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ORIGINAL ARTICLE

Intratympanic steroid injection and hyperbaric oxygen therapy for the treatment of refractory sudden hearing loss[☆]

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KEYWORDS

Salvage treatment;
Intratympanic
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Abstract

Introduction: Controversy surrounds the use of salvage therapies to treat sudden sensorineural hearing loss (SSNHL), with no consensus on recommendations. While several studies have demonstrated the effectiveness of intratympanic administration of steroids (ITS) and hyperbaric oxygen (HBO) treatment, few have compared the efficacy of ITS and HBO therapy in patients with refractory SSNHL.

Objective: We evaluated the efficiency of ITS and HBO therapy in patients with refractory SSNHL.

Methods: Patients who did not adequately benefit from systemic treatment were evaluated retrospectively. Refractory patients were defined as those who gained less than 20 dB in hearing after initial treatment. All refractory patients were informed about salvage therapy options: ITS or HBO therapy, the advantages and disadvantages of which were explained briefly. ITS involved 4 mg/mL dexamethasone administered through a 25 gauge needle. Patients underwent HBO therapy in a hyperbaric chamber where they breathed 100% oxygen for 120 min at 2.5 atmospheric pressure. The hearing levels of both groups were evaluated before the salvage therapy and at 3 months after treatment. Improvements in hearing were evaluated according to the Furushashi criteria. We also compared the two therapies in terms of speech discrimination scores (SDSs) and the recovery of all frequencies.

Results: The salvage therapies generated similar results. Changes in pure tone averages and SDSs were similar for ITS and HBO therapy ($p=0.364$ and $p=0.113$). Comparison of SDSs and hearing thresholds at all frequencies showed similar levels of improvement.

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PALAVRAS-CHAVE

Terapia de resgate;
Tratamento
intra-timpânico;
Oxigenoterapia
hiperbárica;
Perda auditiva súbita

Conclusion: ITS and HBO therapy produced similar improvements in SSNHL patients, but the sample size was too small to draw definitive conclusions. Further randomized controlled studies are needed to identify the best therapy for patients with refractory sudden hearing loss.

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Injeção de intratimpânica de corticoides e oxigenoterapia hiperbárica para o tratamento da perda auditiva súbita refratária

Resumo

Introdução: Há muita controvérsia envolvendo o uso de terapias de resgate para tratar a perda auditiva neurossensorial súbita (PANSS), sem consenso sobre as recomendações. Embora vários estudos tenham demonstrado a eficácia do uso de corticoides intratimpânicos (CIT) e o tratamento com oxigenoterapia hiperbárica (HBO), poucos têm comparado a eficácia da terapia ITS e HBO em pacientes com PANSS refratária.

Objetivo: Avaliamos a eficiência da terapia com CIT e HBO em pacientes com PANSS refratária. **Método:** Pacientes que não se beneficiaram adequadamente do tratamento sistêmico foram avaliados retrospectivamente. Pacientes refratários foram definidos como aqueles que ganharam menos de 20 dB na audição após o tratamento inicial. Todos os pacientes refratários foram informados sobre as opções de terapia de resgate: terapia com CIT ou HBO, cujas vantagens e desvantagens foram explicadas brevemente. O CIT envolveu 4 mg/mL de dexametasona administrada através de uma agulha de calibre 25. Os pacientes foram submetidos à terapia HBO em uma câmara hiperbárica onde respiraram 100% de oxigênio por 120 min a 2,5 pressão atmosférica. Os níveis de audição de ambos os grupos foram avaliados antes da terapia de resgate e três meses após o tratamento. As melhorias na audição foram avaliadas de acordo com os critérios de Furahashi. Também comparamos as duas terapias em termos de Escores de Discriminação de Fala (EDF) e a recuperação de todas as frequências.

Resultados: As terapias de resgate demonstraram resultados semelhantes. As alterações nas médias de tons puros e nas EDF foram semelhantes para a terapia com CIT e HBO ($p=0,364$ e $p=0,113$). A comparação dos EDF e dos limiares de audição em todas as frequências mostrou níveis de melhora semelhantes.

Conclusão: CIT e HBO produziram melhorias semelhantes nos pacientes com PANSS, mas o tamanho da amostra era muito pequeno para tirarmos conclusões definitivas. Estudos randomizados e controlados adicionais são necessários para identificar a melhor terapia para pacientes com perda auditiva repentina refratária.

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Introduction

The widely accepted definition of sudden sensorineural hearing loss (SSNHL) is loss of 30 dB or more for at least 3 days at three consecutive frequencies. This constitutes an otologic emergency that requires urgent treatment. The most common suggested etiologies are perilymphatic fistulas, viral infections, vascular insufficiency, and autoimmune pathologies.¹ Systemic steroids are the most widely accepted and effective drugs for treatment of the condition.² Steroids can be used orally, intravenously, or via the local intratympanic route, particularly in combination with other drugs. With steroid therapy, recovery rates increase from 32–65% to 49–89%.³ However, after the initial systemic treatment, approximately 30–50% of patients do not show an adequate response.⁴ For these patients, salvage therapies offer a treatment alternative.

Intratympanic administration of steroids (ITS) achieves higher perilymphatic levels compared to the systemic route.⁵ It also prevents systemic side effects, allows a higher concentration of steroids in the perilymph, and is particularly beneficial in patients who are contraindicated for systemic steroids. Therefore, it is becoming one of the most recommended treatment options for patients with SSNHL.⁶ ITS can be used as a primary treatment, salvage treatment, or in combination with systemic steroids. Its efficacy has been demonstrated.^{7,8}

Hyperbaric oxygen (HBO) therapy has been used to treat SSNHL since the late 1970s. It is recommended when hypoxia is thought to be the initial cause of SSNHL because it increases blood oxygen levels in the blood, thereby also increasing levels in the perilymph via diffusion.⁹ Recent studies have demonstrated that HBO therapy is effective for SSNHL patients as a salvage treatment.^{10–12}

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