measures of SF, and a neurocognitive battery. Healthy controls complete MRI only. Differences in cortical thickness (CTh) and gray matter volume (GMV) in regions of interest between FEP and controls will be determined with ANCOVA. Multiple linear regression will be used to determine the relationship between neural substrate and SF in FEP. Linear mixed models will be used to examine the relationship between change in CTh and GMV and change in SF. Data collection is ongoing for this study. RESULTS/ANTICIPATED RESULTS: In preliminary data including 12 FEP and 9 healthy controls, FEP demonstrated cortical loss in the right superior frontal cortex and the right isthmus-posterior cingulate. Greater cortical thickness in the posterior cingulate cortex was associated with better social functioning across multiple measures when controlling for global cognition. Gray matter volume in the parahippocampal gyrus was also associated with better social functioning. Preliminary results evaluating whether targeted cognitive training is neuroprotective in these regions of interest in a manner that is associated with improved social functioning will also be presented. DISCUSSION/SIGNIFICANCE OF IMPACT: Preliminary results link the posterior cingulate and parahippocampal gyrus to SF in FEP. Further research will investigate the contribution of changes in these brain regions to improved SF. The identification of biological treatment targets for SF may lead to development and optimization of novel interventions to alleviate SF deficits in FEP.

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The Impact of Axillary Surgery on Recurrence-Free Survival in Invasive Lobular Carcinoma (ILC) of the Breast

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OBJECTIVES/GOALS: Clinical trials demonstrate that axillary lymph node dissection (ALND) is unnecessary for most breast cancer patients with 1-3 involved nodes, but whether this is true for those with ILC is unknown. We evaluate the impact of ALND on recurrence-free survival (RFS) in ILC and 1-3 positive nodes. METHODS/STUDY POPULATION: We performed a retrospective cross-sectional analysis of patients with ILC treated between 1992-2019 at our institution. All patients received either sentinel lymph node biopsy (SLNB) or ALND and underwent either breast conservation surgery (BCS) or mastectomy. The primary outcome was RFS, defined as the absence of locoregional or distant recurrence. RESULTS/ANTICIPATED RESULTS: Of 496 cases, 250 (50.4%) underwent BCS, and 246 (49.6%) underwent mastectomy. A total of 93% of patients were hormone receptor positive, and 89% had low or intermediate grade disease. Among patients with 1-3 positive nodes, there was no significant difference in 5- and 10-year RFS based on receipt of ALND for both BCS and mastectomy cohorts. Using a multivariate model, we found no association between ALND and RFS overall (HR = 0.98, 95% CI 0.36-2.7, p>0.20) and among those with 1-3 positive nodes (HR = 0.60, 95% CI 0.12-3.4, p>0.20). DISCUSSION/SIGNIFICANCE OF IMPACT: These findings support the safety of omitting ALND in patients with ILC and 1-3 positive nodes, regardless of whether they receive BCS or mastectomy. Further studies of axillary management in ILC, including imaging tools to predict nodal involvement and response to therapy, are warranted.

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The Relationship Between Tinnitus-Related Distress and PTSD Symptoms Among Post 9/11 Veterans with Posttraumatic Headache

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OBJECTIVES/GOALS: Military personnel are at significantly greater risk for developing tinnitus, due to increased exposure to acoustic trauma. Many psychiatric disorders are common among individuals with chronic tinnitus, including posttraumatic stress disorder (PTSD). Although tinnitus and PTSD are clearly different, research supports the notion of shared mechanisms between both disorders. First, there are overlapping symptoms between tinnitus-related distress and PTSD, including irritability, distorted cognitions, persistent negative emotional states, diminished interests in activities, exaggerated startle response, sleep disturbance, concentration problems, and hypervigilance. Second, tinnitus and PTSD are highly comorbid with one another, whereas 34% of veterans with tinnitus also carry a PTSD diagnosis. Third, those with both disorders are significantly more emotionally impaired compared to those with tinnitus and any other psychiatric disorder. Lastly, neuroimaging research has shown similar regions within the auditory vigilance network are implicated among those with tinnitus, and separately, among combat PTSD patients, suggesting shared neurobiological mechanisms between both disorders. Though we are aware that tinnitus and comorbid PTSD presents as a significantly greater clinical concern, the relationship between tinnitus-related distress and PTSD symptomotology it is still unknown. Canonical correlation analyses will be conducted to examine the relationship between tinnitus-related distress and PTSD among veterans as a part of a larger clinical trial for posttraumatic headache. Results of the study will shed light on the relationship between tinnitus-related distress and PTSD, and may suggest a different phenotype for those with both disorders. Researchers and clinicians will further understand and conceptualize the relationships among the cognitive, emotional, and behavioral symptoms associated with tinnitus and PTSD, both individually and conjointly. METHODS/STUDY POPULATION: Baseline data (N = 112) from a larger clinical trial examining the effectiveness of two different psychotherapies for the alleviation of posttraumatic headache was examined. The primary aim of this project was to evaluate the relationship between tinnitus-related distress and PTSD based on the eight subscale scores of the Tinnitus Functional Index (TFI) and the four scales of the Clinician Administered PTSD Scale for the DSM-5 (CAPS-5), respectively. To address this aim, canonical correlation analysis was used where the tinnitus-related symptom subscales made up one variable set and PTSD symptom subscales made up the second variable set. First, we evaluated the overall model fit based on Wilks Lambda to determine if the two variable sets were related at the $p < .05$ level. Next, we evaluated the canonical correlations (comparable to an eigenvalue) for each canonical dimension to determine the required number of significant canonical dimensions (or latent constructs) that were necessary to understand the association between the two variable

sets. Finally, the standardized canonical coefficients, which are analogous to regression coefficients, evaluate the magnitude of variate relationships and determine which subscales best describe significant canonical dimensions. RESULTS/ANTICIPATED RESULTS: Prior to the canonical correlation analysis, total score descriptive statistics and subscale score zero-order correlations were carried out. The CAPS-5 total score was 33.24 (SD = 9.39) and the TFI total score was 50.81 (SD = 21.88) in this sample. Interpretation of the zero-order correlations indicated that TFI Relaxation subscale was the only tinnitus-related subscale moderately associated with a PTSD subscale (i.e., Reexperiencing, $r = .35$). Canonical correlation omnibus model fit analysis via the Wilks Lambda overall multivariate test indicated that the tinnitus variable set was significantly associated with the PTSD variable set, $F = 1.55$, $p = .04$. Evaluation of the canonical correlations indicated that one dimension was significant in explaining the relationship between the two variable sets and accounted for 25% of the overall variance, $F = 1.55$, $p < .04$, $R^2 = .249$. Standardized canonical coefficients indicated that the PTSD subscales Reexperiencing ($b = 0.64$) and Negative Alterations in Cognition and Mood ($b = 0.55$) were the most representative of the identified canonical dimension. In terms of the TFI, the Relaxation ($b = 1.28$) and Sleep ($b = 0.72$) subscales appeared to be most related to the canonical dimension. The TFI subscales Auditory Difficulty ($b = -0.30$) and Quality of Life ($b = 0.30$) also appeared to be related the canonical dimension to a lesser degree. DISCUSSION/SIGNIFICANCE OF IMPACT: Findings support prior research suggesting particularly deleterious functional outcomes among individuals with comorbid tinnitus and PTSD. Results of this study suggest a latent variable that can explain the unique experience of individuals with both disorders. This latent variable consists of two PTSD constructs: Reexperiencing traumatic events (i.e., flashbacks, nightmares, intrusive memories), and Negative Alterations in Cognition and Mood (i.e., self- and other-blame, strong negative feelings, loss of interest, feeling distant). This latent variable also consists of two tinnitus-related constructs: Sleep (i.e., trouble falling and staying asleep, peaceful sleep) and Relaxation (i.e., ability to relax, enjoyment of peace and quiet). Auditory Difficulty (i.e., hear clearly, understand people) and Quality of Life (i.e., social activities, relationships, difficulty performing tasks) also contributed to the latent variable, but to a lesser degree. It is suggested that the constellation of symptoms related to the latent variable is a Dysphoric Factor, unique to individuals with PTSD, tinnitus, and posttraumatic headache. It may be necessary to incorporate different techniques into existing evidence-based treatments for both tinnitus and PTSD, for optimal symptom improvement.

4074

The Role of Immortal Time Bias When Linking Treatment to Outcomes among Older Patients with Incident Hodgkin Lymphoma (HL) using Surveillance, Epidemiology and End Results (SEER)-Medicare Data

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OBJECTIVES/GOALS: Older patients with HL have worse outcomes than younger patients, which may reflect treatment selection, including fewer chemotherapy cycles. Immortal time bias exists when patients must survival to initiation, and even completion, of treatment. We described treatment length and death to evaluate the extent of immortal time bias. METHODS/STUDY POPULATION: This retrospective cohort study utilized SEER-Medicare data from 1999-2014. Patients diagnosed with incident advanced stage HL at age ≥65 years and enrolled in Medicare Part A and B fee for service were included. Chemotherapy or radiotherapy treatment initiated within 4 months of diagnosis was determined from inpatient, outpatient, and physician/supplier claims. No treatment was defined by lack of treatment claims. Dates from claims were used to define length of treatment; ≥4 months of treatment indicated complete chemotherapy cycles. Date of death was obtained from Medicare data. Analyses were limited to 1 year post-diagnosis. Summary statistics were used to describe treatment length and subsequent death. RESULTS/ANTICIPATED RESULTS: We included 1492 advanced stage HL patients with a mean age of 76 years (SD = 7). 428 (29%) patients had no documented treatment; 397 (27%) were treated <4 months indicating fewer chemotherapy cycles; and 667 (45%) were treated for ≥4 months indicating complete chemotherapy cycles. Among those with no documented treatment, 15% died within 1 month of diagnosis with 78% dying by 1 year post-diagnosis. Among those treated <4 months, 36% died within 1 month of their last treatment claim with 64% dying by 1 year post-diagnosis. Among those treated ≥4 months, 7% died within 1 month of their last treatment claim with 14% dying by 1 year post-diagnosis. DISCUSSION/SIGNIFICANCE OF IMPACT: Few untreated patients died within 1 month of diagnosis. One-third of patients treated <4 months died soon after completion of treatment, while patients treated longer survived longer, suggesting some patients did not survive to complete treatment. To account for this immortal time bias, landmark analysis will be used to assess the relationship between treatment and survival.

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THE ROLE OF PERIODONTAL DISEASE IN CORONARY ARTERY DISEASE IN A HISPANIC POPULATION

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OBJECTIVES/GOALS: The purpose of this report is to describe the role of Periodontal Disease (PD) in Coronary Artery Disease (CAD) in a Hispanic country. METHODS/STUDY POPULATION: Literature and Puerto Rican experience was reviewed and will be discussed. RESULTS/ANTICIPATED RESULTS: PD produces inflammatory disease by bacterial infection in the gingiva. This factor PD activates an inflammatory process affecting the CAD cascade inducing myocites, endothelial cells activation and cytokines. The incidence of gingival disease in the Puerto Rican population (P) is around 50%; of this group 80% will develop periodontal disease. Including this factor and diabetes mellitus Type 2, still the incidence of CAD is 20-30% less than the U.S.A. DISCUSSION/SIGNIFICANCE OF IMPACT : CAD is a systemic disease related to genetic factors and inflammation. PD is related to an inflammatory process, which will activate the CAD process, producing tissue infarcts. The daily use of resolving or liquid Omega 3 in the gingival tissue is useful in the prevention of gingival and periodontal disease. CONFLICT OF INTEREST DESCRIPTION: All authors have no relationship with any industry or financial associations in connection with the submitted abstract.