ABSTRACTS

2023
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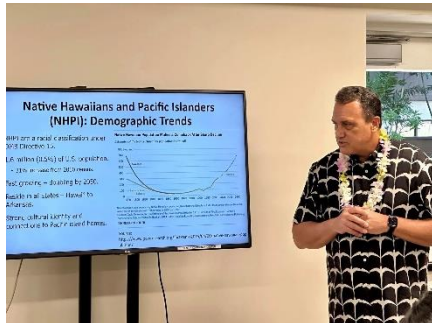
HONOLULU, HAWAI'I

HAWAII PACIFIC NEUROSCIENCE

Hawaii BRITL

2023 Neuroscience Research Summer Symposium

Mahalo **to Keaweʻaimoku Kaholokula, Ph.D.**
Professor and Chair of Native Hawaiian Health,
University of Hawaii, John A. Burns School of Medicine on keynote lecture

Hoʻi Hou iā Mauli Ola,
Achieving Health Equity for
Native Hawaiians and Pacific Islanders

First place $1000
Characterizing Small Vessel Disease in Native Hawaiian and Other Pacific Islanders with Dementia: A Retrospective Pilot Study, Michelle Trinh, Elise Wong, Megan Baldemor, Sarah Song, Tyson Wu, Julia Jahansooz, Edward Weldon, Anson Lee, Chathura Siriwardhana

Runner ups $500
Exploring Radiculopathy in Underserved Communities: A Focus on AANHPI Populations and Risk Factors
Anita Cheung MPH, Matthew K. Nishimura, Kai J. Miyaki, Tea A. Stephens, Edward J. Weldon, Julia R.Jahansooz MS, Anson Y. Lee, Masako Matsunaga

(Lawrence Burgess, MD, Director of Student Affairs with Med student Bradon Hong and Group)

Runner ups $500
Use of Optimal Treatment Modalities for Spasticity and Stiffness in Post-Stroke and Cerebral Palsy Patients in Native Hawaiian Pacific Islanders and Underserved Populations in Hawaii, Bradon Hong, Michael Garvin, Connor Weldon, Yuewen Ding, Julia Jahansooz, Edward Weldon, Anson Lee, Masako Matsunaga

Abstracts Online   Posters Online   Event Photos   Questions kliow@hawaii.edu

Characterizing Small Vessel Disease in Native Hawaiian and Other Pacific Islanders with Dementia: A Retrospective Pilot Study

Michelle Trinh[1,2], Elise Wong[1,3], Megan Baldemor[1,4], Sarah Song[1,5], Tyson Wu[1,5], Julia Jahansooz[1,2], Edward Weldon[1,2], Anson Lee[1,2], Chathura Siriwardhana[2], Yone-Kawe Lin[2], Jason Viereck, MD, PhD[1], Kore Liow, MD, FACP, FAAN[1,2], Enrique Carrazana, MD[1]

[1]Memory Dis Center Alz Research Unit, Hawaii Pacific Neuroscience, Honolulu HI, [2]John A. Burns School of Medicine, University of Hawai'i, Honolulu, HI, [3]Punahou School, Honolulu, HI, [4]Santa Clara University, Santa Clara, CA, [5]University of Hawaii at Manoa, Honolulu, HI

Background

Small vessel disease (SVD), a major cause of age-related cognitive decline, affects small cerebral blood vessels, leading to cerebral hypoperfusion. Native Hawaiians and other Pacific Islanders (NHOPI) are reported to have higher rates of vascular risk factors of SVD, such as hypertension. This study aims to characterize the prevalence of severity of SVD in NHOPI dementia patients compared to their Caucasian and Asian counterparts.

Methods

This retrospective chart review analyzed data from dementia patients ≥ 18 years old with a brain MRI and MMSE score between 23-27. Each NHOPI patient was matched with a Caucasian and Asian patient based on age, sex, and MMSE score. Patient charts were reviewed for demographics, comorbidities, medications, and SVD MRI findings at time of presentation of memory concerns.

Results

Overall, 108 patients were included, with 36 patients in each racial group, a mean patient age of 72.1 years, and 72 (66.7%) females. NHOPI patients had a higher BMI (p<0.001) and higher rates of hypertension (p=0.024), diabetes mellitus (p=0.020), and coronary artery disease (p=0.026). NHOPI had higher rates of reporting attention deficits as a symptom of dementia (p=0.015). However, no significant differences in prevalence or severity of white matter lesions, subcortical infarcts, or brain atrophy.

Conclusions

NHOPI patients were significantly associated with higher rates of vascular risk factors and showed differences in presentation of dementia. Further investigation is needed to identify potential preventative targets and improve risk predictions for individuals with SVD.

Exploring Radiculopathy in Underserved Communities: A Focus on AANHPI Populations and Risk Factors

Anita Cheung MPH [1,2], Matthew K. Nishimura [1,3], Kai J. Miyaki[1,4], Tea A. Stephens[1,5], Edward J. Weldon[1,2], Julia R. Jahansooz MS [1,2], Anson Y. Lee[1,2], Masako Matsunaga PhD, MPH, MS, RDN[2], Jason C. Chang MD[1,2], Enrique Carrazana MD[1,2], Jason Viereck MD, PhD[1,2], Kore K. Liow MD, FACP, FAAN[1,2]

[1]Spine & Pain Management Center, Hawaii Pacific Neuroscience, [2]John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, [3]Pitzer College, Claremont, CA, [4]Boston University, Boston, MA, [5]University of Hawaii, Honolulu, HI

Background/Objectives

Radiculopathy (RP) is a debilitating nerve compression condition. This study aims to address the paucity of research on RP in Asian American, Native Hawaiian, and Pacific Islander (AANHPI) populations and to identify differences in clinical presentation, comorbidities, and treatment of AANHPI compared to other ethnocultural groups in Hawaii.

Methods

This retrospective cohort study utilizes data from a single neurological center in Hawaii. Adults aged ≥18 years diagnosed with RP between 2016-2023 were identified using ICD10 codes. Patients without electromyography, magnetic renaissance imaging, or insufficient demographical data were excluded. Statistical analysis was completed on R, with $p < 0.05$ considered statistically significant.

Results

Data from 1287 out of 1,764 patients are included in the analysis, with 477 excluded. The cohort consisted of 28% Asians and 20% NHPIs. NHPIs had the youngest age of diagnosis, while Asians had the highest age of diagnosis ($p < 0.001$). AANHPI populations were more likely to have public insurance ($p < 0.001$). NHPIs had the highest rates of obesity ($p < 0.001$), while Asians had the lowest ($p < 0.001$). AANHPIs were more likely to have more than two medical comorbidities ($p < 0.001$) and higher rates of hypertension ($p < 0.001$), hyperlipidemia ($p < 0.001$), hypercholesterolemia ($p < 0.001$), and diabetes ($p < 0.001$). AANHPIs were mainly treated with medications and were less likely to have received physical therapy, steroid injections, or surgery ($p = 0.042$)

Conclusions

AANHPI patients are more likely to be publicly insured, have multiple comorbidities, and are less likely to receive specialized treatments. NHPI are diagnosed earlier and have higher rates of obesity. These findings are important for addressing underlying comorbidities and treatment disparities amongst AANHPI patients.

Use of Optimal Treatment Modalities for Spasticity and Stiffness in Post-Stroke and Cerebral Palsy Patients in Native Hawaiian Pacific Islanders and Underserved Populations in Hawaii

Bradon Hong[1,2], Michael Garvin[1,3], Connor Weldon[1,4], Yuewen Ding[1,5], Julia Jahansooz[1,2], Edward Weldon[1,2], Anson Lee[1,2], Masako Matsunaga[2], Jason Chang, Enrique Carrazana[1], Jason Viereck[1], Kore Liow[1,2]

[1]Stroke & Neurologic Restorartion Center, Hawaii Pacific Neuroscience, [2]John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, [3]University of California, Berkeley, [4]University of California, Santa Cruz, [5]University of Hawaii at Manoa

Introduction

Spasticity is a common sequela of Stroke and Cerebral Palsy which can lead to a lower quality of life for patients. Stroke is the most common cause of chronic disability in Hawai'i and is more prevalent in Native Hawaiian and Pacific Islander (NHPI) populations. This study aims to quantify any disparities in treatment decisions for spasticity based on socioeconomic factors in NHPI in Hawaii.

Methods

A retrospective single-center chart review was performed at HPN to collect demographic information of patients diagnosed with Post-Stroke Spasticity or Cerebral Palsy who did and did not receive injection treatments. The study recorded 53 males and 56 females (ages 7-101) using ICD-10 codes from the inception of HPN to 2023. Statistical Analysis was performed using a Wilcoxon rank sum test, Pearson's Chi-squared test, and Fisher's exact test.

Results

Of the 109 patients observed, 48% received injection treatments for spasticity. There were no significant differences between patients who did and did not receive injection treatments based on demographic factors like sex ($p = 0.6$), race ($p = 0.3$), insurance types ($p > 0.9$), or residential area ($p = 0.7$).

Conclusions

Our research found limited evidence to show the disparities between patients who received injections based on race and socioeconomic factors. Our data set shows that efforts to eliminate racial/ethnic disparities are effective at improving access to healthcare. The small sample size and single-center study are the limitations that might influence the statistical significance of the results.

Analyzing the Accuracy of Electromyography Findings when Magnetic Resonance Imaging is Positive for Brachial Plexopathy

D-Dre Wright[1,2], Natalie Gibson[1,4], Shari Ho[1,5], Chancen Law[1,6], Edward J. Weldon[1,2], Julia R. Jahansooz[1,2], Anson Y. Lee[1,2], Meliza Roman, MS[1,3], Hyeong Jun Ahn, PhD[1,3], Jason Chang, MD[1], Enrique Carrazana, MD[1], Jason Viereck, MD, PhD[1], Kore K. Liow, MD, FACP, FAAN[1,2]

[1]Neuromuscular Rehabilitation Center, Hawaii Pacific Neuroscience, Honolulu, HI, [2]John A. Burns School of Medicine, University of Hawai'i, Honolulu, HI, [3]Department of Quantitative Health Sciences, University of Hawai'i John A. Burns School of Medicine, Honolulu HI, [4]University of California, Los Angeles, [5]University of Notre Dame, [6]Kamehameha Schools - Kapālama

Introduction

Magnetic resonance imaging (MRI) and electromyography (EMG) are commonly used to diagnose brachial plexopathies. However, there is limited research on the correlation of EMG and MRI findings for brachial plexus injuries in adults.

Objective

To investigate the concordance of MRI and EMG findings in adult patients diagnosed with brachial plexopathy.

Methods

This retrospective chart review involved adult patients (≥18 years) at Hawaii Pacific Neuroscience (HPN) with the diagnosis code G54.0 or S14.3XXA for brachial plexus injuries from database conception to June 17, 2023. Data collected from patients included demographics, risk factors, physical exam findings, symptoms, MRI findings, and EMG findings. Statistical analyses were performed using version 4.2.0 of R software (R Core Team, 2022).

Results

Among the 64 patients, the overall percentage agreement between the EMG findings and MRI impressions was 75.0%. Sex and BMI were found to be significantly associated with EMG findings. 89.3% (n=25) of females had a negative EMG finding while 41.7% (n=15) of males had a positive EMG finding (p=0.006). BMI was also higher among patients with a positive EMG finding at an average of 29 compared to patients with a negative EMG finding with an average BMI of 26 (p=0.042).

Conclusions

This study supports current literature demonstrating statistical significance in the concordance between EMG and MRI findings for diagnosing adult brachial plexopathies. This study also highlights the importance of considering sex and BMI in the diagnosis of adult brachial plexus injuries.

Investigating The Relationship of Smoking, Sociodemographic factors, and Medical Comorbidities Among Chronic Pain Patients in Hawaii

April Hamachi[1,2], Isabella Grace Kostecki[1,3], Megan Baldemor[1,4], Zoe Mia[1,5], Julia Jahansooz[1,2], Edward Weldon[1,2], Anson Lee[1,2], Masako Matsunaga, PhD[2], Paul Smith, MD[1], Enrique Carrazana, MD[1], Jason Viereck, MD, PhD[1], Kore Liow, MD, FACP, FAAN[1,2]

[1]Self Care and Wellness Center, Hawaii Pacific Neuroscience, Honolulu HI, [2]John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, [3]Yale University, New Haven, CT, [4]Santa Clara University, Santa Clara, CA, [5]University of Exeter, Exeter, UK

Introduction

Chronic pain is a debilitating condition that can negatively impact cognitive performance, psychosocial well-being, and overall quality of life. The relationship between chronic pain and smoking has been well established, but understanding how other factors can influence chronic pain could provide insight for physicians recommending treatment options.

Methods

A retrospective chart review was conducted on 175 patient records diagnosed with G89.4 (chronic pain syndrome) with pain for more than 12 weeks. Patients were grouped by smoking status. Other variables such as sociodemographic factors, medical comorbidities, and numerical pain rating scale were collected.

Results

When compared between groups, 57% of current and former smokers had continued opioid use compared to 41% of non-smokers. Former or current smokers had a higher proportion of private insurance users and non-smokers had a higher proportion of public and other insurance users. Of the collected medical comorbidities, spine pain related diagnoses were more common in former smokers (56.3%) compared to current smokers (37.9%) and non-smokers (25.7%). Lastly, all NHPI patients (n=25) had at least one or more medical comorbidity.

Conclusions

Chronic pain may require complex treatment that should consider a plethora of various factors. Pain ratings did not differ depending on smoking status, but those with a smoking history tended to remain opioid-dependent. Furthermore, spine pain may be a significant comorbid condition in smokers and NHPI patients may commonly present with comorbidities. The effect of insurance type should be studied further in smokers with chronic pain.

Factors Associated with Risk for Depression in People with Epilepsy

Elizabeth Rooks[1,2], Keith Yamamoto[1,2], Johanna Mandl[1,3], Kaylie Kaneshiro[1,4], Julia Jahansooz[1,2], Edward Weldon[1,2], Anson Lee[1,2], Kyle Ishikawa[2], Janette Abramowitz[1], Enrique Carrazana[1], Jason Viereck[1], Kore Liow[1,2]

[1]Comprehensive Epilepsy Center Hawaii Pacific Neuroscience, Honolulu HI, [2]John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, [3]Medical University of Innsbruck, Austria, [4]Tufts University, Boston, MA

Background

Depression is highly prevalent in individuals with epilepsy, affecting 32% of patients. Screening for depression is commonly done using the PHQ-2 and PHQ-9 self-report questionnaires in outpatient settings. Research on depression risk factors using these tools within neurology clinics remains limited. No studies have explored this in Native Hawaiian and Pacific Islander (NHPI) communities. This study aimed to identify factors associated with elevated PHQ-9 scores in epilepsy patients to enhance depression management.

Methods

The research conducted a retrospective chart review of 126 epilepsy patients (62 PHQ-2 negative, 64 PHQ-9 positive) from a private neurology clinic. Eligible adults with epilepsy diagnoses and PHQ-2/PHQ-9 records were included. The PHQ9-positive patients comprised the test group (score ≥9), while PHQ2-negative patients acted as controls. Analysis encompassed demographic data, clinical history, and treatment records. Additional assessments were performed for positive PHQ9 patients and NHPI subgroups.

Results

Results revealed a significant correlation between positive PHQ9 scores and substance use, with nicotine alone predicting a positive PHQ9 score. Patients with positive PHQ9 scores were also more likely to have at least one additional health comorbidity or a diagnosis of anxiety. In the NHPI subgroup, positive PHQ9 scores showed significant correlation with asthma, hypertension, and obesity.

Conclusions

This study provides valuable insights into depression screening within epilepsy and establishes the link between epilepsy and depression in NHPI communities. These findings suggest the clinical utility of conducting PHQ-9 assessments even when PHQ-2 results are negative, using identified risk factors as screening indicators.

Factors Associated with Depression Risk in Post-Concussive Syndrome Patients in Hawaii

Eli Snyder[1,2], Ryan Nakamura[1,2], Miriya Ogawa[1,3], Kaylin Bersamin[1,4], Edward Weldon[1,2], Julia Jahansooz[1,2], Anson Lee[1,2], Kyle Ishikawa[2], Janette Abramowitz, MD[1], Enrique Carrazana, MD[1], Jason Viereck, MD[1], Kore Liow, MD[1]

[1]Concussion & TBI Center, Hawaii Pacific Neuroscience, Honolulu HI, [2]John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, [3]Brigham Young University, Provo, UT, [4]University of Hawaii at Manoa, Honolulu, HI

Background and Aims

Post-Concussion Syndrome (PCS) describes symptoms which persist beyond the typical recovery time frame for mild traumatic brain injury (mTBI). Although there is a confirmed correlation between mTBI and depression risk, there is a paucity of literature investigating risk factors for depression in the context of PCS (DPCS). This study aims to assess patient demographics, concussion etiologies, clinical course, substance use, and medication use associated with DPCS risk.

Methods

This single-center, retrospective study included patients diagnosed with PCS between January 2020 and January 2023. Data comprised demographics, concussion etiology, loss of consciousness (LOC) following injury, PCS symptoms, PHQ-2/PHQ-9 surveys, substance use pre- and post-PCS diagnosis, and CNS-active medications pre- and post-PCS diagnosis. P-values were calculated using Fisher's exact tests and Wilcoxon rank sum tests.

Results

Of the initial 297 patients, 82% received depression screening, and 31% were at risk of DPCS based on PHQ-2 scores. Patients who experienced LOC of unspecified duration were at higher risk of developing DPCS (p=0.037). Patients presenting with symptoms of confusion, insomnia, or memory loss at PCS diagnosis had increased DPCS risk (p=0.014, p=0.035, p=0.003). Tobacco use pre-TBI (p=0.039) and marijuana use pre- (p=0.003) and post-TBI (p=0.009) were associated with increased risk of DPCS. Elevated DPCS risk was also seen in patients who used SSRIs (p=0.005), SNRIs (p=0.010), atypical antidepressants (p=0.040), or mood stabilizers (0.022) pre-TBI or atypical antidepressants (p=0.005) post-TBI.

Conclusions

This study highlights several risk factors for DPCS which may inform improved PCS patient management and emphasizes the need to develop standardized screening protocols for DPCS.

Prevalent Onset Symptoms of Multiple Sclerosis in Native Hawaiian/Pacific Islander, Asian American and Caucasian Patients in Hawaii

Ana Tavares[1,3], Nina Krupa[1,2], Mariel Gonzales[1,4], Matthew Calumpit[1,5], Julia Jahansooz[1,2], Edward Weldon[1,2], Anson Lee[1,2], Masako Matsunaga[2], Jason Viereck[1], Enrique Carrazana[1,2], Kore Liow[1,2]

[1]Comprehensive MS Center, Hawaii Pacific Neuroscience, Honolulu HI, [2]John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, [3]Chaminade University of Honolulu, [4]University of California, Merced, [5]University of Pennsylvania

Introduction

Multiple sclerosis (MS) is a chronic degenerative disease of the CNS characterized by demyelination and axonal degeneration in the brain and spinal cord, which are caused by an immune-mediated inflammatory process. Onset symptoms of MS differ from one patient to another, making MS a challenging condition to diagnose. This research will improve overall understanding of how MS presents in our local population in Hawaii.

Objective

Examine the baseline characteristics and onset symptoms of Asian American, Native Hawaiian/Pacific Islander (NHPI), and Caucasian patients with MS in Hawaii.

Methods

We conducted a retrospective chart review of patient records using hospital data from Hawaii Pacific Neuroscience (HPN) with a diagnosis of MS from June 1st 2018 to June 26th 2023. Patient charts were reviewed for demographics, onset MS characteristics, and medical comorbidities. Differences across the race/ethnicity groups were examined by analysis of variance or Kruskal-Wallis rank sum test for continuous variables and Chi-square test or Fisher's exact test for categorical variables. A p-value less than 0.05 was considered statistical significance.

Results

NHPI are more likely to experience vision loss ($p=0.025$), comorbid seizures ($p=0.014$) and headaches/migraines ($p=0.021$) compared to White and Asian groups. NHPI represented the youngest group diagnosed with MS (43 years old; $p=0.038$); no significant findings for NHPI at age of diagnosis ($p=0.5$).

Conclusions

There was very little NHPI and Asian representation to effectively compare with Caucasian patients which likely affected the external validity of the study. More research should be done to study how MS affects NHPI patients.

Native Hawaiian and Pacific Islanders Risk Factors for Peripheral Neuropathy: An Ethnographic Study

Jonathan Carino[1,2], Ysabelle Bondocoy[1,3], Audrey Herman[1,4], Courtney Yuen[1,5], Julia Jahansooz[1,2], Edward Weldon[1,2], Anson Lee[1,2], Hyeong Jun Ahn[2], Meliza Roman[2], Jason Chang[1], Enrique Carrazana[1], Jason Viereck[1], Kore Liow[1,2]

[1]Neurmuscular Rehabilation Ctr, Neuromuscular Research Lab, Hawaii Pacific Neuroscience, Honolulu, HI , [2]John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, [3]University of Hawaii - Manoa, [4]University of Michigan , Ann Arbor, M, [5]University of Rochester, Rochester, NY

Introduction

This study explored the prevalence and characteristics of peripheral neuropathy, focusing on Native Hawaiian and Pacific Islander (NHPI) patients. The higher prevalence of diabetes and unique lifestyle factors in NHPI communities may contribute to an increased risk of neuropathy, highlighting the need for targeted research in this underrepresented population.

Methods

A retrospective review of 298 patients from a single-center neurology clinic was conducted. Race was categorized into four groups. Pearson's Chi-squared tests, Fisher's exact tests, and Kruskal-Wallis rank sum test were used to analyze associations between race, age, pre-existing conditions, and neuropathy symptoms.

Results

Findings revealed a higher prevalence of neuropathy testing among NHPI patients under 35. Significant associations were found between race, age, conditions like Type 2 Diabetes, obesity, hypertension, and sensory symptoms of neuropathy. No significant differences were found in motor and autonomic symptoms between NHPI and White groups.

Conclusions

The study emphasizes the need for targeted screening and early management, particularly for younger NHPI patients. Limitations include potential selection bias and broad racial categorization. Insights may lead to more equitable care for at-risk populations, with future research needed to explore underlying mechanisms and develop personalized approaches.

Progression of Parkinson's Disease in Asian and Native Hawaiian and Pacific Islander Patients

Kirra K.E. Borrello[1,2*], Shay Nakahira[1,2*], Paul Fontana[2,4], Darrell Guittu[2,3], Chanel Hunter[2,3], Julia R. Jahansooz[1,2], Edward J. Weldon IV[1,2], Anson Y. Lee[1,2], Meliza Roman[5], Hyeong Jun Ahn[5], Jason Viereck[2], Enrique Carrazana[2], Kore Liow[2]

[1]John A. Burns School of Medicine, U of Hawaii, Honolulu, HI, [2] Parkinson's Dis. Ctr, Hawaii Pacific Neuroscience, Honolulu, HI, [3] University of Hawaii at Manoa, Honolulu, HI, [4] University of Michigan, Ann Arbor, MI, [5] Department of Quantitative Health Science, John A. Burns School of Medicine, University of Hawaii, Honolulu, HI
*Denotes equal contribution

Background

Parkinson's disease (PD) is a neurodegenerative disorder caused by dopaminergic cell death in the basal ganglia of the brain. The incidence of PD increases with age, and patients often experience a wide range of symptoms as the disease progresses. A detailed characterization of PD presentation and progression in Asian and Native Hawaiian and Pacific Islander populations (NHPI) has not been well documented.

Methods

This retrospective chart review analyzed data from Hawaii Pacific Neuroscience between 2017-2022. ICD-10 codes were used to identify PD patients. Recorded data included demographics, date of diagnosis, Parkinson's medications and dosing at time of diagnosis, and current Parkinson's medications and dosing. Severity of PD was measured by medication dosage amount and frequency using the Levodopa Equivalent Daily Dosage (LEDD). Fisher's exact test, Kruskal-Wallis rank sum test, and Spearman's correlation coefficient were used as appropriate.

Results

NHPI are diagnosed with PD at a younger age compared to other groups (p=0.040). Additionally, there is a positive correlation between time from PD diagnosis and LEDD score among Asians (p=0.00023) and NHPI (p=9e-04), indicating that PD severity in Asians and NHPI increased the longer the duration of their PD. This contrasts with Whites, whose LEDD score did not increase significantly, even over a longer disease duration.

Conclusions

NHPI were found to be diagnosed with PD at a younger age and experience more severe progression of PD. Further understanding these ethnicity-specific differences is crucial for physicians to manage patient expectations about the progression of their disease.

The Safety and Efficacy of Dual and Sequential Calcitonin Gene-Related Peptide Therapies for Migraine Treatment

Ho Hyun Lee[1,2], Reyn Yoshioka[1,3], Man Ian Woo[1,4], Lana Liquard[1,5], Julia Jahansooz[1,2], Edward Weldon[1,2], Anson Lee[1,2], Kyle Ishikawa[2], Nicole Little[1], Enrique Carrazana[1], Jason Viereck[1], Kore Liow[1,2]

[1]Headache & Facial Pain Center, Hawaii Pacific Neuroscience, Honolulu HI, [2]John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, [3]University of San Diego, San Diego, CA, [4]University of Hawaii at Mānoa, Honolulu, HI, [5]McGill University, Montreal, QC

Introduction

Although singular regimens of calcitonin gene-related peptides (CGRP) are shown to be effective in treating migraines, a considerable number of patients continue to experience suboptimal outcomes. Adding a second CGRP inhibitor could provide increased relief; however, limited research is available to support this practice.

Objective

To assess the safety and efficacy of dual and sequential CGRP therapies.

Methods

This retrospective chart review analyzed 88 patients diagnosed with episodic or chronic migraine at Hawai'i Headache & Facial Pain Center. Between May 2018 and July 2023, 67 patients received two CGRP medications simultaneously (dual group), and 21 patients transitioned to a second CGRP after discontinuing the first due to adverse events or inefficiency (sequential group). Variables, including age of onset, current age, sex, race, ethnicity, baseline symptoms, and adverse events, were collected. Pre-treatment monthly headache frequency and severity were compared to post-treatment results evaluated for 1 to 8 months.

Results

In the dual-CGRP group, 51% of patients experienced a 14% average reduction in headache severity ($p = 4.4 \times 10^{-6}$), while 57% showed an average reduction of 5 days in headache frequency ($p = 1.4 \times 10^{-6}$). Among the sequential CGRP group, 57% of patients had a 10.7% average reduction in headache severity (p = 0.0033), but the change in headache frequency was not significant. No significant adverse events were reported from both groups.

Conclusions

These findings support the benefits related to individual CGRP medication regimens and suggest that dual-CGRP therapies may further improve treatment outcomes.

Identifying Racial Differences in Clinical Presentation of Obstructive Sleep Apnea in Native Hawaiian and Pacific Islander Patients

Cierra Nakamura, BS[1,2], Tamlyn Sasaki, BS[1,2], Timothy Ignacio[1,3], Shalita Areeyaphan[1,4], Edward J. Weldon, BS[1,2], Julia R. Jahansooz, MS[1,2], Anson Y. Lee, BS, BA[1,2], Meliza Roman[5], Hyeong Jun Ahn, PhD[5], Christopher Larrinaga, APRN-BC[1], Enrique Carrazana, MD[1], Jason Viereck, MD, PhD[1], Kore K. Liow, MD[1]

[1]Sleep and Insomnia Center, Hawaii Pacific Neuroscience, Honolulu HI, [2]John A. Burns School of Medicine, University of Hawaii, Honolulu, HI, [3]Bowdoin College, [4]University of California, Irvine, [5]JABSOM Biostatistics Core Facility, Department of Quantitative Health Sciences, University of Hawaii John A. Burns School of Medicine

Introduction

Obstructive sleep apnea (OSA) is the most common sleep-related breathing disorder in the United States. Disparities in the severity of OSA have been identified in other minority racial groups, but there has been little study of OSA in the Native Hawaiian and Pacific Islander (NHPI) population.

Objective

To compare the clinical presentation of OSA between NHPIs and Whites.

Methods

A retrospective chart review was conducted on all patients diagnosed with OSA via polysomnography between 1/1/13 to 6/1/23 at a single outpatient sleep medicine center. Pearson's Chi-squared and Fisher's exact tests were used to identify associations between apnea-hypopnea index (AHI) severity and clinical characteristics such as BMI. Logistic regression models were utilized to estimate associations between AHI severity and race.

Results

Overall, 91 NHPI and 129 White patients were included for analysis. In NHPIs, 76.2% were obese, compared to 48.8% of Whites ($p<0.001$). Among NHPIs, 74.6% had moderate or severe OSA based on AHI scores, compared to 47.3% of Whites ($p<0.001$). The odds of NHPIs being diagnosed with moderate or severe OSA were two times greater than Whites (adjusted odds ratio = 2.84 [95% CI: 1.20, 7.03]).

Conclusion

To our knowledge, this is the first study to compare the severity of OSA in NHPIs with another racial group. With NHPIs 2.84 times more likely to be diagnosed with moderate or severe OSA than Whites, there is a need for further research on interventions and prevention.

2023 Hawaii Pacific Neuroscience
Summer Internship Program

Project Leaders:
Julia Jahansooz, MS3, John A. Burns School of Medicine
Edward Weldon IV, MS3, John A. Burns School of Medicine
Anson Lee, MS3, John A. Burns School of Medicine

BRITL Scholar Group Leaders:
Cierra Nakamura, MS2, John A. Burns School of Medicine
Bradon Hong, MS2, John A. Burns School of Medicine
Jonathan Carino, MS2, John A. Burns School of Medicine
Shay Nakahira, MS2, John A. Burns School of Medicine
Ryan Nakamura, MS2, John A. Burns School of Medicine
Michelle Trinh, MS2, John A. Burns School of Medicine
Kirra Borrello, MS2, John A. Burns School of Medicine
D-Dre Wright, MS2, John A. Burns School of Medicine
Ho Hyun Lee, MS2, John A. Burns School of Medicine
Elizabeth Rooks, MS2, John A. Burns School of Medicine
April Hamachi, MS2, John A. Burns School of Medicine
Anita Cheung, MS2, John A. Burns School of Medicine
Ana Tavares, Chaminade University

SIP Student Leaders:
Nina Krupa, MS2, John A. Burns School of Medicine
Tamlyn Sasaki, MS2, John A. Burns School of Medicine
Eli Snyder, MS2, John A. Burns School of Medicine
Reyn Yoshioka, University of San Diego

Elise Wong, Punahou School
Chancen Law, Kamehameha Schools Kapalama
Darrell Matthew Allen Guittu, University of Hawaiʻi at Mānoa
Tyson Wu, University of Hawaiʻi at Mānoa
Chanel Hunter, University of Hawaiʻi at Mānoa
Johanna Mandl, Medical University of Innsbruck
Shalita Areeyaphan, University of California, Irvine
Timothy Ignacio, Bowdoin College
Matthew Calumpit, Drexel University
Isabella Grace Kostecki, Yale University
Megan Baldemor, Santa Clara University
Zoe Mia, Exeter University
Michael Garvin, University of California, Berkeley
Connor Arthur Weldon, University of California, Santa Cruz
Yuewen Ding, University of Hawaiʻi at Mānoa
Courtney Kalanoweoikapoliokalaʻi Yuen, University of Rochester
Audrey Herman, University of Michigan
Ysabelle Bondocoy, University of Hawaiʻi at Mānoa
Kaylin Bersamin, University of Hawaiʻi at Mānoa
Miriya Ogawa, Brigham Young University, UT
Matthew Kiʻai O Ke Kukuʻi Nishimura, Pitzer College
Mariel Grace Gonzales, University of California, Merced
Tea Stephens, University of Hawaiʻi at Mānoa
Sarah Song, Pomona College
Man Ian Woo, University of Hawaiʻi at Mānoa
Lana Liquard, McGill University
Natalie Gibson, University of California, Los Angeles
Shari Ho, University of Notre Dame
Kaylie Kaneshiro, Tufts University
Paul Fontana, University of Michigan
Kai Justin Miyaki, Boston University

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BRITL Clinical & Research Faculty Mentors

Kore Liow, MD	Neurology, Neuroscience Chair HPN
Jason Viereck, MD, PhD	Neurology, Academic Director
Enrique Carrazana, MD	Neurology, Publication Director
Michael Slattery, MD	Neurology
Eliza Hagen, MD	Neurology
Janette Abramowitz, MD	Neurology
Chris Larrinaga, APRN	Neurology
L. Nicole Little, PA-C, PhD	Neurology
Nicole Evans, PA-C	Neurology
Jason Chang, MD	Neurorehabilitation, Physical Medicine & Rehabilitation
David Baskin, MD	Neurosurgery, Professor and Residency Program Director, Cornell University
Tom Noh, MD	Neurosurgery, Assistant Professor
Ricardo Burgos, MD	Neuroradiology
Barlas Benkli, MD	Neurology
Paul Smith, MD	Brain Health, Lifestyle Medicine & Wellness, Preventive Medicine
Nicholas Anderson, MD	Sleep Medicine
Lawrence Burgess, MD	Director of Student Affairs, JABSOM
Russell Woo, MD	Associate Chair for Research
John Chen, PhD	Biostatistics, Chair, Dept. Quantitative Health
Chathura Siriwardhana, PhD	Biostatistics, Dept. Quantitative Health, JABSOM

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