学位の種類	博士（医学）
報告番号	乙第１９３０号
学位記番号	論第１６８４号
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授与年月日	令和6年 3月 24日
学位論文の題名	Clinical utility of paced finger tapping assessment in idiopathic normal pressure hydrocephalus （特発性正常圧水頭症における指タッピング評価の臨床的有用性に関する検討） Front. Hum. Neurosci. Vol.17:1109670.2023
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Abstract

The finger-tapping test is one of the methods to evaluate motor function of the upper limbs in patients with idiopathic normal pressure hydrocephalus (iNPH). However, quantitative evaluation of the finger-tapping test in iNPH has not yet been established. The purpose of this study is to investigate the usefulness of the quantitative finger-tapping test and optimal measurement conditions as a motor evaluation and screening test for iNPH.

16 age-matched healthy controls (mean age 73 ± 5 years, 7/16 male) and 15 participants a diagnosis of definite iNPH (mean age 76 ± 5 years, 8/15 male completed the study (mean ± standard deviation). The finger-tapping performance of the index finger and thumb was quantified using a magnetic sensing device. The repetitive finger-tapping by participants was recorded in both not timing-regulated and timing-regulated conditions.

The finger Tapping in the iNPH group, with or without timing control, showed a decrease in the mean value of the maximum amplitude of finger-tapping and the mean value of the maximum velocity of closure of finger-tapping compared to the control group.

We found the only paced finger-tapping with 2.0 Hz auditory stimuli was found to improve both the mean value of the maximum amplitude and the mean value of the maximum velocity of closure after shunt surgery($P<0.01$).

The quantitative assessment of the finger-tapping with auditory stimuli at the rate of 2.0 Hz may be a useful and potentially supplemental screening method for motor assessment in patients with iNPH.