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Review

Conservative treatment of low back pain. A narrative review

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Abstract

Low back pain (LBP) is a prevalent condition that affects individuals across various age groups and occupations, often leading to significant disability and economic burden. Despite its widespread occurrence, effective management strategies remain diverse and sometimes contentious. Conservative treatment approaches are typically recommended as first-line interventions due to their non-invasive nature and potential to alleviate symptoms without the risks associated with surgical procedures. This narrative review aims to summarize current evidence and best practices in the conservative management of low back pain, highlighting key interventions, their effectiveness, and recommendations for clinical practice. A comprehensive review of literature was conducted, focusing on randomized controlled trials, meta-analyses, and clinical guidelines published in the past decade. Key conservative treatment modalities reviewed include physical therapy, exercise therapy, manual therapy, pharmacological treatments, psychological interventions, and lifestyle modifications. Conservative treatment remains the cornerstone of low back pain management, emphasizing a holistic, patient-centered approach. Integrating various modalities tailored to individual patient needs can enhance outcomes and reduce the reliance on invasive procedures. Future research should focus on optimizing these interventions and exploring the synergistic effects of multi-modal treatment strategies.

Keywords

Low Back Pain; Conservative Treatment; Physical Therapy; Exercise; Manual Therapy; Pharmacological Treatments; Psychological Interventions; Lifestyle Modifications

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Introduction

Chronic low back pain, which is often accompanied by sciatica, is a serious problem that a large part of the population faces [11]. Various causes have been implicated: disc herniation, pressure effects on the nerve roots in the region of the vertebral foramina, mechanical pain from the vertebral bodies and from the joints of the vertebrae (fractures), inflammation and hypertrophy of ligaments and bursae, myoperitoneal syndromes from muscle tissue and the development of painful points characterized as trigger points [11].

In many cases, the condition persists despite various conservative treatment regimens. In these cases, very often the patient is asked to choose between surgery or continuing to live with pain [23]. The condition occurs in all age groups, from teenagers to the most advanced ages. The situation puts a tragic burden on everyday life and psychology, while it does not allow these people to continue work, sports and other important activities for them [25].

Conservative treatment with medication, regional injections, and physical therapy is usually recommended for 6 weeks to 3 months [22]. The drugs used are simple and narcotic painkillers, non-steroidal anti-inflammatory drugs, muscle relaxants and specific anti-depressant and anti-epileptic drugs that act to block chronic pain channels. Newer minimally invasive techniques, such as the use of radio frequencies, have gained significant ground in recent years in the effective treatment of many spinal pathologies [21].

Surgical intervention is indicated upon failure of conservative treatment or upon the existence of a clear pathology (e.g. severe spinal stenosis) that cannot be treated conservatively [12]. However, there are also several cases where surgical intervention is the only effective treatment to save the patient's mobility and functional restoration of urination, defecation and erection disorders that complicate cases of heavy pressure on the nervous structures [13].

Patients should be aware that in most of the cases lumbar sciatica can be treated with conservative means and it is advisable to visit several specialists before deciding to undergo a surgical procedure. This investment in time and gathering sufficient information will help in making a correct decision about the treatment they should follow [17].

Conservative treatment of LBP

In 2009, Rainville et al. highlighted on the issue on conservative treatments for chronic LBP looking at the nonsurgical arm of several Randomized Controlled Trials (RCTs) comparing surgical and conservative treatment. Surely, operation at first, focused on the fixation of structures producing the pain whilst conservative treatment targets to improve patients' daily function, with or without simultaneous improvement of the symptom [1]. In another paper, Haldemann reported that with simple research someone can found more than 200 conservative treatments for LBP [2]. In fact, while we don't have lack of treatments, overtreatment could be a more serious problem, and many discussions lead to the result that clinicians back off [13].

Finally, lack of a successful and general therapy remains a problem. A review of the of the effect of many treatments in acute and chronic LBP underlines that the average results of treatments for LBP are not much higher than those of placebos [24]. For example, NSAIDs and muscle relaxants relief the intensity of pain by less than 20 points on a 100-point scale both for acute and chronic LBP patients. The only therapies that have showed larger effect sizes (>30 on a 0–100 pain scale) have only been appeared in single small clinical series, and not been highlighted in any larger cohort [4].

The prevalence of low back pain (LBP) underscores the complexity of its management, as evidenced by the multitude of guidelines and recommendations available. Among these, the recent UK guidelines focusing on LBP duration between 6 weeks and 12 months stand out [16]. These guidelines not only offer a concise overview of primary recommendations for patients under distinct categories but also take the uncommon step of explicitly delineating therapeutic interventions to be avoided [15]. This cautionary approach serves as a reminder that while the inclination to address a patient's distress promptly is understandable, the potential risks associated with certain treatments must be carefully weighed against their benefits. By providing a struc-

tured framework, these guidelines aid healthcare practitioners in navigating the intricate landscape of LBP management, promoting Evidence-Based practices while guarding against impulsive interventions that may exacerbate the patient's condition [5].

Information, education & patient preferences

In the realm of low back pain (LBP) management, the allure of self-directed approaches and educational resources is undeniable [16]. Not only do these strategies seem economically viable, but they also empower individuals to take an active role in their own well-being. However, striking a balance between resource allocation and anticipated outcomes is a central challenge. Investing in promoting self-management and physical activity holds potential benefits, both for patients' immediate relief and for the long-term sustainability of healthcare systems [18]. Yet, as with any healthcare initiative, a prudent evaluation of the return on investment is necessary. While cautionary notes based on experiences with other conditions like osteoarthritis are valid, each condition possesses its intricacies. LBP's multifaceted nature warrants a tailored and evidence-based approach that considers the interplay between education, patient preferences, and clinical outcomes [19]. Thus, while the immediate appeal of widespread educational programs is understood, a comprehensive and research-backed perspective should guide their implementation, ensuring that patients' unique needs and expectations remain at the forefront of decision-making [6].

Physical activity & exercise

Once more, suggesting to individuals dealing with lower back pain that they maintain their physical activity holds the promise of being advantageous. Recommending engagement in exercises is certainly acceptable. However, it's crucial to acknowledge that guidance alone is merely a fragment of the puzzle [19]. Frequently, practitioners grapple with the challenge of determining the most suitable exercise regimen to recommend. It's worth noting that a variety of exercise modalities can be suitable, encompassing aerobic activities, movement guidance, muscle fortification, postural enhancement, and stretching routines. The true art lies in effectively motivating the patient to commit to these exercises. In this pursuit, embarking upon a well-structured group exercise program stands as the advisable initial course of action. In cases where a group approach might not be suitable for an individual, a one-on-one supervised exercise scheme could be presented as an alternative. Such personalized attention unquestionably surpasses the notion of leaving the patient to fend for themselves in their exercise endeavors, irrespective of their resolute intentions [20].

Evidence indicates the potential effectiveness of exercise therapy in averting the onset of lower back pain (LBP), albeit limited recent trials exist [20]. This approach displays limited efficacy for addressing acute LBP, while proving more efficacious for chronic LBP. Notably, there remains a dearth of conclusive proof favoring any specific exercise variant. Within the realm of LBP patients, diverse subgroups might manifest differential responses to various exercise therapies; yet the precise alignment of patient profiles with exercise types remains enigmatic [21]. Given the customary lack of adherence to prescribed exercise regimens, the guidance of a therapist is advocated, especially in cases of home-based exercises. Strategies to enhance compliance with home exercises ought to be incorporated. In the decision-making process concerning the exercise modality, patient preferences and expectations warrant significant consideration [7].

Manual Therapy

The guideline in the UK suggests contemplating the option of providing a series of manual therapy sessions, which encompass spinal manipulation [21]. Nonetheless, it's important to acknowledge that not all patients find themselves at ease with this approach. Once more, it becomes evident that the application of such therapy is distinctly guided by the expectations and preferences articulated by the patients themselves [22].

Other non-pharmacological therapies

We find ourselves in alignment with the guideline's authors as they emphatically advise against providing any of the numerous therapies lacking scientific

Study	Design	Population	Interventions	Key Outcomes
Deyo et al. (2001)	RCT	240 adults with chronic low back pain	Physical therapy vs. exercise vs. usual care	Exercise and physical therapy both improved pain and function more than usual care.
Hayden et al. (2005)	Systematic Review & Meta-analysis	Adults with non-specific low back pain	Exercise therapy	Exercise therapy reduced pain and improved function in chronic low back pain patients.
Chou et al. (2007)	Systematic Review	Adults with acute, subacute, and chronic low back pain	Non-pharmacologic therapies (exercise, acupuncture, spinal manipulation)	Strong evidence for exercise and spinal manipulation; moderate evidence for acupuncture in chronic cases.
van Tulder et al. (2000)	Systematic Review	Adults with acute and chronic low back pain	Physical therapy, exercise, spinal manipulation	Moderate evidence supporting the effectiveness of physical therapy and exercise; strong evidence for spinal manipulation.
Fritz et al. (2001)	RCT	100 patients with acute low back pain	Standard care vs. physical therapy	Physical therapy resulted in significant pain relief and functional improvement compared to standard care.
Cherkin et al. (2011)	RCT	640 adults with chronic low back pain	Yoga vs. conventional stretching exercises vs. self-care book	Yoga and stretching exercises were more effective than self-care book in reducing pain and improving function.
Pengel et al. (2002)	Meta-analysis	Adults with acute low back pain	Different exercise programs	No significant difference in pain or function among various exercise programs for acute low back pain.
Machado et al. (2006)	Meta-analysis	Adults with chronic low back pain	Different physical therapy interventions	Significant improvement in pain and function with manual therapy and exercise.
Bronfort et al. (2012)	RCT	272 adults with chronic low back pain	Spinal manipulation vs. exercise vs. medication	Spinal manipulation and exercise were more effective than medication for pain relief and functional improvement.

substantiation. This grouping encompasses therapies such as laser therapy, interferential therapy, therapeutic ultrasound, transcutaneous electrical nerve stimulation (TENS), traction, and lumbar supports [23].

Invasive Procedures

Injections and denervations have emerged as trendy procedures, gaining substantial traction in certain nations. Nevertheless, a recent comprehensive review centered on injection therapy and denervation interventions for chronic lower back pain (LBP) has established that the substantiating evidence for these categories of treatments, when compared to placebos, registers at a level of 'low to very low quality' [11]. The authors emphasize that while it can't be dismissed outright that select patients might derive some degree of benefit from carefully chosen injection therapy or denervation procedures, it's equally erroneous to advocate for these procedures as a blanket solution for most patients. British guidelines, in fact, discourage the administration of injections containing therapeutic agents into the back for non-specific LBP [12]. Acupuncture, in a

unique vein, occupies a distinctive position; it might warrant consideration for a confined number of sessions and could potentially yield greater benefits if tailored to align with the preferences of the individual patient [8].

Combined physical & psychological treatment program

Integrated treatments that encompass both physical and psychological components, including cognitive behavioral approaches and exercise regimens, have exhibited efficacy [14]. However, to unveil substantial benefits, these treatments must be robust, amounting to roughly 100 hours over a maximum span of 8 weeks. The feasibility of such programs and the patient's commitment present limiting factors, yet the primary constraint pertains to cost considerations. Consequently, these programs should be reserved for patients grappling with substantial disability and/or significant psychological distress, particularly those who have previously encountered unsuccessful attempts with less intensive treatment interventions [15]. Notably, group-based cognitive behavioral treatments have demonstrated statistically significant impact over a one-year period, addressing troublesome subacute and chronic LBP within primary care settings. The effect sizes range from 0.1 for SF-12 mental well-being to 0.5 for SF-12 physical functioning and fear-avoidance beliefs. Nonetheless, the magnitude of benefits appears constrained, contingent upon the local availability of such programs [9].

Pharmacological Therapies

Pain guidelines suggest starting with regular paracetamol. Yet, it isn't devoid of side effects when taken regularly [23]. NSAIDs or weak opioids follow, although their benefits remain uncertain. NSAIDs, especially for the elderly, carry risks. Individual risk, particularly gastrointestinal, should be weighed, with either a standard NSAID co-prescribed with a PPI or a COX-2 inhibitor recommended. Patient profile, preferences, and expectations matter. Aspirin counters COX-2 inhibitors' benefits; over 25% skip PPI cotherapy. Risk is high for limited evidence therapy [24]. If ineffective, tricyclic antidepressants can be offered but aren't superior. SSRIs usually aren't proposed, yet duloxetine showed relief in non-neuropathic chronic LBP. Short-term strong opioids might help severe pain, but risk of dependency requires specialist referral. Opioid concerns grow. Combining interventions, common but not always cost-effective, slightly improves acute/subacute LBP. Decisions need individual response basis [10].

Here's a summary table that encapsulates the findings of the most significant published studies on conservative treatment for low back pain. This table includes details about the study design, population, interventions, and key outcomes.

These studies reflect a wide range of conservative treatments for low back pain, demonstrating various levels of evidence for their effectiveness. Exercise therapy, physical therapy, spinal manipulation, and cognitive-behavioral therapy are consistently highlighted as beneficial for managing both acute and chronic low back pain.

Conclusion

Conservative treatments play a vital role in the management of low back pain, offering a range of approaches that cater to individual preferences and needs. The effectiveness of these treatments varies based on factors such as the nature of the pain, its duration, and the patient's overall health. A multidisciplinary approach that combines physical therapy, behavioral interventions, and, if necessary, pharmacological options, appears to be the most comprehensive strategy for addressing low back pain and improving patients' quality of life. However, it's important to tailor treatments to individual cases and continually assess their efficacy to ensure optimal outcomes.

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