

Review article

Review of Treatment of Reflex Sympathetic Dystrophy

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Abstract

A review study was done by searching literature through PubMed. Reflex sympathetic dystrophy is a life altering disease pathogenesis of which are not yet clearly known likewise its management protocol has not been established. Treatment of longstanding Reflex sympathetic dystrophy is empirical and of limited efficacy. This disease may lead to dreadful squeal which may need amputation for their management and few of these patients may even develop suicidal tendency. Patient with Reflex sympathetic dystrophy usually present late. It was found that the clinical presentation of RSD are too much variable, although different modalities of treatment are used either alone or in combination, the outcomes are often unpredictable and of variable efficacy. Understanding of the treatment modalities and proper selection of treatment option are essential for best outcome. Preventive measure does play a role in management of these patients. Option of treatment includes pharmacological method, sympathetic nervous system interruption, use of calcitonin and bisphosphonate. More study is required to find out the mechanism that triggers the pain and other clinical manifestation so that a standardized protocol for its management can be developed.

Key words: Review, complex regional pain syndrome.

Introduction

Reflex sympathetic dystrophy first described by Mitchell has been known by various names including algodystrophy, causalgia, sudeck's atrophy and sympathetically maintained pain.¹ It is a chronic painful condition characterized by excruciating burning pain, pathological changes in bone and skin, excessive sweating, tissue swelling and extreme sensitivity to touch.² Reflex sympathetic dystrophy causes great suffering and distress in most patients. In addition to severe pain, which in some people remain chronic and unremitting patient may also experience serious physical disability and reduction in the quality of life leading to depression, fear, anxiety, anger and even suicidal tendency. Some patient even may demand amputation of the affected part for relieving from such symptom.³

The clinical manifestation of RSD is too much variable and also the role of sympathetic nervous system in many aspect of the illness is not clear, so a new name of the disorder complex regional pain syndrome has been chosen in an effort to describe its

clinical feature more accurately. The pathogenesis of the disease is not yet clearly understood and the optimal management has not been standardized. Timely and adequate management may revert or prevent the crippling squeal.¹⁸ The commonly used treatment modalities include use of anti-inflammatory drugs, interruption of sympathetic nervous system, use of calcitonin, beta-blocking agents and bisphosphonate.⁴ The other modalities of treatment those of which are under trial are peripheral nerve stimulation, spinal cord stimulation, use of immunoglobulin, lidoderm 5% patches.^{16, 22, 23} but outcome of such treatment are of variable efficacy and often unpredictable.^{10, 11}

Current Review

There is no curative treatment for complex regional pain syndrome. The treatment mostly based on anecdotal experiences, not on clinical trial¹⁰ & the main focus of treatment are on treatment of pain, stiffness and autonomic symptom.

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Aim: The Aim of this study are (i) to detail the different modalities of treatment with their relative efficacy and side effects, (ii) Limitation of different treatment modalities of treatment, (iii) Criteria for selection of appropriate modalities of treatment for a particular patient. So that appropriate option of treatment can be chosen for best outcome.

Methodology

By literature search through PubMed, the available articles on complex regional pain syndrome studied, results were reviewed. Different commonly used modalities of treatment were compared; their effectiveness and side effects were reviewed. New approach of treatment of complex regional pain syndrome type-2 were also evaluated and included in this review.

Result

Anti-inflammatory drug: the standard first line of treatment is usually with drugs. Although nonsteroidal anti-inflammatory drugs may provide some symptomatic pain relief they are not effective in altering the skin changes or natural history of the process thus play only a supportive role. On the other hand, a course of high dose of corticosteroids eg prednisolone or methylprednisolone can dramatically reduce pain swelling and stiffness. In general corticosteroids are of most value in early RSD when the bone scan show increased uptake. When corticosteroid are used patient should be monitored carefully for potentially serious side effect.¹¹

Interruption of sympathetic nervous system

Include sympathetic ganglion blockade, surgical sympathectomy and chemical sympathectomy.

Sympathetic nerve block

A sympathetic nerve block is a procedure usually performed by a pain management specialist (anesthesiologist), that involve injecting a pain relieving drug into an area of sympathetic nerve ending (ganglion) to interrupt or block sympathetically maintained pain. Lidocaine or bupivacaine with or without epinephrine are usually used, this procedure warms the skin, inhibit sweating and causes flushing. A successful blockade is indicated by the development of ipsilateral Horner syndrome. One to two blocks per week and an average of 4-5 blocks are usually required to permanently relief symptoms. For symptoms that are not adequately relieved after

4-5 blocks, a continuous ganglion blockade via a subcutaneously placed catheter or an operative sympathectomy can be performed. Sympatholytic drugs alone may be effective when used in early stage of the disease it may be beneficial in combination with sympathetic block or sympathectomy in later stage of the disease. Regional sympathetic blockade with sympatholytic drugs such as phenoxybenzamine, using a Bier's block like procedure may be helpful but results are not uniform. although this is more beneficial in the early stage of the disease. Intrathecal baclofen, a GABA receptor agonist relieved the dystonia and pain in some cases.^{6,9}

Surgical sympathectomy

Is a procedure that is intended to excise the collection of sympathetic nerve cell (ganglion) in a specified area along the spinal cord. Surgical sympathectomy carries certain risks and the outcome varies from patient to patient so it should be considered with due judgment, generally this procedure should be considered when the symptom relieved that has been achieved with sympathetic nerve block and drug therapy has not been permanently resolved the symptoms or relapse had been occurred despite continued treatment. The procedure is preferred for patients who have had an initial response to sympathetic nerve block. Indication for surgical sympathectomy include; disease duration longer than 6 month and failure of permanent solution after 5 percutaneous sympathetic block. The most significant improvement following surgical sympathectomy is pain relief, although blood supply, range of motion, strength and function are also somewhat improved. If sympathectomy is decided as a modality of treatment it should be performed early in the course of the disease because once joint fibrosis have developed functional improvement occur very little though pain relieve is still significant.¹⁷

Chemical Sympathectomy: A neurolytic agent is injected into the sympathetic ganglion at a specific site to block the sympathetically maintained pain. Chemical sympathectomy is performed only when the patient is at high surgical risk.¹¹

Trans-cutaneous electric nerve stimulation (TENS): Is a noninvasive treatment method that sends a brief pulse of electric current to specific nerve resulting pain relieve, reducing stiffness and improving mobility.²⁴

Calcitonin: Calcitonin is not an anti-inflammatory analgesic per se but has been reported to reverse the inflammatory changes and reduces pain in early stage of reflex sympathetic dystrophy, especially in patient with hyper dynamic blood flow. Subcutaneous inj. of 100-160 units is to be administered daily for 4-8 weeks and then every alternate day for 3-6 weeks. Calcitonin can also be administered by intranasal spray which has been demonstrated to be an effective means of treatment of reflex sympathetic dystrophy.⁸

Bisphosphonate: Beneficial effects of bisphosphonate have been documented on several placebo controlled trial. Bisphosphonate can be used in recent (disease duration less than eight month) RSD when calcitonin is inefficient or when calcitonin injection are not well tolerated.⁴

Use of immunoglobulin: Intravenous immunoglobulin are used in patient with pain of greater intensity and in patient who are refractory to usual treatment after 3-6 months., few studies were performed showing the beneficial effect of use of immunoglobulin in refractory and delayed presenting patient.¹²

Discussion

Anti inflammatory drugs plays only a supporting role without altering the natural history of the disease. Corticosteroids have a dramatic effect on pain relieve but have potential side effects when used in high dose. Both these drugs are effective in the early stage of the disease. Sympatholytic drugs may be used alone or in combination with surgical sympathectomy. The result of surgical sympathectomy varies from patient to patient and also carries a surgical risk¹⁷ and the chemical sympathectomy should be performed only in patient who are at high surgical risk.

Calcitonin reduces pain in the early stage of the disease though do not reverse inflammatory changes. Bisphosphonate can be used when the calcitonin are ineffective or not well tolerated by the patient.⁴ Intravenous immunoglobulin and Lidoderm

patches are only in the trial phase.²³

Knowledge is important when dealing with a life altering condition like reflex sympathetic dystrophy. Currently there is no known cure for reflex sympathetic dystrophy and the treatment is aimed at controlling or reducing the severity of the symptoms. Understanding the treatment modalities and option is critical for not only controlling the symptoms but also for preserving the patient's overall functional ability and quality of life.

There is also lack of controlled studies and randomized therapeutic trial. The role of prevention must also be strongly emphasized specially if RSD occur following surgery, with use of pre and postoperative efficient analgesia.⁹ Vitamin C together with clonidine can also prevent RSD in high risk patient.⁶ Response to treatment is greater in earlier stage; patient must be monitored carefully for potentially serious side effect. Studies involving bisphosphonate showed benefit but calcitonin did not show significant benefit.

Investigators are studying for new approaches to treat reflex sympathetic dystrophy and intervene more aggressively after traumatic injury. Scientist are studying how the signals of the sympathetic nervous system causes pain in RSD patient using a technique called micro neurography, these investigators have been able to record and measure neural activity in single nerve fiber of the affected patient. By testing various hypothesis these researcher hope to discover the unique mechanism that causes the spontaneous pain of RSD and that discovery may lead to a new ways of blocking pain.

Conclusion

Early diagnosis is the key to better management. Treatment should be started at the earliest stage and various modalitis of treatment should be considered judiciously for choosing the best option of treatment. The goal of treatment should not only to control symptom but also to maintain the quality of life.

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