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Relationship between cytokines and dopamine transporter availability in patients with carbon monoxide poisoning

1 Wen-Chi Hsieh, 2 Huang Wen-sheng, 1 Yuan Hwa Chou
1 Departments of Psychiatry, Taipei Veterans General Hospital, Taipei, Taiwan 2 Departments of Nuclear Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

Abstract

Previous studies have demonstrated that dopamine transporter (DAT) decreased in patients with carbon monoxide poisoning (COP). However, the underlying mechanism is unclear. COP may cause neuropsychiatric symptoms, which result from a demyelinating leukoencephalopathy caused by the injury or destruction of myelin and/or oligodendroglia in the cerebral white matter. The aim of this study was to examine the relationship between DAT and cytokines in patient with COP.

Thirty-three patients with COP and 33 age- sex-matched healthy controls (HCs) were recruited. Each subject underwent single photon emission computed tomography with [99mTc] TRODAT-1 to measure DAT availability. Cytokines included the pro-inflammatory cytokine tumor necrosis factor-α (TNF-α) and the anti-inflammatory cytokine interleukin-10 (IL-10), which was measured using an enzyme-linked immunosorbent assay. The total striatal DAT was significantly lower in COP than HCs (3.01±0.73 vs. 2.41±0.62, t=3.587, p=0.001). In a sub-analysis showed that both sides of DAT were decreased. TNF-α was significantly lower in COP than HCs (4.63±6.79 vs. 1.08±0.36, t=2.714, p=0.012), whereas IL-10 was not different in both groups (4.31±3.31 vs. 4.93±1.10, t=1.00, p=0.321). Linear regression analysis showed that IL-10 was well correlated with the decreased DAT in HCs but not in COP (HCs: β=0.72, p=0.000; COP: β=0.22, p=0.247).

Our results implicate that the disruption of association of DAT and IL-10, which was found in HCs, might be an important factor underpinning the decreased DAT.

PS269

Epidemiology of Completed Suicide in Different Blood Alcohol Concentration: a Nationwide Autopsy-based Study

Jae Won Lee, Yong Min Ahn, Sung Joon Cho, C. Hyung Keun Park, Seong Ho Yoo
Seoul National University Hospital, Republic of Korea

Abstract

Aims: The aim of the study was to assess the prevalence and the risk factor associated with the different blood alcohol concentration among suicide decedents.

Methods: Data from a nationwide autopsy between May 2014 and November 2014 were collected in Korea. A total of 717 suicide decedents were classified into three groups as blood alcohol concentration at the time of the suicide attempt: the no alcohol (NA) group (BAC<0.01 %); no intoxication (NI) group (0.01% ≤ BAC<0.08 %); intoxication (I) group (BAC≥0.08 %) and were analyzed risk factors for suicide among the three groups using multinomial logistic regression analyses.

Results: The results showed that suicide decedents were more likely to attempt suicide in the I group if they had made previous suicide attempt (OR=2.090, p=0.004) or didn’t have a...
medical illness (OR=1.633, p=0.034). The decedents who were male (OR=2.635, p=0.001) and had suicide triggers by financial problems (OR=2.531, p=0.004) in the NI group appears significant results compared with the decedents in the NA group.

Conclusions: The suicide in the intoxicated state was associated with previous suicide attempt, while medical illness was a protective factor. The male and financial problems were the risk factors in the suicide who consumed a small amount of alcohol. It is necessary to recognize and discuss with high risk patients about the role of acute alcohol use in suicidal behavior.

Keywords: suicide, alcohol intoxication, autopsy, blood alcohol concentration

PS270
The neural correlates of suicidal ideation in healthy subjects
Wonja Choi1, Sang Min Lee2,3, Kuk-In Jang1,3, Miseon Shim4, Seung-Huan Lee1, Jeong-Ho Chae1,2,3, *1Institute of Biomedical Industry, 2Department of Psychiatry, 3Department of Biomedicine and Health Sciences, College of Medicine, The Catholic University of Korea, Seoul, South Korea, *Clinical Emotion and Cognition Research Laboratory

Abstract
Introduction: There have been multiple explorations for the finding of biological markers of suicide. Some studies indicated the association of neurophysiological markers with suicidal ideation (SI). In previous studies, antidepressant treatment-emergent SI was associated with theta value in midline right frontal region, and pretreatment assessment of frontal quantitative EEG (QEEG) may be associated with worsening SI during antidepressant treatment. However, there is limited understanding for the alteration of EEG theta power as biological marker for SI, not in the course of antidepressant treatment. We examined frontal theta power involvement with SI in healthy subjects.

Method: Resting QEEG data were recorded from 90 healthy subjects. Subjects who had an experience of suicide attempt, current and/or lifetime Axis I and II psychiatric disorders were excluded. According to Scale for suicidal ideation (SSI), the subjects were divided into two groups: high SSI group (n = 33) and low SSI group (n = 57). Individual frontal electrodes (Fp1, Fp2, F7, F3, Fz, F4, F8) and central midline electrodes (FCz, Cz) were examined with absolute power in theta band. Clinical state was assessed using Hospital Anxiety and Depression.

Result: We found that theta power in all channels positively correlated with SSI. High SSI group showed higher theta power at Fz, F4, FCz, Cz than low SSI group. No significant differences were found at the other electrodes. Theta power in fronto-central region was significantly increased in high SSI (t = -3.173, p = 0.0029) compared to low SSI.

Conclusion: QEEG theta power at midline locations could be associated with SI in healthy subjects. Theta activity in fronto-central region may be more reliable region to predict SI than midline right and left frontal region. Further QEEG studies are needed to assess potential of QEEG as biomarker for SI in clinical monitoring.

PS271
Characteristics of Adolescents Who Visit the Emergency Department Following Suicide Attempts
Yeon-Sik Bang, Seonho Min, Joung-Sook Ahn, Ki-Chang Park, Min-Hyuk Kim
Department of Psychiatry, Yonsei University Wonju College of Medicine, Wonju, Republic of Korea

Objective: This aim of the present study was to determine the demographic and clinical characteristic of suicide attempts in adolescents compared than those of adults.

Methods: The subjects were suicide attempters visited in emergency department at a university hospital. We prospectively collected data on socio-demographic variables, clinical and suicide-related characteristics. Comparisons were made on variables between adolescents (less than 18 year, n=113) and adult suicide attempters (n=1274).

Results: Suicide attempters in adolescents were more often women than in adults (79.6% vs. 56.3%, p<0.001). Adolescent used more non-lethal method such as poisoning of over the counter drugs and wrist cutting, while adult used more lethal method such as poisoning of pesticide or carbon monoxide (p<0.001). However, jumping from high place was more frequently used in adolescents (5% vs. 1.2%, p<0.001). With regard to motivation of suicide attempt, adolescent had more interpersonal problems (p<0.001), less financial and physical problems (p<0.001 and p=0.001). In adolescents, intention was less serious (p=0.003) and help seeking behavior following suicide attempts was more common compared than in adults (p=0.004)

Conclusion: Our findings suggest that suicide attempt in adolescents may be impulsive and help seeking behavior resulted from maladaptive or premature coping strategies managing interpersonal problems. Programs for managing interpersonal problems might be effective for prevention of suicide attempts in adolescent.

PS272
The Influence of Alcohol in Diurnal Variation of Deliberate Self-Poisoning
Chitty K.M., 1 Briggs N.E, 1 Buckley N.A 1
1Translational Australian Clinical Toxicology research group, Discipline of Pharmacology, University of Sydney

Objective: Alcohol is implicated in up to a third of suicides and even greater number of suicide attempts. There is evidence that individuals who engage in alcohol related (Alc+) and non-alcohol related (Alc-) suicidal behaviour represent clinically distinct groups who require alternate suicide prevention strategies, though limited studies have investigated the underlying neurobiology which may inform targeted treatment options. As both alcohol use and suicidal behaviour independently demonstrate significant circadian variation there is the possibility that alcohol may be linked to suicidal behaviour via its interaction with the biological clock. The objective of this study was to investigate the proportion of diurnal variation in suicidal behaviour in the form of deliberate self-poisoning that may be attributed to co-ingestion of alcohol.

Methods: This study is a retrospective analysis of consecutive hospital presentations following deliberate self-poisoning from 1987 and 2013. Poisonings were split up into Alc+ versus Alc-. Records from the Australian Bureau of Meteorology were used to gain information on temperature and sunlight hours for the date of each poisoning. Data on the group as a whole, by sex and by alcohol, will be analysed by cosinor analysis. Temperature and sunlight variables will be built into the model to adjust for seasonality.

Results: 15084 deliberate self-poisoning admissions, for 9194 patients (3832 males and 5362 females) will be included. 5012 (33.2%) of these admissions involve co-ingestion of alcohol. Preliminary results suggest diurnal patterns of deliberate self-poisoning differ between Alc+ and Alc-. Data analysis is ongoing.