

# Clinical Observation on the Treatment of Acute Tinnitus with Retroauricular Injection of Methylprednisolone

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**Abstract:** Objective: To explore and analyze the clinical effect of retroauricular injection of methylprednisolone in the treatment of acute tinnitus patients. Method: 100 acute tinnitus patients treated in Shaanxi Provincial People's Hospital from March 2021 to March 2022 were selected as the research subjects. After obtaining the consent of the patient and their family, a random allocation method is used. 100 patients were divided into two groups. All patients received mecobalamin dispersible tablets, ginkgo biloba leaves and Flunarizine hydrochloride capsules. However, patients in the experimental group needed to receive postauricular methylprednisolone injection, and patients in the control group received postauricular ligustrazine hydrochloride injection. Compare the effectiveness of treatment between two groups of patients. Result: After treatment, the total effective rate of the experimental group was 95%, while the total effective rate of the control group was 62%. The difference in total effective rate between the two groups was statistically significant ( $P < 0.05$ ). Conclusion: Patients with acute tinnitus who receive retroauricular injection of methylprednisolone during clinical treatment can achieve significant results without any adverse reactions, and is worthy of promotion and use in future clinical treatment.

**Keywords:** Acute Tinnitus; Methylprednisolone; Clinical Effects

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## Introduction

The so-called tinnitus refers to the subjective perception of sound in the patient's head or ears. But there is no sound outside the patient. This is a common disease in otorhinolaryngology. The incidence rate of tinnitus patients is increasing with age, and the probability of tinnitus is also increasing. In recent years, with the increasing pressure of daily life, the number of patients with tinnitus in the general population has been continuously increasing, and the elderly are a high-risk group for tinnitus diseases. Acute tinnitus mainly refers to the patient's onset time not exceeding 3 months and continuous tinnitus phenomenon. For acute tinnitus, due to the relatively few objective evaluation methods, there are still relatively difficult problems in clinical diagnosis. For acute tinnitus, effective treatment cannot be carried out in the current treatment. In order to better achieve radical treatment of the disease, the plan of injecting methylprednisolone into the ear for acute tinnitus patients can produce significant results, In order to further analyze and explore the effectiveness of retroauricular injection of methylprednisolone in the clinical treatment of acute tinnitus patients, 100 clinical data of acute tinnitus patients treated in our hospital from March 2021 to March 2022 were selected as the research subjects. The following report is presented.

## 1. Materials and Methods

### 1.1 General Information

The clinical data of 100 patients with acute tinnitus who received treatment in our hospital from March 2021 to February 2022 were selected as the research subjects, and the onset time of the patients did not exceed 3 months. Among

them, there are 65 males and 34 females, aged 18-69 years old. Randomly divide them into an experimental group and a control group, with 50 cases each. Among them, there were 61 cases of unilateral tinnitus and 39 cases of bilateral tinnitus. There was no statistically significant difference in general information such as age and gender between the two groups of patients ( $P>0.05$ ), indicating comparability.

## 1.2 Diagnostic criteria and exclusion criteria

The patient has been clinically diagnosed with one or both sides of tinnitus, which meets the clinical determination criteria. The diagnostic examination methods used include tinnitus matching, otoscopy, acoustic immittance testing, pure tone hearing threshold, auditory brainstem response audiometry, etc. After being determined through various methods, the patient's consent is obtained and they are used as experimental research subjects. For patients with tinnitus, there have been no abnormal changes in the internal structure of the ear or the properties of the eardrum membrane. The disease cycle of all patients did not exceed 3 months. Acute tinnitus needs to exclude patients with chronic Otitis media, vertigo, otosclerosis and other diseases. For patients, tinnitus not only has physiological effects, but also has psychological effects. So this study needs to exclude patients with psychological problems. Exclusion criteria: Patients participating in this survey and study are not allowed to suffer from serious illnesses, and lactating and pregnant women are not allowed to participate in the study. Patients with primary diseases such as cardiovascular, kidney, liver, or hematopoietic system. Exclude patients with psychosis, acoustic neuroma, brain tumor, congenital Cholesteatoma or other malignant tumors.

## 1.3 Method

Treatment method: Experimental group: Patients take the end and sit in a sitting position, undergo routine disinfection behind the ears, and use a 1ml syringe with a No. 5 needle (injection needle size  $0.5 \times 38$ RWSB), aspirate 1ml of methylprednisolone (methylprednisone sodium succinate for injection), pull the auricle forward in the middle of one hand's ear wheel, and a transverse ligament protrusion can be seen in the mastoid area. The intersection point with the auricle is the injection point behind the ear. The other hand holds a syringe to inject approximately 1.5cm parallel to  $15^\circ$ , and push the drug solution every 3 days. 10 days for one course of treatment.

Control group: Patients were placed in an upright position, disinfected routinely behind the ears, and used a 5ml syringe and a No. 5 needle (injection needle size  $0.5 \times 38$ RWSB), extract ligustrazine hydrochloride injection (2ml: 40mg), and use the method of opening the mouth to select the acupoints for listening, listening, and Yifeng; Select the acupuncture point or sensitive pain point, and slowly puncture it for 1-1.5cm. After the patient feels sore, numb, bloated, and Qi, draw back without blood, and then slowly inject the medication, with a dosage of 0.5ml per acupoint; Alternate acupoint injection on both sides, once per day. 10 days for one course of treatment. All patients were matched with oral mecobalamin dispersible tablets (0.5mg/tablet, 1 tablet/time, 3 times/day), Flunarizine hydrochloride capsules (2 tablets/time, every night), and ginkgo biloba leaves (40mg/tablet, 1 tablet/time, 3 times/day). After one course of treatment, rest for one week before proceeding to the next course, with a total of three courses of treatment, during which other treatments will be suspended.

## 1.4 Criteria for determining efficacy

The treatment efficacy of all patients was analyzed using the efficacy evaluation criteria for tinnitus severity. Recovery: The patient's tinnitus disappeared, various accompanying symptoms disappeared, and no recurrence occurred during the 1-month follow-up after treatment; Significant effect: The degree of tinnitus in the patient decreased significantly; Effective: The degree of tinnitus reduction in patients is not significant enough; Invalid: The patient's tinnitus level did not show any change. Total effective rate=(cured+significantly effective+effective)/total number of cases  $\times 100\%$ .

## 1.5 Statistical Methods

SPSS16.0 statistical software was used for statistical analysis of the research data. The measurement data is expressed as mean  $\pm$  standard deviation ( $\bar{x} \pm s$ ) and t-test is used; The counting data is expressed in percentage (%), using  $\chi^2$  Inspection.  $P<0.05$  indicates that the difference is statistically significant.

## 2. Results

After systematic treatment, both groups of patients achieved significant results, with a total effective rate of 92% in the experimental group and 60% in the control group. The difference between the two groups was statistically significant ( $P < 0.05$ ).

## 3. Discussion

At present, the causes of acute tinnitus in patients with acute tinnitus are not yet understood in clinical medicine. Through clinical research, it has been found that there are many reasons for patients to suffer from acute tinnitus, including related factors such as decreased immunity, infection, or vascular disease. In clinical treatment work, the main focus is to improve the patient's cochlear blood supply, nutritional nerve blood supply schemes, and so on. Fundamentally alleviate the blood supply status of patients during the treatment process. By satisfying the conditions of blood supply, the patient's lymphatic circulation is improved to maintain normal tissue cell function. In the treatment of acute tinnitus, patients need to receive various antiviral improvements to complete their immune response. The systemic use of glucocorticoids may induce infections, ulcerative disease, cortical hyperfunction syndrome, mental illness, and osteoporosis in individuals. As a new treatment method, the mechanism behind the ear medication cannot be determined yet. During clinical treatment, the drug is injected subcutaneously into the patient's body after passing through the ear, and a large amount flows into the patient's ear vein and then into the mastoid vein, which may lead to prolonged or high concentration peaks in the blood of the sigmoid sinus.

In addition, after the Intramuscular injection drug enters the blood circulation, the drug enters the inner ear mainly through the blood labyrinth barrier of the inner ear, and plays its pharmacological role. Clinical trial studies have confirmed that post ear medication has achieved good therapeutic effects and is a new type of medication in clinical practice. The specific mechanism of its treatment method is currently uncertain. In animal experiments, compound Betamethasone injection was injected subcutaneously behind the ear and intramuscular injection into the buttocks, respectively. The pharmacokinetic characteristics of the subcutaneous administration mode behind the ear were as follows: after the drug was administered behind the ear, it entered the blood of the sigmoid sinus, and its concentration reached a high peak and lasted for a long time, especially in the blood of the sigmoid sinus on the same side, while the concentration in the blood of the Systemic circulation was always at a low level.

## 4. Summary

In summary, in the current treatment of acute tinnitus, injecting methylprednisolone into patients after use has good clinical efficacy. The drug is easy to operate and easy to operate. During the treatment process, avoid adverse reactions from patients. The use of drugs such as methylprednisolone can alleviate patients' adverse reactions. The method of administering drugs after the ear is a new way of use, which is a new idea for future research. However, whether its mechanism of action can be clarified requires further research and exploration in the future.

## References

- [1] Chen TY, Zheng YX, Li GH, Data analysis of medication and treatment methods for retroauricular injection [J]. 2022(04).
- [2] Jiang LM, Wei HJ, Wang Q, Effect of modified Tongqiao Huoxue Decoction combined with retroauricular injection of methylprednisolone sodium succinate on the efficacy and apolipoprotein in patients with sudden deafness [J]. 2022(08).
- [3] Liu D, Zhang YB, Shan CG, Jia QJ, Jia ZW, Effect of different frequency of retroauricular injection of methylprednisolone on sudden deafness [J]. 2020(01).
- [4] Wang HY, Liu W, Zhang M, Xu AD, Analysis of the efficacy of retroauricular injection of methylprednisolone in the treatment of sudden deafness with tinnitus [J]. 2020(05).
- [5] Li LJ, Wang JS, Zhou HQ, Zhang BS, A case of retroauricular abscess in children caused by Eiken's bacteria [J]. 2020(06).