Effect of experimental anterior temporalis muscle pain on jaw movements

M. AMHAMED1, T. WHITTLE, T. MAULINA2, J. GAL, R. AKHTER & G. M. MURRAY 
1 Larroumet University Centre for Oral Health, University of Sydney, Sydney, NSW, Australia; 2 Current address: 162105 Bridge Road, Westwood, 2166 NSW, Australia. 

SUMMARY To test the hypotheses that experimental noninvasive stimulation of the anterior temporalis muscle results in significant decreases in jaw movement amplitude and velocity, and there are significant correlations between scores of mood and pain-related cognitions and amplitude and velocity. The jaw movements of 14 asymptomatic participants were recorded during standardized open-close jaw movements and free and standardized chewing tasks. Tonic infusion of hypertonic saline into the right anterior temporalis muscle maintained pain intensity between 40 and 60 mm on a 100-mm visual analogue scale. Tasks were performed in a single session in the following sequence: baseline condition, test 1 condition (during hypertonic or isotonic saline infusion), test 2 condition (during saline infusion) (10 min between conditions). Participants completed the Depression, Anxiety and Stress Scale (DASS-21) and the Pain Catastrophizing Scale (PCS). Amplitude and velocity of opening and closing were compared between conditions with a repeated-measures analysis of variance (ANOVA), and Spearman’s rank correlation coefficient explored correlations; statistical significance: P ≤ 0.05. For any of the three tasks, there were no significant differences in kinematic variables between any condition and no significant correlations between DASS-21 or PCS scores and kinematic variables during hypertonic saline infusion. The absence of a significant reduction in velocity or amplitude of open-close or chewing jaw movements during experimental temporalis muscle pain is not consistent with the Pain Adaptation Model proposing decreases in kinematic measures in pain. The lack of significant correlations between psychological variables and measures of jaw movement may reflect the low scores reported by our study sample.

Keywords: mastication, chewing gum, muscle pain, McGill Pain Questionnaire, visual analogue, pain catastrophizing

Accepted for publication 8 October 2016