. As colorectal cancer and PC are both adenocarcinoma, we applied all other CRC assumptions: PC incidence by age will fit a logistic pattern defined by presence of one or more colorectal polyps, a form of neoplasia, among cases follows a predictable pattern that can be modeled by omnipresent neoplasia equations (ONE). The equation CE(p) = X^p states that the chance that a random event occurs p times is the event chance X to the power p. A derivative from this equation is f(p) = X^p/\left(\sum_{p=0}^{X} X^p\right) where f(p) is the fraction in the population at-risk for neoplasia for a specific value of p. The total at-risk fraction of the population is defined by \sum_{p=0}^{X} f(p).

CONCLUSION: The ONE allow modeling of expected metastatic PC survival and average PC incidence by age. The concept of the at-risk group is critical; being able to estimate the size of the at-risk group allows application of the ONE for the entire cohort or population under study. Individual risk is defined by duration in the at-risk group.

S0091

Admission Outcomes and Risk Factors for Patients Presenting With Acute Pancreatitis and Concomitant Diabetic Ketoadisis

Benni Hirumoto, MD1, Alexander Tonthat, MD1, Liam Hilon, MD, Carlos Butrago, MD1, Cameron Furey, MD2, Alice Lee, MD1, Yao Liu, MD1, Helen Lee, ANPC1, Ara B. Sahakian, MD2, James Buchman, MD, MS2.

1LAC + USC Medical Center, Los Angeles, CA; 2University of Southern California, Los Angeles, CA.

INTRODUCTION: Admissions for acute pancreatitis and diabetic ketoacidosis (DKA) often overlap. Presenting features such as abdominal pain, elevated lipase levels, and anion gap acidosis may make differentiation and management challenging. To date, studies on admission and follow up outcomes in patients presenting with concomitant DKA and acute pancreatitis has been incompletely characterized.

METHODS: The clinical course of consecutive patients admitted to Los Angeles County + University of Southern California Hospital for acute pancreatitis between March 2015 and February 2020 was reviewed through April 2020. Patients with diabetes were identified and stratified by presence of DKA on admission. The outcomes of interest included the diagnosis of diabetes mellitus following index hospitalization in our hospital for acute pancreatitis, as well as general admission outcomes such as length of stay (LOS), intensive care unit admission (ICU), ICU LOS, organ failure, and pancreatitis severity as based on the Revised Atlanta Criterion.

RESULTS: Among a total cohort of 1,081 patients with acute pancreatitis, 252 had diabetes mellitus (DM), and 37 of the patients with DM presented in DKA. Those presenting in DKA were more likely to develop moderately severe pancreatitis by the Revised Atlanta Classi-