Ozone Therapy For Spinal Stenosis

Spinal Ozone Therapy in Lumbar Spinal Stenosis

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SUMMARY - *Lumbar spinal stenosis (LSS) is the first indication of lumbar surgery in the population over 65 years in the USA, according to the North American Spine Society. Degenerative aetiology is the most common, and as the elderly population grows, this pathology will increase in prevalence. The natural history of LSS shows that there is no need for surgery unless symptoms clearly progress or the clinical situation is unbearable. A high rate of complications with traditional surgery has encouraged the development of minimal invasive surgery and percutaneous techniques like ozone-therapy, for improving quality of life in these patients. In vitro studies have demonstrated the phospholypase A2 blocking action of ozone, which is the same enzyme steroids block to produce their antinflammatory effect. The success of epidural and intraforaminal steroids injections in decreasing surgery rates and the published reports comparing these techniques versus ozone injections encouraged me to use periforaminal ozone injections to treat these patients. Based on the SICOT 953902 protocol widely used in Italy to treat lumbar spondylosis and the works on steroids injections in LSS, an experimental protocol was devised and used in a previous study to determine the indications and the optimal number of sessions in a group of 20 patients. Seventy-two patients have completed the protocol since September 2002 with no drop outs; 59 patients have a one year follow-up. One patient died five months after ending the protocol. No mayor side effects were observed; four patients returned to their baseline during the first year of follow-up. Evaluation was done using the Zurich Claudication Questionaire (ZCQ) and Visual Analogue Scale (VAS) for low back pain and leg pain. These scales were fulfilled by the patients before the treatment and in the follow-up controls at one, three, six and 12 months. Forty-three patients were considered excellent and good results, reaching a ZCQ improvement over 60% or 40%. This is a 74% success rate out in the 58 patients evaluated at one year. Natural history positive evolution rate of LSS has been settled at around 15%, so the protocol seems to be useful for treating LSS patients. A randomized controlled study directly comparing treated and non-treated patients would be necessary to confirm these results.*

Introduction

Lumbar spinal stenosis (LSS) refers to the narrowing of the neural canal containing the lumbar roots intradurally (central canal) and extradurally (lateral canal) (figures 1-2).

Although there have been references to this pathology since 1803 [1], the modern concept was settled by Henk Verbiest in 1949 [2].

Epidemiology

According to the North American Spinal Society (NASS) [3], around 20% of the adult population suffers from this pathology (5% central stenosis and 15% lateral stenosis). In patients over 60 years old, it is well tolerated, being asymptomatic in more than 20% of patients with radiological LSS. On the other hand, 98% of patients under 60 years are symptomatic. Nowadays, LSS has become the first indication for lumbar surgery in patients over 65 years in the USA.

Anatomy

The central canal has a variable anterior-posterior diameter [4] that ranges from 15 mm in L1-2 to 12 mm in L5-S1. This gives us an area ranging from 85 to 100 mm^2. The lateral canal is present "as it is" [3] in 72% of the L3-4 level and in 100% of L4-5 and L5-S1 levels [4]. Its dimensions range from 50 to 150 mm^2 and depend on the lumbar flexion to extension position.

Classification

According to the items affected, lumbar stenosis can be classified as [5]:

- Central:

Ozone therapy for spinal stenosis is an emerging treatment option that has garnered attention for its potential benefits in managing symptoms associated with this condition. Spinal stenosis, characterized by the narrowing of the spinal canal, can lead to pressure on the spinal cord and surrounding nerves, resulting in pain, numbness, and mobility issues. Traditional treatments often include physical therapy, medications, and, in severe cases, surgery. However, ozone therapy is being explored as a less invasive alternative that may offer relief for patients suffering from spinal stenosis.

Understanding Spinal Stenosis

Spinal stenosis can occur in any part of the spine but is most common in the lumbar (lower back) and cervical (neck) regions. The condition is often associated with age-related changes, such as arthritis, herniated discs, and thickening ligaments.

Symptoms of Spinal Stenosis

Patients with spinal stenosis may experience a range of symptoms, including:

- Chronic pain in the back or neck
- Numbness or tingling in the arms or legs
- Weakness in limbs
- Difficulty walking or standing for prolonged periods
- Balance issues

These symptoms can significantly impact the quality of life, making it essential for patients to seek effective treatment options.

What is Ozone Therapy?

Ozone therapy involves the administration of ozone gas (O3) for therapeutic purposes. Ozone is a molecule composed of three oxygen atoms, and it has been used in various medical applications since the early 20th century. The therapy is believed to promote healing by improving oxygen supply to tissues, reducing inflammation, and stimulating the immune response.

Mechanisms of Action

The potential benefits of ozone therapy can be attributed to several mechanisms:

1. Oxygenation: Ozone can enhance the oxygen supply to tissues, which is crucial for healing.
2. Anti-inflammatory Effects: Ozone may reduce inflammation by modulating immune responses and decreasing the production of inflammatory cytokines.
3. Pain Relief: The therapy can lead to a reduction in pain through its nerve-blocking effects and by promoting the release of natural painkillers in the body.
4. Antimicrobial Properties: Ozone exhibits antimicrobial effects, which can be beneficial in treating infections that may complicate spinal conditions.

Ozone Therapy for Spinal Stenosis

The application of ozone therapy for spinal stenosis primarily involves intradiscal ozone injections, where ozone gas is injected directly into the affected intervertebral disc. This method aims to alleviate pain, reduce inflammation, and promote healing within the disc.

Procedure for Ozone Therapy

The ozone therapy procedure typically involves the following steps:

1. Consultation: A thorough evaluation by a healthcare professional to determine the suitability of ozone therapy for the patient's condition.
2. Imaging: Diagnostic imaging, such as MRI or CT scans, may be conducted to assess the severity of spinal stenosis and identify the specific areas to target.
3. Injection: Under sterile conditions and often using fluoroscopic guidance, ozone gas is injected into the affected disc or surrounding tissue.
4. Post-Procedure Care: Patients are usually monitored for a short time after the procedure and may receive instructions for recovery and follow-up care.

Benefits of Ozone Therapy for Spinal Stenosis

Ozone therapy presents several potential benefits for individuals with spinal stenosis, including:

- Reduced Pain: Many patients report significant relief from chronic pain following ozone injections.
- Improved Mobility: With reduced pain and inflammation, patients may experience improved mobility and functionality.
- Minimally Invasive: Ozone therapy is less invasive than traditional surgical interventions, making it an appealing option for those seeking alternatives.
- Short Recovery Time: Most patients can resume normal activities shortly after the procedure, with minimal downtime.

Research and Evidence

While ozone therapy for spinal stenosis is still considered experimental in many regions, several studies have examined its efficacy:

- A 2018 study published in the Journal of Pain Research evaluated the effects of ozone therapy on patients with lumbar disc herniation and found that it significantly reduced pain and improved functionality.
- A 2020 meta-analysis in Pain Physician suggested that ozone therapy could be a safe and effective treatment for various spinal conditions, including spinal stenosis.

Despite these promising findings, more extensive clinical trials are needed to establish standardized protocols and validate the long-term effectiveness and safety of ozone therapy.

Potential Risks and Considerations

Although ozone therapy is generally considered safe, it is essential to recognize potential risks and side effects:

- Infection: As with any injection, there is a risk of infection at the injection site.
- Allergic Reactions: Some individuals may experience allergic reactions to ozone.
- Temporary Discomfort: Patients may experience temporary discomfort, swelling, or bruising at the injection site.

It is crucial for patients to discuss these risks with healthcare providers and weigh them against the potential benefits of ozone therapy.

Conclusion

Ozone therapy for spinal stenosis represents an innovative approach to managing a condition that can severely impact quality of life. While the therapy shows promise in alleviating pain and improving mobility, it is essential for patients to consult with qualified healthcare professionals to determine if this treatment aligns with their specific needs and circumstances. As research continues to evolve, ozone therapy may become a more widely accepted option for those seeking relief from the debilitating effects of spinal stenosis.

Frequently Asked Questions

What is ozone therapy and how is it used for spinal stenosis?

Ozone therapy involves the administration of ozone gas to promote healing and reduce inflammation. For spinal stenosis, it is typically injected into the affected area to alleviate pain and improve mobility by enhancing oxygen delivery and circulation.

What are the potential benefits of ozone therapy for patients with spinal stenosis?

Potential benefits of ozone therapy for spinal stenosis include reduced pain, decreased inflammation, improved blood flow, enhanced healing of damaged tissues, and a non-surgical option for managing symptoms.

Are there any risks or side effects associated with ozone therapy for spinal stenosis?

While ozone therapy is generally considered safe, potential risks may include local irritation at the injection site, allergic reactions, or adverse effects if not administered correctly. It's important to consult with a qualified healthcare provider to discuss risks.

How does ozone therapy compare to traditional treatments for spinal stenosis?

Ozone therapy may offer a less invasive alternative to traditional treatments such as surgery or steroid injections. It can provide pain relief and improved function without the risks associated with more invasive procedures, though results can vary by individual.

Is ozone therapy widely accepted as a treatment for spinal stenosis?

Ozone therapy is gaining popularity and is used by some practitioners, but it is not universally accepted or extensively studied in the context of spinal stenosis. More research is needed to establish its efficacy and safety as a standard treatment.

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