Atrophy of suboccipital muscles in patients with chronic pain: a pilot study

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Magnetic resonance imaging studies were performed in six patients with chronic head and neck pain and in five control subjects to determine whether irreversible atrophic changes resulting in destruction of muscle fibers have a role in patients with chronic pain specific to the cervical spine. Both groups of subjects had medical history obtained and underwent physical examination and proton density-weighted (PD-weighted) magnetic resonance imaging. Subjects with chronic pain had substantial restriction of motion. Axial proton density-weighted images of the rectus capitis major and minor muscles were examined. In the subjects with chronic pain, the muscles had high signal intensity, indicating replacement of dead suboccipital skeletal muscle with fatty tissue. This infiltration was not observed in the control subjects who were free of significant motion restrictions and had no history of recurring neck and head pain. Analysis of pixel intensity values confirmed this finding. The reduction in proprioceptive afferent activity in affected muscles may cause increased facilitation of neural activity that is perceived as pain. At least mean squares algorithm was used to define a linear estimating equation for each subject. Linear regression analysis, using an alpha level < .005, was used to determine how well each subject's data fit the estimating equation. This preliminary work indicates substantial infiltration of fatty tissue into suboccipital muscles of some subjects being treated for chronic head and neck pain.