

第五腰椎神經根壓迫接受經皮自動腰椎椎間盤切除 術患者之F波研究

F-Wave Studies in L5 Radiculopathic Patients Receiving Automated Percutaneous Lumbar Disectomy

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摘要

椎間盤突出併神經根壓迫可能造成F波潛期延長及減少F波被誘發出來的百分比。本研究主要是針對第四和第五腰椎間盤突出併第五腰椎神經根壓迫的患者，接受經皮自動腰椎椎間盤切除術(automated percutaneous lumbar disectomy)，手術治療前後深腓神經F波的變化進行研究。研究中，共收集8名患者，年齡分布由26歲至39歲，這些患者都有下肢放射痛或運動及感覺的異常而且磁振造影顯示第四第五腰椎間盤突出併神經根壓迫。研究中記錄經皮自動腰椎椎間盤切除術手術前後，深腓神經F波潛期和被誘發出F波之百分比。為了使深腓神經的F波比較容易被誘發出來，我們對每一病患使用較標準化長之波寬的刺激(0.3毫秒)和加強的誘發方法(咬合肌緊閉)。研究結果顯示深腓神經F波被誘發出來的百分比在術後有顯著增加(術前 $42.5\pm 11.7\%$ 、術後 $66.3\pm 10.6\%$ ， $p<0.01$)；F波潛期雖有縮短的傾向，但仍未達統計上明顯差異(術前 $46.19\pm 3.58\text{ms}$ 、術後 $44.76\pm 2.69\text{ms}$ ， $p=0.262$)。F波被誘發出來百分比的增加，可能可以解釋為神經根壓迫的壓力減輕後，神經較容易被興奮。而F波潛期縮短較不明顯，可能原因是因為F波只反應一小部分傳導最快的神經纖維表現，所以比較沒有那麼敏感。本研究的結果顯示，以F波來評估病人接受經皮自動腰椎椎間盤切除術，去神經根壓迫手術前、後之變化，F波的誘發百分比比F波潛期更具敏感度，有關F波誘發百分比對神經根病變檢查之價值，值得再作更深入之研究。

Abstract

Background and purpose: Herniated intervertebral disc with radiculopathy may prolong F-latency and reduce F-persistence. The aim of this study was to investigate changes of F-waves in patients with L5 radiculopathy before and after automated percutaneous lumbar disectomy (APLD). Methods: Eight patients (aged 26 to 39 years) with L5 radiculopathy

were recruited. The L5 radiculopathy was diagnosed by radicular pain and motor/sensory deficit and was confirmed by MRI. F-latency and persistence of the deep peroneal nerve were measured before and after APLD. To enhance the F-wave response, a stimulus duration of 0.3 ms was used, and patients were asked to contract the masseter muscles. Results: The F-persistence showed a significant increase ($p < 0.05$) after APLD ($42.5\% \pm 11.7\%$ and $66.3\% \pm 10.6\%$ before and after APLD, respectively). The F-latencies of the deep peroneal nerve showed a decreasing trend after APLD (46.19 ± 3.58 ms and 44.76 ± 2.69 ms before and after APLD, respectively). The increase of F-persistence may be explained by increased nerve excitability after APLD. F-latency may lack the sensitivity to show the change after APLD because F-latency possibly reflects only a small portion of motor neuron fibers affected. Conclusions: We conclude that F-persistence is more sensitive than F-latency in monitoring nerve root decompression after APLD. Understanding the role of F-persistence in evaluating the nerve root condition requires further study.