but the result was inconsistent. This study was to investigate the analysis of HRV in PTSD patients according to postural change with head-up tilt testing.

**Methods:** Seventy-one PTSD patients and seventy normal controls participated. The diagnosis of PTSD was established by the structured clinical interview for diagnostic and statistical manual of mental disorders (SCID)-IV. The postrumatic stress disorder checklist (PCL-S), Beck depression inventory (BDI), Beck anxiety inventory (BAI), psychosocial well-being index short form (PWI-SF) and Pittsburgh sleep quality index (PSQI) were applied to all study subjects. The HR measurement, including heart rate (HR), standard deviation of the NN interval (SDNN), the square root of the mean squared differences of successive NN intervals (RMSSD), physical stress index (PSI), log total power (LNT), log low frequency (LNLF), log high frequency (LNHF) and low-frequency/high-frequency ratio (LF/HF ratio), were performed at supine position for the first five minutes, then underwent head-up tilt testing for the last five minutes at an erect position.

**Results:** The PTSD group showed a significantly higher score than the nonPTSD group in PCL-S (t=11.625, p=0.001), BDI (t=5.543, p=0.020) and BAI (t=9.500, p=0.002). In the PTSD group, SDNN (t=3.563, p=0.039), RMSSD (t=3.514, p=0.011) and LNLF (t=2.902, p<0.001) were significantly lower, but PSI (t=3.818, p<0.001) and LF/HF ratio (t=–1.730, p=0.041) were significantly higher than in the nonPTSD group. After tilting, higher PSI (t=–2.570, p<0.001), lower LNLF (t=1.927, p=0.011) and lower LNHF (t=2.403, p=0.025) were found in the PTSD group, compared to the nonPTSD group. SDNN (t=–0.209, p=0.013), RMSSD (t=–0.211, p=0.012) and LNHF (t=–0.168, p=0.046) were correlated with PCLS in only supine position.

**Conclusion:** PTSD patients showed reduced heart rate variability compared to nonPTSD patients, associating PTSD with involvement of autonomic nerve system activity. Although head-up tilt testing might be not more available than supine position testing for measurement of HRV with PTSD patients in this study, HRV might be a usable physiological parameter of assessing and monitoring of autonomic function in PTSD patients.

**PS262**

Frontal electroencephalographic findings related with psychological symptoms of complicated bereaved familial members of Sewol ferry disaster

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Abstract

**Purpose:** On April 16th 2014, the Sewol ferry sank off South Korea’s southern coast, killing 304 people. Two hundred fifty among the victims were sophomore of a high school on a school trip. This disaster caused over hundreds bereaved families suddenly. Until today, they have been suffered from the death of their children and most of them showed problems related with complicated grief. This study was the first biological investigation for the familial members of the victims of Sewol ferry disaster. The purpose of this study was to investigate whether the neurophysiological change of brain was associated with clinical rating scales in families of the Sewol ferry victims.

**Methods:** Subjects were 86 family members of the Sewol ferry victims (32 men and 54 women). The mean age was 44.88 (8.51) years (range: 19–60 years). All subjects were recruited through advertisement of Ansan trauma center. The two-channel EEG device was used to measure of cortical activity in frontal lobe during 5 minutes in resting state with eye-closed condition.

**Results:** Frontal beta relative power was decreased in the high risk insomnia group (n=22) compared to the normal sleep group (n=18). There was significant inverse association between frontal beta relative power and insomnia symptom in all subjects (n=86). The mean insomnia scores was higher in fathers (n=27) than mothers (n=38).

**Conclusions:** Decrease of beta power implies the lack of attention and decreased alertness. The study suggests that decreased frontal beta activity is associated with insomnia symptom severity of bereaved subjects.

**PS263**

Association between Heart Rate Variability (HRV) and posttraumatic stress symptoms in female victims of sexual violence

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Abstract

Decreased HRV can occur with a variety of physical and psychological disorders including posttraumatic stress disorder (PTSD). However, little is known about the associations between the sexual trauma and HRV measures. The purpose of this present study was to investigate the HRV characteristics associated with PTSD symptoms in victims of sexual trauma.

Data were collected from female victims who had been sexually assaulted (n = 23, mean age = 28.2 years). Heart rate variability was measured in resting state. Victims also completed self-report questionnaires including the Korean version of the Impact of Event Scale-Revised (IES-R-K). Chi-square was used for frequency of subject characteristics; independent t-test compared means of HRV measures between victims group and control group (n = 27, mean age = 32.6 years); Pearson correlation was used for association between HRV measures and self-report scores.

The results were as follows. First, significantly higher log-transformed very low frequency (VLF) (p < .0001), log-transformed low frequency (LF) (p < .0001), and log-transformed high frequency (HF) (p < .0001) were found in victims group compared to control group. Second, hyperarousal symptom of PTSD symptoms was negatively associated with log-transformed square root of the mean squared differences of successive normal-to-normal intervals (RMSSD) (t = –0.461, p = .03) and log-transformed standard deviation of normal-to-normal intervals (SDNN) (t = –0.453, p = .03).

This cross-sectional analysis supports associations between PTSD symptoms, especially hyperarousal, in female victims of sexual violence and reduced HRV measures.

**PS264**

Children and Adolescent Exposed to Disaster: Delphi Technique Study for the Development of Post-traumatic Assessment and Intervention

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