arrest), high-velocity CT negative TBI, and non-injured controls. Differences in GFAP and UCH-L1 concentrations were assessed using the t-test and Wilcoxon rank-sum test. Support vector machine learning was then utilized for the classification of the patient samples in our prediction tasks. Prediction accuracy was measured by the area under the curve (AUC), precision, recall, and F1 score.

RESULTS: 111 matched GFAP and UCH-L1 samples were analyzed; 36 traumatic hemorrhage, 10 spontaneous hemorrhage, 16 oxygen deprivation, 10 high-velocity CT negative TBI, and 39 healthy controls. GFAP concentrations were statistically different ($P < .05$) in all but one comparison, high-velocity CT negative TBI and oxygen deprivation injury, while UCH-L1 concentrations were only statistically different for comparisons with non-injured control subjects. When GFAP and UCH-L1 concentrations were combined for prediction classification, the AUC for comparisons was as follows: 0.90 spontaneous vs traumatic hemorrhage, 0.93 oxygen deprivation vs spontaneous hemorrhage, 0.84 oxygen deprivation vs traumatic hemorrhage, 0.94 CT negative TBI vs traumatic hemorrhage, 1.00 CT negative TBI vs spontaneous hemorrhage, and 0.96 CT negative TBI vs oxygen deprivation. The classification prediction using both biomarkers for healthy controls and high-velocity CT negative TBI demonstrated an AUC of 0.93, precision 0.9, recall 0.84, and F1 score of 0.87.

CONCLUSION: Serum concentrations of S100B and GFAP collected within 32 hours of injury have utility in classifying brain-injured subjects based on the etiology of their injuries which has implications for early targeted management and prognostication of brain injury.

429 Antibiotic Prophylaxis in Penetrating Brain Injury: A Systematic Review of the Literature

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INTRODUCTION: Civilian penetrating brain injury is a common pathology at trauma centers across the United States. The development of infection, including superficial wound infection, meningitis, or intracranial abscess can lead to significant morbidity in this patient population. Rates of infection vary among studies and there are few guidelines on interventions to prevent infections.

METHODS: A systematic review of the literature was performed to identify studies regarding antibiotic use in civilian penetrating brain injury from 2000–2020. All types of studies were included. Abstracts were screened for inclusion based on English language, penetrating trauma involving dural puncture, age greater than 15 years, and patients within high income countries. Data was extracted to identify demographic information, type of penetrating object, type of intervention performed, prophylactic antibiotic regimen, rate and type of infection, and adverse events associated with antibiotics.

RESULTS: Forty full text articles were identified, resulting in a study population of 903 patients. Prophylactic antibiotics were administered in 577 patients (64.0%). Of the patients given prophylactic antibiotics, 8.32% developed infection [95% CI 6.07-10.57%] compared to 6.75% [95% CI 4.03-9.47%] in patients without prophylaxis. Of the patients with a documented antibiotic regimen ($n = 71$), 39.4% were given prophylaxis consisting of a single class of antibiotic. A variety of antibiotic classes were given for prophylaxis. Similarly, the duration of antibiotic prophylaxis varied throughout studies.

CONCLUSION: Over the past 20 years, data has been published for many civilian patients with penetrating brain injury. In high income countries, antibiotic prophylaxis for these patients is not universal, with only a slight majority of patients receiving antibiotics with the intention of preventing infection. Further, antibiotic regimens vary widely between cases. Interestingly, our results show similar infection rates amongst patients regardless of the use of prophylaxis.

430 Neuro-trauma and COVID-19 Pandemic in New York City. Influence of Viral Spread Prevention Policies

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INTRODUCTION: New York City (NYC) is the epicenter of the novel coronavirus disease 2019 (COVID-19) pandemic in the United States. Cancellation of non-essential activities and social distancing policies are implemented during this crisis to avoid spread of the infection.

METHODS: Retrospective and prospective reviews were performed from a Level-II trauma-center from November 2019 (one month before the outbreak started in China) to April 2020. General demographics, mechanism of trauma, diagnosis, and treatment were recorded. We dichotomized the data between pre-COVID-19 (before March 1st) and COVID-19 period, and compared differences between the two groups.

RESULTS: A total of 150 patients composed our cohort, with a mean age of 66.2 years (SD+/-: 18.9), and 66% male. An average of 25 neuro-traumas/month was observed, with the highest average cases per day in March (1 case/day), and the lowest in April (0.6 cases/day). We noticed a progressive decrease of neuro-traumas since the beginning of March (from 11 cases to 2 cases a week), with the lowest point in the first week of April. This tendency was evident after March 16th, simultaneously with the cancellation of all non-essential activities in NYC during COVID-19 era, the most common mechanism of trauma was mechanical fall, but it was less frequent compared to the pre-COVID-19 period (61.4% vs 40.8; $P = .04$). Subdural hematomas were the most common pathology in both periods. Non-operative management was selected for most patients (79.2 vs 87.8%, $P = .201$) in both periods, but the tendency to convert code status to Do-Not-Intubate/Do-Not-Resuscitate (DNI/DNR) increased during the COVID-19 crisis (5.9% to 12.2%, $P = .041$).

CONCLUSION: A temporary decrease of neuro-traumas was observed during the initial phase and peak of the crisis. This tendency was observed simultaneously with the implementation of social-distancing policies as the number of total infected patients was rising in NYC. Mechanical falls were the most frequent cause of neuro-trauma in both periods. More neuro-trauma patients were converted to DNI/DNR code during the crisis and this was not necessarily related to patient’s COVID-19 status.