A Treatment Guideline for Neuropathic Pain
Kook Jin Chung, M.D., Jae Hyup Lee, M.D., Changju Hwang, M.D., Myun Whan Ahn, M.D.

J Korean Soc Spine Surg 2011 Dec;18(4):246-253.
Originally published online December 31, 2011;
http://dx.doi.org/10.4184/jkss.2011.18.4.246

Korean Society of Spine Surgery
Department of Orthopedic Surgery, Inha University School of Medicine
#7-206, 3rd ST. Sinheung-Dong, Jung-Gu, Incheon, 400-711, Korea Tel: 82-32-890-3044 Fax: 82-32-890-3467
©Copyright 2011 Korean Society of Spine Surgery
pISSN 2093-4378 eISSN 2093-4386

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://www.krspine.org/DOIx.php?id=10.4184/jkss.2011.18.4.246

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (http://creativecommons.org/licenses/by-nc/3.0) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.
A Treatment Guideline for Neuropathic Pain

Kook Jin Chung, M.D., Jae Hyup Lee, M.D.*, Changju Hwang, M.D.†, Myun Whan Ahn, M.D.‡

Department of Orthopaedic Surgery, College of Medicine, Hallym University, Seoul, Korea
Department of Orthopaedic Surgery, College of Medicine, Seoul National University, Seoul, Korea

Study Design: A review of literature including definition, diagnosis and treatment of neuropathic pain.

Objectives: To review and discuss the treatment guideline for neuropathic pain.

Summary of Literature Review: Neuropathic pains are characterized by partial or complete somatosensory change caused by various disorders affecting central and peripheral nervous system, and are especially problematic because of their severity, chronicity and resistance to simple analgesics.

Materials and Methods: Review of literature.

Results: Tricyclic antidepressants and the anticonvulsants gabapentin and pregablin were recommended as first-line treatments for neuropathic pain. Opioid analgesics and tramadol were recommended as second-line treatments that can be considered for first-line use in selected clinical circumstances. Other medications such as dual reuptake inhibitors of both serotonin and norepinephrine would be used in severe cases. More invasive interventions (e.g., spinal cord stimulation) may sometimes be helpful.

Conclusions: Treatment must be individualized for each patient and aggressive, combinatory pharmacotherapy and multidisciplinary approach are recommended for the treatment of neuropathic pain.

Key Words: Neuropathic pain, Definition, Diagnosis, Treatment guideline

INTRODUCTION

Neuropathic pain results from damages in peripheral nerve system or dysfunctional central nerve system and is challenging to control with typical analgesia currently using. It is characterized by incurable and severe pain and doesn’t respond well to the standard pain management methods which impaired the quality of patients’ lives significantly and is also classified as a morbid pain manifesting that it can cause mental disorder such as sleeping disturbance, depression and anxiety and induce social issues such as reduced productivity secondary to the failure of social adaptation.

Adequate early treatments for neuropathic pain prevent the pain from worsening and becoming too chronic and incurable to control satisfactorily. Therefore, it is vital to start established effective treatment at early stage after the diagnosis when neuropathic pain is suspected. For this reason, this study aimed to summarize diagnosis methods and management guideline through literature review and to contribute to the effective management.

REVIEW OF LITERATURE

Definition

Neuropathic pain was defined as pain initiated or caused by a primary lesion or dysfunction in the nerve system by the International Association for the Study of pain (IASP).

Received: August 12, 2010
Accepted: August 2, 2011
Published Online: December 31, 2011
Corresponding author: Jae Hyup Lee, M.D.
Department of Orthopaedic Surgery, Seoul National University College of Medicine, SMG-SNU Boramae Medical Center, 39, Boramae-Gil, Dongjak-Gu, TEL: 82-2-870-2314, FAX: 82-2-870-3863
E-mail: spinelee@snu.ac.kr

“This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (http://creativecommons.org/licenses/by-nc/3.0/) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.”
Although this definition was thought to be useful to distinguish neuropathic pain from the other types of pain, it was criticized that there was a lack of anatomical accuracy and diagnostic manifestation. Therefore, the definition neuropathic pain was revised in recent years and the terms is now described as pain arising as direct consequence of a lesion or disease affecting the somatosensory system. Contrary to nociceptive pain, which is usually acute and reversible, the neuropathic pain progresses to the chronic status and is characterized by allodynia (pain due to a stimulus which does not normally provoke pain), hyperalgesia (an increased sensitivity to pain) and dysesthesia (an unpleasant, abnormal sense of touch).

Classification

Neuropathic pain is classified as peripheral or central according to the anatomical origins of pain and it can be also caused by following orthopedic or operative spinal diseases (Table 1).

Diagnosis

The accurate clinical diagnosis of neuropathic pain is not easy because it can be caused by a number of different diseases. It is necessary to analyze the anatomical location of the lesions and the cause of the lesions for the diagnosis. First of all, it is necessary to confirm whether the distribution of pain is corresponded to the anatomical location of peripheral nerve or central nerve through the detailed history taking and there should be a causal relationship between the onset of pain and the lesions in central somatosensory system. If neuropathic pain is suspected after this, whether there is muscle weakness, sensory disturbance and pain should be confirmed in the physical examination and in addition to this, neurological disease or lesions should be confirmed via laboratory test, 3 phase–bone scan, radiological investigation and electroneuromyography to diagnose neuropathic pain.

The diagnosis of neuropathic pain can be made according to the correspondence to the following criteria based on the grading system (Table 2). When the symptom includes all 4 criteria, it is a definite neuropathic pain and when the symptom includes criteria 1 and 2 and one of criteria 3 or 4, neuropathic pain is

Table 1. Classification of neuropathic pain by anatomical location and etiology.

| Peripheral                                      | Central                                      |
|-------------------------------------------------|----------------------------------------------|
| Complex regional pain syndrome                  | Cervical or thoracic myelopathy              |
| Neural entrapment syndrome                      | Spinal cord injury                           |
| Cervical, thoracic and lumbar radiculopathy     | Syringomyelia                                |
| Neural compression by tumor                     | Spinal cord compression (e.g. cancer)       |
| Diabetic neuropathy                             |                                              |

Table 2. Grading system for neuropathic pain.

| Criteria to be evaluated for each patient                |
|----------------------------------------------------------|
| 1. Pain with a distinct neuroanatomically plausible distribution |
| 2. A history suggestive of a relevant lesion or disease affecting the peripheral or central somatosensory system |
| 3. Demonstration of the distinct neuroanatomically plausible distribution by at least one confirmatory test |
| 4. Demonstration of the relevant lesion or disease by at least one confirmatory test |

Grading of certainty for the presence of neuropathic pain:

- Definite neuropathic pain: all (1 to 4)
- Probable neuropathic pain: 1 and 2, plus either 3 or 4
- Possible neuropathic pain: 1 and 2, without confirmatory evidence from 3 or 4.

Fig. 1. This algorithm shows the management of neuropathic pain in primary care. Topical antineuralgics such as lidocaine patch is useful for focal neuropathy such as postherpetic neuralgia.
highly probable. In addition to the grading system, the diagnosis of neuropathic pain can be also made according to the pain scale using S-LANSS basing on the clinical symptoms. There are 7 items (the existence of pricking sensation, changes of skin color in the affected areas, the existence of unpleasant sensation or onset of pain when the affected area was touched, whether there is sudden pain in bursts for no apparent reason, whether there is feeling of skin temperature changes in the painful areas, whether stroking the affected area of skin with a piece of cotton wool produce an unpleasant painful sensation, whether touching the affected area of skin with a sharp needle feel sharper or duller when compared to an area of normal skin ) and sensory test and the diagnosis is made when the score is more than 12 out of 24.

Management

Principles of neuropathic pain management
The treatment of neuropathic pain should be started actively at the earliest possible moment considering the causative diseases and the dose of first line drugs should be increased until the pain is controlled as long as the side effects are tolerated and even if the pain is not controlled, continuous treatment is recommended. The use of second line drugs or the combined with other types of drugs may offer if there is not satisfactory improvement with monotherapy and psychological support and comfort should be provided. Providing that the combined drug therapy fails to control the pain, multi–disciplinary approach such as interventional procedures and psychological support will be necessary (Fig. 1).

1 Pharmacological management

Neuropathic pain is commonly progressed to the chronic status and subsequently, long–term and high dose of medication will be required. Hence, it is important to fully acknowledge about the type of possible drugs, their dose, the use and the side–effects (Table 3).

First line pharmacologic treatment

Tricyclic antidepressants (TCAs)
The great advantages of tricyclic antidepressants (TCAs) are that it is cost–effective and also manages comorbid depression which is highly prevalent to the patients with neuropathic pain. It also had the equipotentiality in both neuropathic pain patients with depression and without depression. On the other hand, anti–cholinergic effects such as thirst, constipation and micturition disorder can be presented and there is also possible cardiotoxicity even though the prevalence is extremely low. Therefore, it cannot be used in the cardiac patients such as arrhythmia or ischemic heart disease and it might not be appropriate to use in the elderly patients. However, secondary amine tricyclic anti–depressant such as nortriptyline and desipramine can be used for elderly patients instead because they have significantly low cardiotoxicity and anti–cholinergic effects. Amitriptyline should be started at low dose (25mg) at night and increased 25mg every 3–7 day up to 150mg over 2 weeks and can be used for 6–8 weeks.

Gabapentin/Pregabalin (calcium channel $\alpha_2$–$\delta$ ligand)
Gabapentin/Pregabalin exerts their beneficial effects by binding to calcium channels inducing changes in neurotransmitter. Side–effects such as dizziness and sedation can be presented in proportion to the dose but these side effects can be minimized as long as the drug is started with low dose and carefully titrated. Interaction with other drugs is rare but the reduced dose is recommended in renal failure.

Gabapentin is instructed to start 300mg three times a day and can be increased up to 3600mg per day. It usually takes about 2 month to take an effect as the analgesic effect is slowly expressed. The effect of pregablin is similar to that of gabapentin and it is recommended to start 75mg twice a day and increase 300mg within 3–7 days. Depending on the efficacy of the dose, it can be increased up to 600mg per day every 1 week.

Local lidocaine products
5% lidocaine patch is usually used in postherpetic neuralgia and it is reported that 5% lidocaine patch is effective to manage allodynia and peripheral neuropathic pain but also showed tolerance and can be only used in the local areas. Lidocaine gel is reported to be easier to use and has similar effects. Local lidocaine products hardly cause side effects apart from local skin irritation.

Second line pharmacologic treatment

Opioid analgesics/Tramadol
The effects of opioid analgesics and tramadol have been
| Drug                      | Starting dose | Titration                  | Usual maintenance dose (and maximum) | Adverse effects                                      | Duration of adequate trial | Comments                                                                 |
|---------------------------|---------------|----------------------------|--------------------------------------|------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------|
| Tricyclic antidepressants |               |                            |                                      |                                                      |                             |                                                                          |
| Amitriptyline Imipraine   | 10-25 mg/day  | increase weekly by 10 mg/day| 50-150 mg/day                        | Drowsiness, confusion, orthostatic hypotension, dry mouth, constipation, urinary retention, weight gain, arrhythmia | 6-8 weeks with at least 1-2 week at maximum tolerated dosage | Amitriptyline more likely to produce drowsiness and anticholinergic side effects; contraindicated in patients with glaucoma, symptomatic prostatism and significant cardiovascular disease |
| Nortriptyline desipramine | 10-25 mg/day  |                            | 50-150 mg/day                        |                                                      |                             |                                                                          |
| Calcium channel $\alpha_2\delta$ ligand |               |                            |                                      |                                                      |                             |                                                                          |
| Gabapentin                | 100-300 mg at bedtime or 100-300 mg three times daily | Increase by 100-300 mg three times daily every 1-7 days as tolerated | 300-1200 mg three times daily | Drowsiness, dizziness, peripheral edema, visual blurring | 3-8 weeks for titration plus 2 weeks at maximum dosage | Dosage adjustments required in renal failure |
| Pregabalin                | 50 mg tid or 75 mg bid | Increase to 300 mg daily after 3-7 days, then by 150 mg/ d every 3-7 days as tolerated | 150-300 mg twice daily | Drowsiness, dizziness, peripheral edema, visual blurring | 4 weeks | Similar adjustments in renal failure |
| Topical lidocaine         |               |                            |                                      |                                                      |                             |                                                                          |
| 5% lidocaine patches or gel | Maximum of 3 patches daily for a maximum of 12 h | None needed | Maximum of 3 patches daily for a maximum of 12 -18 h | Local erythema, rash | 3 weeks | None |

**Table 3. Neuropathic pain medications.**

[www.krspine.org](http://www.krspine.org)
| Drug         | Starting dose | Titration                                                                 | Usual maintenance dose (and maximum) | Adverse effects                                                                                                                                  | Duration of adequate trial | Comments                                                                                                                                                                                                 |
|-------------|---------------|---------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| **Opioid agonists** |               |                                                                           |                                      |                                                                                                                                                                                   |                           |                                                                                                                                                                                                       |
| Morphine    | 15 mg every 12 h | After 1-2 wk, convert total daily dosage to long-acting opioid analgesic and continue shortacting medication as needed | 30-120 mg every 12 h                | Respiratory depression, ataxia, nausea, vomiting, sedation, dizziness, urinary retention, constipation                                                                 | 4-6 weeks                 | History of substance abuse, suicide risk, driving impairment during treatment initiation, constipation requires concurrent bowel regimen                                                                |
| Oxycodeone  | 10 mg every 12 h | After 1-2 wk, convert total daily dosage to long-acting opioid analgesic and continue shortacting medication as needed | 20-60 mg every 12 h                 | Respiratory depression, ataxia, nausea, vomiting, sedation, dizziness, urinary retention, constipation                                                                 | 4-6 weeks                 | History of substance abuse, suicide risk, driving impairment during treatment initiation, constipation requires concurrent bowel regimen                                                                |
| Fentanyl    | 12-25ug/h patch | After 1-2 wk, convert total daily dosage to long-acting opioid analgesic and continue shortacting medication as needed | 25-100 ug/h patch                   | Respiratory depression, ataxia, nausea, vomiting, sedation, dizziness, urinary retention, constipation                                                                 | 4-6 weeks                 | History of substance abuse, suicide risk, driving impairment during treatment initiation, constipation requires concurrent bowel regimen                                                                |
| Tramadol    | 50mg once or twice daily | Increase by 50-100 mg daily in divided doses every 3-7 days, as tolerated, until pain relief | 50–100 mg 2–3_ daily, maximuma 400 mg/d (100 mg 4 times daily); in patients older than 75 y, 300 mg/d in divided doses | Respiratory depression, ataxia, sedation, constipation, seizures, nausea, orthostatic hypotension                                                                 | 4 weeks                   | May lower seizure threshold, use with caution in epilepsy, history of substance abuse, suicide risk, driving impairment during treatment initiation, concomitant use of SSRI, SSNRI, TCA or acetaminophen, keep maximal dose of acetaminophen at 4 g to avoid hepatic toxicity, |
Treatment for Neuropathic Pain

It has been proved in a number of randomized controlled trials with different types of neuropathic pain. However, these drugs are usually recommended to the patients who are poorly responded to the first line pharmacologic treatment due to the safety issue relating to the long-term use (comparing to the first line pharmacologic treatment). Opioid analgesics has a similar analgesic effects to tricyclic anti-depressant and gabapentin but the prevalence of the side-effects is higher. 13,14)

It is necessary to consider prescribing gastrointestinal drug at the same time for side effects such as nausea/vomiting and constipation and it should be carefully observed for any misuse, abuse or addition when it is used in long-term. Opioid analgesics is usually prescribed 10-15mg every 4 hourly and conversion from short-acting agents to long-acting agents may require. Tramadol is less efficient than morphine or codeine in that it requires less frequent dosing.

Table 3. Neuropathic pain medications. (Continued)

| Drug                                      | Starting dose | Titration                        | Usual maintenance dose (and maximum) | Adverse effects                                      | Duration of adequate trial | Comments                                                                 |
|-------------------------------------------|---------------|----------------------------------|--------------------------------------|------------------------------------------------------|---------------------------|--------------------------------------------------------------------------|
| Selective serotonin noradrenaline reuptake inhibitors | 37.5 mg once or twice daily | Increase weekly by 37.5 mg/day | 150-225 mg/day/ day                   | Nausea, headache, dizziness, drowsiness, hyperhidrosis, hypotension, constipation, worsening depression | 4-6 weeks | Use with caution in concomitant use of tramadol, cardiac disease, withdrawal syndrome with abrupt discontinuation |
| Venlafaxine                               | 30 mg once daily | Increase to 60 mg once daily after one week | 60-120 mg/day/ day                   | Sedation, nausea, somnolence, dizziness, constipation, ataxia, drymouth | 4 weeks | Use with caution in hepatic dysfunction, renal insufficiency, alcohol abuse, concomitant use of tramadol |
| Duloxetine                                | 30 mg once daily | Increase to 60 mg once daily after one week | 60-120 mg/day/ day                   | Sedation, nausea, somnolence, dizziness, constipation, ataxia, drymouth | 4 weeks | Use with caution in hepatic dysfunction, renal insufficiency, alcohol abuse, concomitant use of tramadol |

Other drugs

It is possible to prescribe other types of anti-depressants, such as venlafaxine and duloxetine, as third line drugs. Venlafaxine is also reported to be effective in DPN and other types of peripheral neuropathic pain excluding postherpetic neuralgia. Venlafaxine is also known to be significantly effective for anxiety or depression. Duloxetine is also used as third line drugs. Among these, duloxetine, the serotonin-norepinephrine reuptake inhibitor, is usually used for neuropathic pain resulting in that condition such as serotonin-norepinephrine reuptake inhibitors. Therefore, tramadol should not be used with these drugs at the same time.

Tricyclic anti-depressant treatment

It is necessary to consider prescribing gastro-intestinal drug at the same time for side effects such as nausea/vomiting and constipation and it should be carefully observed for any misuse, abuse or addition when it is used in long-term. Opioid analgesics has a similar analgesic effects to tricyclic anti-depressant and gabapentin but the prevalence of the side-effects is higher. 13,14)
2 Interventional procedures

Spinal cord stimulation

Spinal cord stimulation is one of effective management methods for the pain which is poorly responded to the conservative management. The pain can be controlled effectively and it reduces the use of pharmacologic treatment hence, the quality of life can be improved and it facilitates the return to work. Although the initial inserting device can be costly, it is still considered to be cost-effective in the view of long-term effects.\(^{16-18}\) Failed back surgery syndrome,\(^{19}\) peripheral vascular disease,\(^{20,21}\) chronic regional pain syndrome,\(^{22,23}\) complex regional pain syndrome,\(^{24,25}\) and ischemic heart disease\(^{20,26}\) are known as indications for spinal cord stimulation but it is documented that spinal cord stimulation is less successful to manage central pain originated from brain or spinal cord.\(^{17,25}\)

CONCLUSION

Neuropathic pain requires active early treatment because it can be easily progressed to the chronic pain due to challenging diagnosis and severity of the symptom. Tricyclic anti-depressants or anti-convulsants (gabapentin or pregabalin) are usually used as the first line treatment and opioid analgesics or tramadol can be added or converted to when the symptom is persistent. Additional drug therapies may initiate if the pain is still not controlled. Furthermore, multi-disciplinary approach such as interventional procedures or psychological approach may be necessary if there is no satisfactory improvement with combined drug therapies.

REFERENCES

1. Merskey H, Bogduk N. Lumbar zygapophysial joint pain syndromes and definition of pain terms 2nd ed. Seattle, IASP Press: 1994.181–2.
2. Hansson P. Neuropathic pain: clinical characteristics and diagnostic workup. Eur J Pain, 2002; 6 suppl A:47–50.
3. Max MB. Clarifying the definition of neuropathic pain. Pain, 2002;96:406 – 7.
4. Jensen TS, Sindrup SR, Bach FW. Test the classification of pain: reply to Mitchell Max. Pain, 2002;96:407 – 8.
5. Backonja MM. Defining neuropathic pain. Anesth Analg. 2003;97:785 – 90.
6. Dworkin RH, Backonja M, Rowbotham MC, et al. Advances in neuropathic pain: diagnosis, mechanisms, and treatment recommendations. Arch Neurol. 2003; 60:1524 – 34.
7. Cruccu G, Anand P, Attal N, et al. EFNS guidelines on neuropathic pain assessment. Eur J Neurol. 2004;11:153 – 62.
8. Woolf CJ, Mannion RJ. Neuropathic pain. Etiology, symptoms, mechanisms, and management. Lancet. 1999;353:1959 – 64.
9. Treede RD, Jensen TS, Campbell JN, et al. Neuropathic pain: redefinition and a grading system for clinical and research purposes, Neurology, 2008;29:1630–5.
10. Bennett M, Smith B, T orrance N, et al. The S–LANSS score for identifying pain of predominantly neuropathic origin: Validation for use in clinical and postal research. J Pain. 2005;6:149 – 58.
11. Gilron I, Bailey JM, Tu D, et al. Morphine, gabapentine, or their combination for neuropathic pain. N Engl J Med. 2005;352:1324–34.
12. Dworkin RH, O’Connor AB, Backonja M, et al. Pharmacologic management of neuropathic pain: evidence-based recommendations. Pain. 2007;132:237–51.
13. Gilron I, Bailey JM, Holden RR, et al. Morphine, gabapentin, or their combination for neuropathic pain N Engl J Med. 2005;352:1324–34.
14. Raja SN, Haythornthwaite JA, Pappagallo M, et al. Opioids versus antidepressants in postherpetic neuralgia: a randomized, placebo-controlled trial. Neurology. 2002;59:1015–21.
15. Finnerup NB, Otto M, McQuay HJ, et al. Algorithm for neuropathic pain treatment: an evidence based proposal. Pain, 2005;118:289–305.
16. Bel S, BauerBL. Dorsal column stimulation (DCS): cost to benefit analysis. Acta Neuochir Suppl(Wien). 1991:52:121–3.
17. Kumar K, Hunter G, Demeria D. Spinal cord stimulation in treatment of chronic benign pain: challenges in treatment planning and present tatus, a 22-year experience. Neurosurgery. 2006:58:481–96.
18. Kumar K, Malik S, Demeria D. Treatment of chronic pain with spinal cord stimulation versus alternative therapies: cost-effectiveness analysis. Neurosurgery. 2002;51:106–15.
19. North RB, Kidd D, Shipley J, et al. Spinal cord stimulation
versus reoperation for failed back surgery syndrome: a cost effectiveness and cost utility analysis based on a randomized, controlled trial. Neurosurgery. 2007;61:361–8.
20. De Vries J, De Jongste MJ, Spincemaille G, et al. Spinal cord stimulation for ischemic heart disease and peripheral vascular disease. Adv Tech Stand Neurosurg. 2007;32:63–89.
21. Horsch S, Schulte S, Hess S. Spinal cord stimulation in the treatment of peripheral vascular disease: results of a single center study of 258 patients. Angiology. 2004;55:111–8.
22. Harke H, Grettenkort P, Ladleif HU, et al. Spinal cord stimulation in sympathetically maintained complex regional pain syndrome type I with severe disability. A prospective clinical study. Eur J Pain. 2005;9:363–73.
23. Taylor RS, Van Buyten JP, Buchser E. Spinal cord stimulation for complex regional pain syndrome: a systematic review of the clinical and cost-effectiveness literature and assessment of prognostic factors. Eur J Pain. 2006;10:91–101.
24. Daouss C, Benbow J, MacFarlane IA. Electrical spinal cord stimulation in the long-term treatment of chronic painful diabetic neuropathy. Diabet Med. 2005;22:393–8.
25. Fogel GR, Esses SI, Calvillo O. Management of chronic limb pain with spinal cord stimulation. Pain Pract. 2003;3:144–51.
26. Ansari S, Chaudhri K, Moutaery K. Neurostimulation for refractory angina pectoris. Acta Neurochir Suppl. 2007;97:283–8.

신경병증성 통증의 치료 지침에 대한 고찰

정국진•이재협*•황창주†•안면환‡
한림대학교 의과대학 정형외과학교실, 서울대학교 의과대학 정형외과학교실
울산대학교 의과대학 정형외과학교실*, 영남대학교 의과대학 정형외과학교실†

연구 계획: 신경병증성 통증의 정의, 진단과 치료 방법에 대한 문헌 고찰
목적: 신경병증성 증후군에 대한 문헌을 고찰하고 치료 지침을 논의하고자 한다.

본문

신경병증성 통증은 말초 신경계나 중추 신경계의 질환에 의해 유발된 체성감각계의 부분적 혹은 완전한 변형으로, 통증의 정도가 심하고 만성 경과를 보이며 일반적인 진통제에 반응하지 않는 특성을 지니는 병적 통증으로 분류된다.

대상 및 방법: 문헌 고찰

결과: 일차 약제로 삼환계 항우울제나 가바펜틴이나 프리가바린 같은 항전간제를 사용하며 이차 약제로 마약성 진통제나 트라마돌을 사용할 수 있다. 조절이 잘 되지 않을 경우 세로토닌-노르에피네프린 동시 재흡수 차단제 등 기타 약제를 사용할 수 있으며, 증상에 따라 화학 자극술 등 종제적 시술이 도움이 되는 경우도 있다.

결론: 신경병증성 통증의 치료는 환자에 따라 개별화 되어야 하며, 적극적으로 복합 치료법을 통한 통증 조절을 고려해야 하고, 다학제적 접근과 치료가 필요하다.

색인 단어: 신경병증성 통증, 정의, 진단, 치료 지침
약칭 제목: 신경병증성 통증의 치료