

戴慧寒,王 健,杨红春,李天骄,蔡奇芳,林金来. 脑卒中患者不同强度随意运动时的sEMG反应特点[J]. 中国康复医学杂志, 2008, (1): 23-25

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基金项目: 广东省科学事业费计划项目(2005B36001099); 广东省佛山市科技发展专项资金资助项目(佛科 2004, 55)

DOI:

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摘要:

目的: 观察不同强度静态及动态运动负荷对脑卒中患者四肢肌肉sEMG信号变化的影响, 研究脑卒中患者四肢肌肉活动的表面肌电信号特征与其神经运动控制的关系。方法: 24例脑卒中患者参加本研究, 采用患、健侧自身对照实验方法设计, 采用上肢屈肘和下肢伸膝静态运动, 以及肘关节和膝关节动态屈伸运动负荷试验, 采集主动肌和拮抗肌的表面肌电信号, 分析信号振幅和拮抗比值等sEMG信号活动特征。结果: 最大用力收缩时, 上、下肢患侧主动肌AEMG小于健侧, 而拮抗比大于健侧; 小强度静态运动负荷过程中, 患侧上肢主动肌的AEMG略高于患侧, 拮抗比明显大于健侧。患侧下肢股外侧肌(VL)、股直肌(RF)和股内侧肌(VM)的平均AEMG、%DET标准化值大于健侧, 拮抗比小于健侧; 小强度动态运动负荷过程中, 上肢患侧主动肌AEMG明显高于健侧。下肢患侧VL、RF和VM的AEMG均值具有增大趋势, 但无明显差异。而患侧拮抗比明显小于健侧。结论: 脑卒中患者由于高位神经元和运动控制功能受损, 导致其患侧在最大随意收缩时运动单位募集能力下降, 而在轻负荷运动时运动单位募集过度。

关键词: [表面肌电](#) [脑卒中](#) [运动控制](#)

sEMG responses to the different intensities of muscles voluntary contractions in post-stroke hemiparetic subjects [Download Fulltext](#)

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Fund Project:

Abstract:

Objective: To investigate the relationship between surface electromyography (sEMG) signal activities and neuromuscular motor control in post-stroke hemiparetic subjects. Method: Both sEMG signal activities and muscles maximal voluntary contraction of paretic and non-paretic upper and lower limb muscles of 24 stroke patients were compared. All the subjects performed a maximal voluntary, isometric and dynamic muscles contractions in elbow and knee flexion/extension movement. Myoelectric signals were collected by surface electrode and then processed by linear and non-linear methods. Result: AEMG of agonist in non-paretic side were higher than paretic side during maximal isometric voluntary contraction. Both upper and lower limb agonist muscles AEMG and DET% were higher in paretic side than in non-paretic side during 20%MVC isometric contractions. Both upper and lower limb agonist muscles AEMG were higher in paretic side than in non-paretic side during 20%MVC dynamic contractions. Conclusion: The paretic muscles of post-stroke patients had a specific muscle motor unit recruitment patterns during maximal voluntary and light intensity muscles contractions.

Keywords: [surface electromyography](#) [stroke](#) [motor control](#)

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