

The Management of Chronic Post-Thoracotomy Pain Syndrome

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Chronic post thoracotomy pain syndrome (CPPS) is defined by 'International Association for the Study of Pain '(IASP); as a persisting chronic pain during two months after the thoracotomy. Thoracotomy is the most painful surgical procedure that can affect normal respiration and lead to impaired respiratory function. In the majority of patients pain is usually mild and only slightly or moderately interferes with normal daily living [1]. There has been a decrease in incidence in recent years with the development of minimally invasive techniques. CPPS is known to occur as a result of poorly healed rib fractures, costochondritis, costochondral dislocation, intercostal neuroma, nerve trapping and infection after a thoracotomy. Preemptive analgesia initiated prior to surgery shows promise and might help reduce the incidence of CPPS [2,3]. Risk factors include age, gender, preoperative pain, surgical techniques, operation time, during operation applied analgesic methods, chemoradiotherapy, tumor recurrence and psychosocial factors. CPPS occurs through the development of a lot of complex physiological events. It leads to a neuropathic pain. Symptoms that can occur in CPAS are hypoesthesia, hypoalgesia, hyperesthesia, paresthesia, dysesthesia, allodynia, hyperalgesia [4,5]. The pathogenesis of CPPS has not been fully elucidated. In this complex mechanism, they are transmitted to the dorsal horn along the intercostal nerve by stimulating mechanoreceptors and nociceptors, skin, subcutaneous, muscular, costal, and parietal pleura. Noxious stimuli transmit through the nervous vagus and autonomic nervous system to the central nervous system the stimulation of lung parenchyma and visceral pleura, mediastinum, diaphragm and pericardial pleura mediated by phrenic nerves [5]. A close association between acute postoperative thoracotomy pain and CPPS has been reported. Damage to the intercostal nerve due to exertional pressure during thoracotomy and immunoreaction in the incision leads to peripheral and central sensory system. This triggers pain, hyperalgesia, allodynia in the operation scar [6,7].

The treatment is difficult and most of the time not successful in CPPS, like other neuropathic pain syndromes. It is mandatory to exclude recurrence of disease or malignancy as a cause for the pain prior to initiating treatment. The main goal in symptomatic treatment is to improve the quality of life by reducing or eliminating the pain of the patient. It is important that the patient be informed about possible side effects of medication in terms of patient education, pain and treatment for increasing patient compliance. First, treatment is started with Non-steroid Anti-Inflammatory Drugs (NSAID), topical anesthetics, tricyclic antidepressants (TSAD), antiepileptics and opioids as primarily. If these treatments are ineffective, more invasive treatments should be undertaken. These are nerve blockages, transdermal electrical nerve stimulation, cryo-neurolysis, thoracic sympathectomy and epidural analgesia with neuromodulation, spinal cord stimulation and acupuncture [8]. Catheters placed with thoracic epidural anesthesia are frequently used for acute postoperative pain control with thoracotomy or Video Assisted Thoracoscopic Surgery (VATS). It has been reported that the TEA has reduced CPPS in studies conducted [9]. Drug selection in CPPS is not different from other neuropathic syndromes. Drug selection is not just efficacy, but efficacy/safety ratio is absolute should be taken into account. The effects on different pain symptoms, concomitant diseases, drug side effects, contraindications and quality of life must be taken into consideration. The first option is tricyclic antidepressants, gabapentin and pregabalin. Tramadol and capsaicin cream may be the second option. Opioids potential risk and reliability is proposed as the second and third option drugs with the contradictions of the subject [10].

At the beginning of treatment and at each control, the severity and quality of the pain should be questioned about physical and social functions and drug side effects. Observing the patient's response to treatment scales such as visual analogue scale can be used. In the treatment, first-line drugs should be given maximum doses. If the medication is effective for that patient; at least 50% reduction from the start should be expected in pain. 3 weeks for all first-line drugs a little improvement in pain should be expected. If patients do not respond adequately to first-line treatment or complain of side effects, treatment may need to be changed. Treatment can be performed with another primary drug and it can be replaced with one of the step medicines. In this cases, it is appropriate to choose an agent that is effective through different mechanisms, or additional medication may be applied. In addition, complementary mechanisms of action, possible synergies should be considered and additive side effects should be avoided. In combination therapy gabapentin, tricyclic antidepressants or opioids are recommended. In treatment planning, appropriate treatment modalities should be determined for each patient using algorithms. Treatment must be personalized, not all treatment options should be applied to all patients [1,10,11].

In conclusion, although there has been a decrease in incidence due to an increase in minimally invasive procedures in recent years, CPPS is a pain problem that's etiology exactly is an unidentified. It has been reported that patients who are frequently encountered in the daily practice of chest surgeon and chest diseases clinics, affecting the daily life and vital functions in the negative by this syndrome. The treatment is similar to other neuropathic pain and difficult. The most accused of etiology; During thoracotomy, the formation of the exertion pressure and rib fracture should be minimized. The most appropriate and least traumatic surgical methods should be chosen. The treatment should be considered as multimodal which is varies from primary treatment to neuromodulation and nerve blocks in wide range and the treatment should be personalized.

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