

Announcement of Press Conference  
“Evaluation of Driving Performance by Using MRI:  
Leukoaraiosis Significantly Worsens Driving Performance of Ordinary Older Drivers”

1. Date and Time

Date: Friday, October 10, 2014

Time: 14:00 – 16:00 p.m.

2. Location

Room 301 and 302 in An block, Institute of Industrial Science, the University of Tokyo

3. Attendee:

Kimihiko NAKANO, Associate Professor, Interfaculty Initiative in Information Studies/Institute of Industrial Science, The University of Tokyo

Kaechang PARK, Visiting Professor of Kochi University of Technology, Director of The Brain Checkup Center, Kochi Kenshin Clinic

Zheng RENCHENG, Research Associate, Advanced Mobility Research Center, Institute of Industrial Science, The University of Tokyo

4. Main Points of the Research

- ◆ It was verified by our actual-vehicle experiments that the driving performance of ordinary older drivers with leukoaraiosis became significantly worse than that of the ordinary older drivers without leukoaraiosis.
- ◆ The study also demonstrated that the driving performance was influenced even in the case of mild leukoaraiosis that is not a kind of medical disease to deteriorate the ability of daily living for older drivers.
- ◆ The findings indicate that the driving performance can be evaluated by leukoaraiosis diagnosis through brain MRI scan. Therefore, the MRI method can be adopted as a basic guidance to provide suitable driving assistance or education for ordinary older drivers.

5. Summary of the Research

Group of Dr. Kimihiko Nakano, Group of Dr. Kaechang Park, and Group of Driver and Vehicle Licensing Center, Kochi Prefectural Police Department carried out real car experiments, and it was found that the driving performance of older drivers with leukoaraiosis was worse than the one of older drivers without leukoaraiosis. Leukoaraiosis is extracellular space in the brain tissue and diagnosed as hyperintensities in the white matter (HWM) on MRI. It had been known that severe leukoaraiosis with much HMN is associated with dementia. However, there had been

no data clearly showing that mild leukoaraiosis causes brain dysfunction, and the effect of leukoaraiosis on driving performance had not been investigated. Significant differences in driving performance between older drivers with and without leukoaraiosis were revealed by observing both driving with and without distraction of driver's attention. Since leukoaraiosis is diagnosed by MRI, the driving performance can be evaluated by MRI. It was also indicated that the driving performance of older drivers can be evaluated by observation of driving with distraction of driver's attention. MRI can be used as a tool to provide basic data in order to consider the driving education and assistance for older drivers.

6. Publication

Journal Title: PLOS ONE, released at 12am ET on October 8 2014.

Press embargo is 2pm ET on October 8 2014.

Article Title: Leukoaraiosis Significantly Worsens Driving Performance of Ordinary Older Drivers

The paper will be shown at

<http://dx.plos.org/10.1371/journal.pone.0108333>

7. Notice

The press embargo is **October 8th, 2014, at 2pm Eastern Time, October 9<sup>th</sup>, 2014, at 3am JST. Do not release before the press embargo.**

8. Contact

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