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論文内容の要旨

Differential Efficacy of Electric Motor Cortex Stimulation and Lesioning of the Dorsal Root Entry Zone for Continuous vs Paroxysmal Pain After Brachial Plexus Avulsion

BACKGROUND: Pain after traumatic brachial plexus avulsion (BPA) has 2 distinct patterns: continuous burning pain and paroxysmal shooting pain. Lesioning of the dorsal root entry zone (DREZotomy) is more effective for paroxysmal than continuous pain. It is unknown, however, whether electric motor cortex stimulation (EMCS) has a differential effect on continuous vs paroxysmal BPA pain.
OBJECTIVE: To analyze the differential effect of EMCS and DREZotomy on continuous vs paroxysmal BPA pain.
METHODS: 15 patients with intractable BPA pain underwent DREZotomy alone (n = 7), EMCS alone (n = 4), or both procedures (n = 4). Separate ratings of the Visual Analog Scale were recorded for paroxysmal and continuous pain. Pain relief was categorized as excellent (> 75% pain relief), good (50%-75%), or poor (, 50%). Favorable outcome was defined as good or better pain relief.
RESULTS: 8 patients had EMCS; 7 were followed up for an average of 47 months. 3/ 7 patients, (42%) with continuous pain had favorable outcomes compared with no patients with paroxysmal pain. 11 patients had DREZotomy; 10 were followed up for an average of 31 months. 7/10 patients (70%) with paroxysmal pain had favorable outcomes compared with 2 (20%) with continuous pain.
CONCLUSION: EMCS was ineffective for paroxysmal pain but moderately effective for continuous pain. DREZotomy was highly effective for paroxysmal pain but moderately effective for continuous pain. It may be prudent to use EMCS for residual continuous pain after DREZotomy.

Spinal Cord Stimulation for Central Poststroke Pain

BACKGROUND: The effectiveness of spinal cord stimulation (SCS) for central poststroke pain (CPSP) is not well established. Therefore, we explored the efficacy of SCS in 30 consecutive patients with intractable CPSP.
METHODS: All patients underwent a percutaneous SCS trial. 10 patients decided to proceed, and received a permanent SCS system. Pain intensity was evaluated by a visual analogue scale (VAS). The Patient Global Impression of Change (PGIC) scale was also assessed at the latest follow-up visit as an indicator of overall improvement.
RESULTS: During trial stimulation, pain relief was good (≥50% VAS score reduction) in 9 patients (30%), fair (30%-49% reduction) in 6 patients (20%), and poor (<30% reduction) in 15 patients (50%). 10 patients elected to receive a permanent SCS system. 9/ 10 patients were followed long-term (mean, 28 months; range, 6-62 months). 7 patients reported significant pain relief on the VAS (5 = good and 2 = fair). On the PGIC scale, 6 / 7 patients reported a rating of 2 (much improved) and 1 reported a rating of 3 (minimally improved). The remaining 2 patients, reported either (no change) or (minimally worse). The median VAS score in the 9 patients decreased significantly from 8.6 (range, 6.0-10.0) to 4.5 (range, 3.0-8.0; $P = .008$). There were no significant reported complications.
CONCLUSION: SCS may provide improved pain control in a group of patients with intractable CPSP and may have therapeutic potential for intractable CPSP.

論文審査の結果の要旨

本研究は、脊髄神経根引き抜き損傷後疼痛に対する脊髄後根進入部遮断術（DREZotomy）と一次運動野電気刺激療法（EMCS）の除痛効果の違い、および中枢性脳卒中後疼痛に対する脊髄刺激療法（SCS）の除痛効果について、長期効果を明らかにした。脊髄神経根引き抜き損傷後疼痛や中枢性脳卒中後疼痛などの神経障害性疼痛は最も治療の難しい慢性疼痛疾患の一つであり、薬物治療のみならず外科的治療の開発・確立が必要とされている。脊髄神経根引き抜き損傷後疼痛においてDREZotomyは発作痛に著効するが、EMCSは発作痛には効果がなく持続痛のみに除痛効果があった。疼痛の性状の違いによるDREZotomyとEMCSの効果の違いを、初めて明らかにした。また、中枢性脳卒中後疼痛に対するSCSは、今まで十分に効果を検討されていなかったこともあり、無効であると信じられていたが、約半数で有効性が示された。両研究で難治性の神経障害性疼痛に対する外科的治療の新たな知見が得られた。よって本研究は博士（医学）の学位授与に値すると考える。