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Electro-physiological study on facial muscles in healthy people: Using the surface electromyography

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Statement of the Problem: Currently, it is attempted to objectify the diagnosis and treatment of Traditional Korean Medicine by combining sEMG (surface electromyography) and the meridian muscle system. However, until 2012, there are only 6 studies related to Traditional Korean Medicine using sEMG, and clinical use of sEMG is still uncommon. In addition, there are few standardized studies on using sEMG of facial part during facial movement. The purpose of this study was to find electro-physiological characteristics measuring sEMG of healthy people in Korea.

Methodology & Theoretical Orientation: Healthy male and female volunteers were included. The sEMG values were obtained by simultaneous measurement of left and right side in the face. The attachment sites of surface electrode were frontalis muscle (acupoint GB14), zygomaticus muscle (acupoint SI18), orbicularis-oris (acupoint LI19). The practitioners educated the volunteers in the way of muscle contraction. The RMS (Root Mean Square) value was measured three times and the mean RMS was calculated. Statistical analysis comparing the characteristics of left and right side was conducted through t-test.

Findings: In whole experimental group, the mean RMS of left and right side of frontalis muscle area was 78.36±40.87, that of zygomaticus muscle area was 84.70±49.81, and that of orbicularis-oris area was 104.83±38.81. In whole experimental group, the average ratio of small value of one side to large value of the other side was 19.60±12.88%. The total AI (Average Index) was 11.46±8.36%.

Conclusion & Significance: According to the result, the difference between the right and left faces of normal people was 19.60±12.88%. The result of this study could provide useful electro-physiological information of facial muscles. Using this result, we want to standardize measured value in facial part and to enhance clinical use of sEMG in diagnosis, prognosis and treatment assessment of neuromuscular disease. Further studies with large scale are needed.

Biography

Jong-uk Kim is a Researcher in Neuromuscular Diseases in Korea. He majored in Acupuncture and Moxibustion Medicine. He is in the process of series of researches to apply surface electromyography especially to the facial area. He is a Professor at College of Korean Medicine, Woosuk University and has been teaching students for about 10 years.

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