Association between age, retinal nerve fibre layer thickness and Hounsfield units value in a cohort of patients

Al-Marri Faraj Mohammed[1,2], Faruque Reza[1], Sanihah Abdul Halim3, Ali Al-Abbas[4], Wan Hazabbah Wan Hitam[4]

[1]Department of Neurosciences, School of Medical Sciences, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [2]Department of Neurosciences, King Faisal University, AL-AHSA, Saudi Arabia, Malaysia, [3]Department of Internal Medicine, School of Medical Sciences, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia, [4]Department of Ophthalmology and Visual Science, School of Medical Sciences, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

ABSTRACT

Introduction: Optical Coherence Tomography (OCT) is a non-invasive imaging technique that is commonly used to diagnose and monitor various retinal diseases, including glaucoma, age-related macular degeneration, and diabetic retinopathy. On the other hand, Hounsfield Units (HU) are a measure of the radio density of a particular tissue or material, and they are used in computed tomography (CT) scans. The objective of the study is to investigate a relationship between age, HU and OCT parameters in a patient group. **Materials and Methods:** The OCT parameters include the average RNFL thickness, rim area, disc area, average C/D ratio and cup volume of left and right eyes were obtained from the 39 heterogeneous patients visited the Ophthalmology Clinic, Hospital Pakar USM. The HU of left and right eye gloves and occipital brain areas as a control of those patients were measured from their CT brain images. A statistical analysis of the Bivariate Pearson correlation was performed between the age, HU and OCT parameters of the patients. **Results:** There were no significant correlations between age 42.2 (17.2) years) and HU with the average RNFL thickness, rim area, disc area, average C/D ratio, cup volume of right and left eyes. There were no significant correlations between age and HU of the right and left occipital brain areas with the OCT parameters. But there were significant negative correlations of age with the HU ($r = -.429$, $p = .006$) and average RNFL thickness ($r = -.345$, $p = .031$) of left eye. **Conclusion:** This preliminary study showed that HU could be a radiological marker for age related vitreous liquefaction and vitreoretinal pathophysiology. Therefore, it is important to replicate these findings in the large patient groups and the HU values should be interpreted in the context of the specific CT scan and the patient's individual characteristics and clinical history.