**A Prospective Assessment of Relationship between Peripheral Near Infrared Spectroscopy using Vascular Occlusion Test and Body Mass Index in Patients with or without Statin Therapy**

**T. Kawamorita, MDa;** K. Kuronuma, MDa; T. Yagi, MDb; S. Sugai, MDa;S. Hayashida, MDa; K. Iso, MDa; K. Iida, MDa; W. Atsumi, MDa; M. Komoriya, MD; Y. Suzuki, MDb; E. Tachibana, MDa; S. Kunimoto, MDa; S. Tani, MDb; N. Matsumoto, MDb; Y. Okumura, MDc; K. Sakatani, MDd

*a Department of Cardiology, Kawaguchi Municipal Medical Center, Japan*

*b Department of Cardiology, Nihon University Hospital, Japan*

*c Division of Cardiology, Department of Medicine, Nihon University Itabashi Hospital, Japan*

*d NEWCAT Institute, Nihon University College of Engineering, Japan*

*Corresponding author e-mail address: keiichirokuronuma@gmail.com*

**Abstract:** Near infrared spectroscopy (NIRS) with a vascular occlusion test (VOT) is a noninvasive technique that evaluates oxidative metabolism and microcirculation. Improvement of endothelial function and microcirculation by lipid-lowering agents such as statins has been studied for a long time. Obesity is also known to cause microcirculatory disturbances. The aim of the current study was to assess the correlation between peripheral NIRS with VOT and body mass index (BMI) both in patients with and those without statin therapy. Eighty-three consecutive patients (52 males; median age 69 years) with suspected coronary artery disease, between October 2017 and March 2018, were enrolled. Forty patients were prescribed statins. All NIRS examinations were performed a NIRO-200NX (Hamamatsu Photonics K.K., Japan), with the patient in the supine position. After the NIRS probe was attached to the right thenar eminence, brachial artery blood flow was blocked for 3 min. Maximum or minimum values during VOT were used to determine concentration changes for total hemoglobin (ΔcHb), oxyhemoglobin (ΔO2Hb), deoxyhemoglobin (ΔHHb) and tissue oxygenation index (ΔTOI). Although ΔTOI, ΔcHb and ΔHHb were not correlated with BMI, an inverse correlation was found between ΔO2Hb and BMI in total 83 patients (r = -0.255; p value= 0.0202). A stronger correlation was observed in the patients without statin therapy (r = -0.345; p value = 0.0234). Conversely, the correlation was absent in the patients with statin therapy (r = -0.195; p value = 0.228). This prospective study showed that there was a significant negative correlation between ΔO2Hb and BMI, especially in the patients without statin therapy. Findings from this study suggested that statin therapy might improve oxidative metabolism and tissue microcirculation.

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