

- **Format:** Abstract
- **FULL TEXT AVAILABLE ON REQUEST**

[Electromyogr Clin Neurophysiol](#). 2005 Sep-Oct;45(6):323-8.

Quantitative motor unit action potentials (QMUAP) in whiplash patients with neck and upper-limb pain.

[Chu J¹](#), [Eun SS](#), [Schwartz I](#).

Author information

Abstract

INTRODUCTION:

Needle EMG studies in patients with whiplash symptoms to document presence of neural injury, such as cervical radiculopathy, are not available.

OBJECTIVE:

To document presence of motor unit action potential (MUAP) parameter changes compatible with neurogenic involvement in symptomatic-limb muscles in whiplash induced acute and chronic pain states.

DESIGN:

Retrospective review.

SETTING:

Out patient quantitative electromyography (QEMG) laboratory.

PARTICIPANTS:

72 consecutive patients (mean age 43.6 years) who underwent QEMG between 1/2001 - 12/2004 for electrodiagnosis of neck and upper-limb pain related to auto-accidents (mean symptom duration 15.3 months).

INTERVENTIONS:

QEMG with MUAP parameter analysis.

MAIN OUTCOME MEASURES:

Amplitude, duration, size-index (SI), percentage of polyphasic units and firing rate analysis in chosen bilateral muscles representing C3-C8 myotomes.

RESULTS:

No spontaneous activity noted in muscles examined. Without subsetting symptom duration, symptomatic-side: asymptomatic-side MUAP parameter comparison showed significant increase in MUAP frequency on the symptomatic-side C6-muscle (10.4 +/- 1.3 vs. 9.7 +/- 1.4, $p < 0.05$), and C7 muscle (10.0 +/- 1.2 vs. 9.1 +/- 1.1, $p < \text{or} = 0.01$). The symptomatic-side C6-muscle also showed increased percentage of polyphasic-MUAPs (23.7 +/- 13.1 vs. 15.9 +/- 12.7, $p < 0.001$). Patients with acute symptom duration (< 6 months, mean duration 3.4 +/- 1.4 months, N=26), showed increased percentage of polyphasic MUAPs in the symptomatic-side C6-muscle (27.0 +/- 12.3% vs. asymptomatic 22.2 +/- 17.6%, $p < \text{or} = 0.05$). In patients with chronic symptom duration (> or =6 months, mean duration 22.0 +/- 17.9 months, N=46), symptomatic-side C6-muscle showed increased polyphasic MUAPs (22.2 +/- 13.2%) vs. asymptomatic (15.5 +/- 11.6%), $p < \text{or} = 0.02$, and higher firing rates (10.3 +/- 1.7 vs. 9.6 +/- 1.3 respectively, $p < \text{or} = 0.003$).

CONCLUSIONS:

QEMG changes suggest neural injury in symptomatic side C6 and C7 innervated muscles, even in the absence of spontaneous activity. In acute and chronic pain patients a higher percentage of polyphasic MUAPs is noted in the symptomatic side C6 muscle. In chronic pain patients higher MUAP frequencies are noted in the symptomatic side C6 muscle.