



11th World Congress on

Alzheimer's Disease & Dementia

March 20-21, 2019 Sydney, Australia

Posters

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Novel pathophysiological roles of α -synuclein (SNCA) in age-related vascular endothelial dysfunction: Possible mechanistic link to the symptoms of dementia with Lewy bodies**Yoichi Takami, Yasushi Takeya, Shuko Takeda, Akane Oyama, Tsuneo Nakajima, Koichi Yamamoto, Ryuichi Morishita, Yasufumi Kaneda, Hironori Nakagami and Hiromi Rakugi**

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Although SNCA is one of the well-known pathological molecules of Dementia with Lewy Bodies (DLB) in neurons, its physiological roles remain to be identified. We found SNCA was expressed in and secreted from endothelial cells by functional screening for anti-inflammatory molecules and detectable in circulating blood. Intriguingly, the human population study revealed serum SNCA levels decreased with aging and displayed inverse correlation with blood pressure and insulin sensitivity, which indicated protective properties of circulating SNCA on vascular endothelial function. Furthermore, we also found SNCA knockout mice displayed phenotypes of metabolic syndrome such as hypertension, impaired glucose metabolism and dyslipidemia. Based on these preliminary data, we sought to elucidate the physiological functions of endogenous and exogenous SNCA for vascular Endothelial Cells (ECs). Exogenous treatment with recombinant SNCA (rSNCA) promoted eNOS activation and nitric oxide production via Gab1/PI3K/Akt pathway in ECs, followed by cGMP production in co-cultured vascular smooth muscle cells. Treatment with rSNCA also suppressed TNF- α induced NF- κ B activation in ECs. As to endogenous SNCA, replicative senescence showed attenuation of SNCA expression in ECs and siRNA-mediated silencing of SNCA induced eNOS inactivation and cell senescence assessed by β -gal activity along with decreased Sirt1 expression and increased p53 expression. SNCA overexpression displayed NF- κ B inactivation in ECs. In *ex vivo* study, aortas from SNCA knockout mice showed impairment of acetylcholine-induced relaxation possibly due to eNOS dysfunction. In *in vivo* study utilizing atherosclerosis model of SNCA/ApoE double-knockout mice showed exaggerated expression of inflammatory genes which play important roles in atherogenesis. In conclusion, these results indicate exogenous and endogenous SNCA in ECs might physiologically maintain cerebral vascular integrity. Aging or aggregation-related loss-of-function of SNCA in ECs might be partially correlated with clinical features of DLB, especially fluctuating cognitive function and marked sensitivity of antipsychotic which could be modified by cerebral blood flow and vascular permeability.

Biography

Yoichi Takami is currently working at Osaka University, Japan. He has published numerous research papers and articles in reputed journals and has various other achievements in the related studies. He has extended his valuable service towards the scientific community with his extensive research work.

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Cerebrovascular hemodynamics and vascular dementia**Yuhong Man, Gang Yao and Ping Xu**

The Second Hospital of Jilin University, China

Statement of the Problem: Recent evidence suggests that vascular risk factors and neurovascular dysfunction may be related to dementia. This study was performed to evaluate the association between hemodynamic markers and the cognitive impairment in patients with Vascular Dementia (VaD).

Method: A total of 65 VD participants were included. Using Transcranial Doppler (TCD) ultrasonography, Cerebrovascular Reactivity (CVR) was evaluated with the Mean blood Flow Velocity (MFV), Pulsatility Index (PI) and Resistance Index (RI) of the middle cerebral artery. Mini-Mental State Examination (MMSE) and magnetic resonance imaging of the brain was performed to evaluate cognitive impairment and cerebral small vessel disease. All patients were interviewed for 12 follow-up months.

Findings: Adjusting for covariates such as age, education, vascular risks, higher PI were observed in patients. The changes of MMSE score over 12 months were closely related to higher RI and PI values. Multivariate logistic regression showed that abnormal baseline PI value could predict a conversion from mild to severe of VaD ($P < 0.001$).

Conclusion: Our findings may be suggestive of an underlying relationship between hemodynamic changes and VaD. There is a close association between hemodynamic markers represented by TCD and cognitive decline, supporting the clinical value of hemodynamic markers in predicting VaD patients from mild to severe.

Biography

Yuhong Man has her expertise in headache, cerebral disease and sleep disorders. Her research is in the basics and clinical of the acute and chronic headache, such as migraine and tension type headache. She also has 14 years' experience in neurology about cerebral disease and sleep disorders, teaching and administration both in hospital and education institutions in Jilin University.

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Adverse drug events in the elderly in hospital were associated with comprehensive geriatric assessment score**Akane Oyama, Yasushi Takeya, Tsuneo Nakajima, Miyuki Takeya, Shuko Takada, Yoichi Takami, Ken Sugimoto, Koichi Yamamoto and Hiromi Rakugi**
Osaka University, Japan

It has known that the number of medications is associated with increasing risk of Adverse Drug Events (ADEs). In elderly people, poly pharmacy has also been associated with adverse clinical outcomes, such as disability and cognitive impairment, falls and fractures, malnutrition, hospitalization, mortality and increasing medical costs. Prescribing drugs to elderly patients should pay special caution because of age related change in metabolism, excretion, metabolism and distribution. Independent risk factors for ADEs have been known more than 5 or 6 medication, age, comorbidity and specific drugs (antipsychotics, anti-infective medication and anticoagulant and antiplatelet drugs etc.). Large majority of ADEs are preventable. The basic goal of our study was to identify the kinds of patients who more susceptible to ADEs for efficiently reducing ADEs. Our study was a retrospective study for seeking another risk factors related with ADEs in elderly inpatients from 2014 to 2017 in our department. We suspected that physical and cognitive impairment is also the risk factor of ADEs. Physical frailty was assessed by checking by hand strength, walking speed, physical activity, exhaustion and weight loss for two or three months and cognitive function was checked by MMSE. The number of ADEs was 28% in our hospitalized patients. Risk factors of ADE in previous studies were also risk factor of ADEs in our study. Major risk factor of ADEs identified in our study were comorbidity, duration of hospitalization and total score of CGA7 but MMSE score and physical frailty not related with AEDs. To reduce preventable ADEs in elderly inpatients, we may pay more attention to comorbidity and comprehensive geriatric assessment.

Biography

Akane Oyama has specialty in geriatric medicine especially dementia and poly pharmacy. He is a Member of the Japanese Society of Internal Medicine and Japan Society for Dementia Research.

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White matter hyperintensities and vascular dementia**Yuhong Man, Gang Yao and Jingjing Qi**
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Statement of the Problem: Recent studies show that WMHs is a known risk factor for cerebrovascular events such as age, hypertension and diabetes. The aim of this study was to define the severity of White Matter Hyperintensities (WMHs) and vascular dementia.

Method: 67 patients (mean age 62.5 ± 4.5 years) with brain Magnetic Resonance Imaging (MRI) confirmed WMHs. The severity of WMHs was further graded according to the Fazekas scale. WMHs in the deep and subcortical white matter were classified as follows: Absent (grade 0), only punctate foci (grade 1), early confluent lesions (grade 2) or confluent lesions (grade 3). Cognitive function was assessed using Montreal Cognitive Assessment (MoCA) and Mini-Mental State Examination (MMSE). Activity of Daily Life Scale (ADL) was applying for assessment of severity of activity of daily living state. Vascular dementia met the vascular dementia and differential diagnosis of other type dementia based on widely accepted criteria: Hurler scale and NINDS-AIREN criteria with Modified Hachinski Ischemic Scale ≥ 7 points.

Findings: Among 67 WMHs patients 57 had been found cognitive impairment (85.07%). 41 patients among 57 cognitive impairment patients were diagnosed with vascular dementia. The cognitive dysfunction decreased gradually and ADL scores were increased accompanied with the WMHs grades increased, respectively.

Conclusion: WMHs is associated with vascular dementia. The cognitive dysfunction of vascular dementia induced by WMHs was significantly impaired in abstract thinking ability, visual spatial execution ability, delayed recall ability, orientation, attention and concentration.

Biography

Yuhong Man has her expertise in headache, cerebral disease and sleep disorders. Her research is in the basics and clinical of the acute and chronic headache, such as migraine and tension headache. She has 14 years' of experience in neurology about cerebral disease, sleep disorders, teaching and administration, both in hospital and education institutions in Jilin University.

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