Rehabilitation on Cervical Spondylosis

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Abstract

Introduction: Cervical Spondylosis (SC) is the most common disorder of the cervical spine. Intervertebral discs can degenerate as a result of natural aging. Other degenerative changes include osteophyte formation, facet joint hypertrophy, longitudinal ligament calcification, and ligament flava thickening.

Aim: The aim of this study is to show the different methods of physiotherapy used for the rehabilitation of cervical spondylosis and to compare among them the combined methods to see which of the methods is most effective in terms of relieving the main symptoms of cervical spondylosis.

Methods: In this study we investigated 33 studies that have used different treatment methods of patients with cervical spondylosis. The elected studies ranged from 2002 to 2020. For this review articles have been taken from official sources like PubMed, Google Scholar, Medscape and Cochrane library.

Results: During the analysis it was observed that the combination of different therapeutic methods is more effective than a single method. Combining exercise therapy with other methods seems to be the most effective program for relieving the symptoms that come from cervical spondylosis.

Conclusion: We concluded that exercise therapy combined with other methods is one of the most effective methods in the rehabilitation of cervical spondylosis.

Key words: *cervical spondylosis, cervical spondylosis with radiculopathy, rehabilitation, exercise, cervical traction, manual therapy.*

Introduction

Spondylosis belongs to the group of osteoarthritis and is related to injuries at the level of the articular cartilage and is associated with destructive and constructive phenomena (osteophytes).

Spondylosis can develop in different parts of the spine and according to the affected part gets the following names:

- Cervical spondylosis at the C1-C7 level
- Thoracic spondylosis at the level of Th1-Th12
- Lumbar spondylosis at the L1-L5 level
- Lombo-sacral spondylosis at level L5-S1-S2 (1)

Etiology

Cervical spondylosis (SC) is the most common disorder of the cervical spine. Intervertebral discs can degenerate as a result of natural aging. Other degenerative changes include osteophyte formation, hypertrophy of the facet joints, calcification of the longitudinal ligament, and thickening of the flava ligament. (2) These articular changes can lead to stiffening and narrowing of the segments and loss of physiological cervical lordosis.

SC presents in three symptomatic forms such as neck pain, cervical radiculopathy and cervical myelopathy. Neck pain and cervical radiculopathy (involvement of nerve roots) can be acute, subacute, or chronic resulting in various stages during the degenerative cascade. (3) Symptoms of SC include one, or a combination of: numbness; weakness and tingling in the neck and / or arms; neck and / or arm pain; stiffening of the neck; headache; symptomatic compression of the spinal cord (myelopathy) (4) or nerve roots (radiculopathy) (5); a combination of both (myeloradiculopathy), or a problem with bladder function from cervical myelopathy. (6,7).

Epidemiology

The prevalence of SC is the same for both sexes, but the degree of severity is higher in men. (8-10). In about 10% of patients, SC is due to congenital bone abnormalities, blocked vertebrae and lamina malformation that placed under stress on adjacent intervertebral discs. (11) SC involves 2% of hospital admissions. It is the most common cause of spinal cord dysfunction in patients older than 55 years. Based

on radiological findings, 90% of men older than 50 years and 90% of women older than 60 years have degenerative changes in the cervical spine (12).

Methodology

For the realization of this study, the method of reviewing the latest literature for the rehabilitation of cervical spondylosis was used. 44 studies were found and from these 33 studies were selected for further review which were in line with the inclusion and exclusion criteria. Selected studies ranged from 2002 to 2020.

Inclusion criteria

- Females and males aged 18-75 years
- Diagnosed with cervical spondylosis based on physical examination and radiography
- Cervical spondylosis with radiculopathy
- Subacute and / or chronic stage of cervical spondylosis

Exclusion criteria

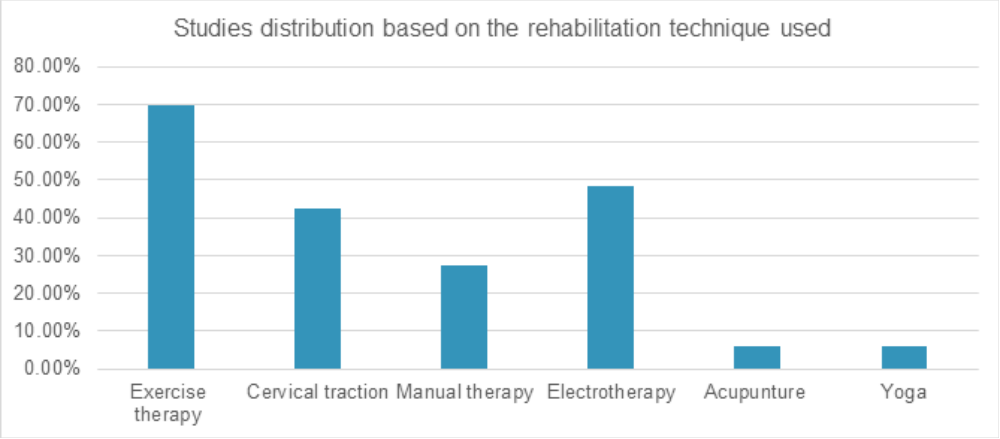
- Cervical spondylosis with myelopathy
- Acute stage of cervical spondylosis
- Spinal canal stenosis in the cervical region
- Red flags (tumor, osteoporosis, fracture, prolonged history of steroid use, rheumatoid arthritis)
- Pregnancy
- Ankylosing spondylitis

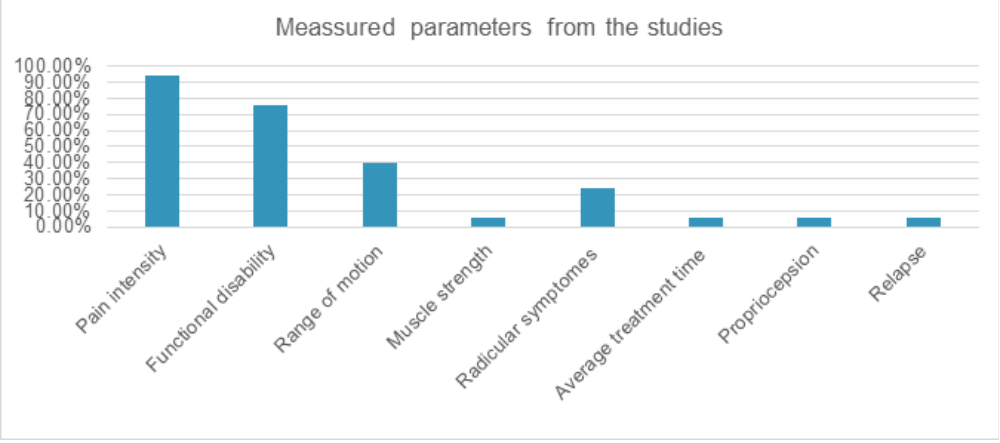
Results

The reviewed articles focused on different aspects of physical rehabilitation which included:

1. Combining exercises with electrotherapy (13)
2. Combination of exercise therapy with cervical traction and electrotherapy (14)
3. Combination of exercise therapy with deep tranvers massage, stretching and electrotherapy (15)

4. Combination of exercise therapy, electrotherapy and kinesiotaping (16)
5. Manual therapy techniques (17)
6. Combination of manual therapy with exercise therapy (18)
7. Combination of exercise therapy with cervical traction (19)
8. Combination and comparison of cervical traction and manual therapy (20)
9. Combination of cervical traction and electrotherapy (21)
10. Combination of manual therapy, exercise therapy and cervical traction (22)
11. Electrotherapy (23)
12. Acupuncture (24)
13. Yoga (25)





According to the results, the most encountered therapy is exercise therapy combined with other therapies and the main parameters measured are pain intensity and functional disability.

Physiotherapeutic rehabilitation in persons with cervical spondylosis should combine different methods to obtain the maximum possible results.

From the above analysis it is clear that the combination of different therapeutic methods is more effective than a single method. Combining exercise therapy with other methods seems to be the most effective program for relieving the symptoms coming from cervical spondylosis. Also, cervical traction is a very effective method when combined with other methods, especially for relieving radicular pain. Other methods such as manual therapy, electrotherapy, acupuncture and yoga should not be left out which also have beneficial effects in improving the symptoms.

Discussion

Exercise therapy combined with other methods is very effective in relieving symptoms. It is thought that training the muscles of the cervical region, especially the deep flexors of the neck is an effective and safe method for improving pain, disability and muscular strength. According to Saleh MSM et al., (2018) (26) in a study conducted for training of deep cervical flexors (DCFs), DCFs training was more effective, comfortable and safe for improving propocection, pain, muscular strength of dizziness severity neck and dizziness handicap (DHI) inventory points. In a study conducted by Wani S. et al., (2013) (27) the effectiveness of cervical retraction exercises (McKenzie) with or without biofeedback pressure for the treatment of pain in cervical spondylosis was compared. The study concluded that the group that used biofeedback pressure cervical retraction exercises (group B) experienced more pain reduction and functional disability associated with cervical spondylosis than the group that used biofeedback pressure cervical retraction exercises. Telci EA and Karaduman A. (2010) (28) in their study comparing the effect of different conservative methods of treating cervical spondylosis found that the results for pain, disability, quality of life, psychological state and patient satisfaction were higher in the groups receiving combination therapy than in the drug treatment group. These results indicate that individualized use of regular exercise for patients with neck pain provides long-term improvements in function and quality of life. To maximize the benefits exercise therapy can also be combined with manual therapy. Various methods of manual therapy are effective in treating cervical spondylosis. Langevin P. et al., (2015) (29) comparing 2 manual therapies and exercise protocols for cervical radiculopathy has concluded that manual therapy and exercises are effective in reducing the pain and functional limitation associated with cervical radiculopathy. Neck pain has a major impact on society, due to its long duration, the disability it causes and reduced productivity. Exercise therapy combined with electrotherapy can be a beneficial solution for relieving

pain. Electrotherapy has the best effect if used in combination. The many benefits of electrotherapy are widely known especially for the rapid relief of pain. In a study by Venosa M. et al., (2018) (30) it was found that high-intensity laser therapy plus exercise was more effective than ultrasound / TENS plus exercise in terms of functional improvement. High intensity laser therapy can be promoted and used in this pathology with positive results.

When treating patients with degenerative changes, pain relief therapy is recommended based on indirect treatment and with active patient participation. It is useful to work with PNF models that mimic the activities of daily functional life. According to the study conducted by Maicki T. et al., (2017) (31) it was demonstrated that rehabilitation of patients using PNF and manual therapy had a statistically significant impact on reducing pain and improving the performance of daily life activities. women with cervical back pain. However, the PNF method proved to be more effective in the short term (after 2 weeks) and in the long term (after 3 months). Evidence-based cervical spondylosis physiotherapy management is also part of cervical traction. Essentially the cervical traction pulls the head from the neck and creates space between the vertebrae to eliminate compression. This is especially important for cervical spondylosis with the presence of radiculopathy. Combining cervical traction with other methods is thought to be effective. This is supported by a study conducted by Sanduja A. (2010) (32) whose results imply that mechanical cervical traction is a useful physiotherapeutic tool for reducing neck pain and consequently neck disability. Also according to Qayyum S. et al., (2017) (33) mechanical traction has been proven to be more effective than manual therapy in patients with radicular pain from cervical spondylosis at the C5-C6 level. Singh A. and Rastogi A. (2018) (34) in their study demonstrated that intermittent cervical traction with hot packs and exercises is more effective in managing cervical spondylosis than just hot packs and exercises. This suggests that increasing cervical traction may provide additional effects. But not all authors think so. Regarding the combination of cervical traction, exercise therapy and manual therapy, some authors think that increasing cervical traction does not bring additional benefits. According to Young I. A. et al., (2009) (35) the addition of mechanical cervical traction to a multimodal treatment program of manual therapy and exercise exhibits no significant additional benefits for pain, function, or disability in patients with cervical radiculopathy. In contrast to the above study Cleland JA et al., (2005) (36) noted that 91% of patients with cervical radiculopathy treated with multimodal treatment of manual physical therapy, strengthening exercises, and intermittent cervical traction had reduced pain and improved function after completion of treatment and after 6 months follow-up. Acupuncture is another treatment method used for cervical spondylosis. It is an ancient Chinese medicine based treatment. For the treatment of cervical spondylosis it is often

used alone, but can also be used in conjunction with movement therapy. In both cases it is effective. Luo B. and Han J. (2010) (37) in their study demonstrated that acupuncture plus movement therapy and conventional acupuncture were similar in the treatment of cervical spondylosis, but the former was superior to the latter in short-term treatment and fewer points used.

Conclusion

From the above reviews it was concluded that exercise therapy combined with other therapies such as manual therapy, cervical traction and electrotherapy is one of the most effective methods in the rehabilitation of cervical spondylosis. Exercise therapy contributes to pain relief, improved muscle strength and quality of life in these individuals. Also important finding is that cervical traction combined with other therapies like manual therapy, exercise therapy and electrotherapy, is effective in relieving neck pain, radicular pain and disability coming from cervical spondylosis. The use of manual therapy techniques has more benefits for relieving the symptoms of cervical spondylosis if used in combination with exercise therapy, cervical traction and electrotherapy. This combination helps reduce pain and improve function. Acupuncture alone or in combination with movement therapy is effective in rehabilitating cervical spondylosis in the short term. During the rehabilitation of patients with cervical spondylosis, the additional application of yoga as exercise therapy has an effect on improving the effectiveness of treatment.

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