

nights of wrist actigraphy. The mean age was 54.3 years (range 34 to 83).

To reveal factors associated with insulin resistance and age, statistically significant variables in univariate regression analyses were entered into multivariate regression analyses. Insulin resistance was estimated by homeostasis model assessment of insulin resistance (HOMA-IR). In women, higher sleep onset latency (SOL) was associated with higher insulin resistance after adjustment for possible confounding factors including age, smoking, obesity, diabetes, depression, and inflammatory cytokines. Also, higher SOL was associated with higher interleukin (IL)-6 and C-reactive protein (CRP) levels. After adjusting for covariates, no sleep measures were associated with insulin resistance, IL-6, or CRP in men. The mediation analysis showed that higher SOL is associated with insulin resistance both directly and indirectly.

Difficulty initiating sleep contributes to insulin resistance development, especially in middle-aged women. A combination of inflammatory pathway activation and physiological hyperarousal may be one of the key underlying mechanisms.

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Prevalence of Sleep Problems and Its Impact on Anxiety, Depression and Quality of Life in Korean Fire Fighters

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Abstract

Background: Professional fire fighter is a strenuous and unique occupation due to the high levels of stress and risk involved as well as the low control nature of the job. Anxiety and depression are prevalent in the professional fire fighters' population and constitute a dominant area of investigation. Limited attention have been given to impact of sleep problems on the anxiety, depression and quality of life in fire fighters. The aim of this study is to evaluate prevalence of sleep problems and its impact on anxiety, depression and quality of life in Korean fire fighters.

Methods: Using simple sampling method in a cross-section study in Jeonbuk province of Korea, sleep problems, anxiety, depression and quality of life of 1669 professional fire fighters were measured with Patients Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder 7 item (GAD-7) and brief version of World Health Organization Quality of Life assessment scale (WHOQoL-Brief). Sleep problem was measured with 3 item of PHQ-9, the definition of sleep problems group was not able to initiate sleep or maintaining sleep. We measured cross-sectional Odds ratios for sleep problems group on depression and anxiety by logistic regression analysis.

Results: The prevalence of sleep problem of Korean fire fighters was 51.2%. Korean fire fighters with sleep problems showed not only more anxiety ($p < 0.001$) and depression ($p < 0.001$) but also lower quality of life ($p < 0.001$). The sleep problems group was more likely to suffer from depression (OR=47.537, 95% CI: 33.669- 64.323) and anxiety (OR=9.822, 95% CI: 7.529-12.813). The severity of sleep problems in Korean fire fighters was positive correlated with depression and anxiety.

Conclusion: These results show that higher prevalence of sleep problems in Korean fire fighters and Korean fire fighters with sleep problems have more depression and anxiety, and less

quality of life than fire fighters with-out sleep problems. Sleep problems are important risk factor on the depression and anxiety in Korean fire fighters. Early detect of sleep problems of fire fighters will be needed to manage of depression and anxiety'.

Key Words: Insomnia, Prevalence, Anxiety, Depression, QoL, Fire fighter.

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Check an efficiency About the Suvorexant with Combining Other Sleep Promoting Medicines

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Abstract

Background: Suvorexant was launched on November 26, 2014 in Japan. This is marketed as the world's first orexin receptor antagonist to treat insomnia. Orexins is synthesized by neurons in hypothalamus, and promote arousal by acting on the orexin receptors in the arousal center.

Suvorexant promotes sleep by blocking orexin neuropeptides from binding to their receptors. So far, the effects and the side effects have been reported for patients administrated suvorexant alone. There are no reports of effects and side effects of suvorexant combining to other hypnotics. However, suvorexant is often used combining with other sleep promoting medicines such as benzodiazepines and major tranquilizers in psychiatric hospitals. We investigated 116 combined use cases from medical records in Showa University Karasuyama Hospital, Tokyo, Japan, to check an usefulness and a safety about the suvorexant when combining with other sleep promoting medicines. We also investigated the characteristics of patients with insufficient effect of orexin.

Result: The diagnoses of patients who received a combination of suvorexant and other sleep promoting medicines in our hospital from December 2014 to September 2015 were schizophrenia (13%), mood disorder (21%). addiction include alcoholic (8.6%).

62 subjects (54%) continued to take suvorexant over 3 months. 20 subjects(17%) and 23subjects (20%) stop taking orexin due to the side effect and the insufficient effect respectively. 40 subjects (35%) had better effect than other medicines.

Conclusion: The result suggested that combined use of suvorexant and other psychotropic medicine were effective and safe for patients with schizophrenia, mood disorder and alcoholic who took benzodiazepines or major tranquilizers.

On the other hand, the suvorexant was ineffective for a part of patients. A further investigation will be needed for the ineffective cases.

The first limitation of this study was that this study investigated the effect and the side effect of suvorexant only by medical records so that we did not notice symptoms without description on the records. The second limitation was that we could not concern about placebo effect

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Nicotine evokes convulsive seizures by activating amygdala neurons partly through $\alpha 7$ nACh receptors

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Abstract

Nicotinic acetylcholine (nACh) receptors evoke convulsive seizures both in nicotine intoxication and human epileptic disorders (e.g., autosomal dominant nocturnal frontal lobe epilepsy [ADNFLE]). Here, we performed behavioral and immunohistochemical studies to elucidate the mechanisms of nicotine-induced seizures. Nicotine at high doses (4mg/kg, i.p.) evoked convulsive seizures, which was antagonized by non-selective (mecamylamine) and $\alpha 7$ -selective (methyllycaconitine) nACh receptor antagonists. Nicotine-induced seizures were accompanied by significant and region-specific increments in Fos protein expression, a biological marker of neural excitation, in the piriform cortex (Pir), amygdala (AMG), medial habenular nucleus (MHb), thalamus (Th) and solitary tract, suggesting that these regions are potential causative sites for nicotine-induced seizures. Electrical lesioning (1 mA for 15 sec per side) of AMG significantly suppressed nicotine-induced seizures, whereas neither lesioning of the Pir, MHb nor Th affected the nicotine seizure induction. Furthermore, bilateral microinjection of nicotine (100 or 300 $\mu\text{g}/\mu\text{L}/\text{side}$) into the AMG effectively evoked convulsive seizure in a dose-dependent manner. The present results strongly suggest that acute nicotine treatment evokes convulsive seizures by activating amygdala neurons, mainly through $\alpha 7$ nACh receptors.

PT668**Development of behavioral dysfunction in mice cohabit with brain disordered cage-mate**

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Abstract

People who live with patients with brain disorders are considered as a potential risk group leading to mental disorder. They suffer from a caregiving burden and distressing situation. Consequently, the longer caregiving, the worse their quality of life. In spite of their devoted effort, caregiver's deteriorated state has been overlooked. Here, we attempted to set a long-term housing model reflecting the particular situation. Mice were housed with a conspecific temporal lobe epilepsy model mouse or inescapable foot-shock stress mouse models. After long-term housing, cage-mate was performed behavior tests and electrophysiological investigation. The conspecific cage-mate showed increased anxiety and depression-like behavior. Furthermore, they showed significantly reduced social interaction with juvenile and anesthetized mouse. Behavioral dysfunction of cage-mate sustained four weeks after removing the mouse model. Interestingly, fluoxetine, serotonin selective reuptake inhibitor, hardly restored their behaviors. Our results suggest that a dweller whose cage-mate having brain disorder could develop abnormal behavior including reduced social and increased depression-like behavior. These findings may help to understand psychosocial or psychiatric symptoms frequently observed in at-risk nursing people or caregivers.

PT669**Investigation of the antiinflammatory and gastric side effects of pregabalin**

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Abstract

Objectives: Nonsteroidal antiinflammatory drugs are used for the relief of inflammation, however gastrointestinal side effects restrict their clinical use. We aimed to investigate the antiinflammatory effects of pregabalin, a drug used in epilepsy, anxiety, neuropathic pain treatment, on carrageenan-induced paw edema and to evaluate its gastric side effects in Wistar rats.

Methods: Pregabalin 30,50,100mg/kg; indomethacin 5mg/kg(reference drug), vehicle(saline) were injected intraperitoneally before 100 μl of 1% carrageenan administration into the right hind paws of the rats. Paw thickness was measured by a gauge calipers(Vernier Calipers) before (0th hour) and in every hour during 6 hours after induction of inflammation. Paw thickness of treated groups were compared with control group with One-way ANOVA. Also paw thickness in 0th and 6th hours were compared within each group with two-way ANOVA. Pregabalin was administered orally for 10 days to evaluate gastric side effect. At the end of 10 day treatment, rats were sacrificed, gastric tissues were removed out, mucus secretion was determined spectrophotometrically, ulcer index was scored from score 0:(no petechia) to score 3:(petechia>5mm).

Results: There was no significant difference between 0th and 6th hours in paw thickness of all groups, except carrageenan group. Carrageenan significantly increased paw thickness in 6th hour compared to 0th hour. All doses of pregabalin and indomethacin significantly reduced paw thickness in 6th hour compared to carrageenan group. Pregabalin 50 and 100mg/kg similar to indomethacin significantly reduced mucus secretion and increased ulcer index compared to control while pregabalin 30mg/kg did not.

Conclusion: All doses of pregabalin exerted antiinflammatory effects comparable to indomethacin, 50 and 100mg/kg pregabalin showed gastric side effects as reduced mucus secretion and ulcer formation similar to indomethacin and 30mg/kg pregabalin may be reasonable dose for antiinflammatory effect without showing gastric side effects.

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Key words: pregabalin, carrageenan-induced paw edema, gastric mucus, ulcer index

PT670**Antiinflammatory and gastric side effect of gabapentin**

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Abstract

Objectives: Nonsteroidal anti-inflammatory drugs are effective in the treatment of inflammation. However, they have been associated with gastrointestinal complications such as gastric ulcer formation. Gabapentin is a drug that is used in the treatment of epilepsy, anxiety, depression and neuropathic pain. We aimed to study the antiinflammatory effects of gabapentin on carrageenan-induced paw edema and to determine its gastric side effects on gastric mucus secretion in Wistar rats.