

**Original article:**

## **A Relative Report between the Adequacy of Intratympanic Steroid Injection and Regular Clinical Treatment in Tough cases of Otitis Media with Effusion**

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### **Abstract:**

**Introduction:** The Otitis media with Effusion (OME) is a multifactorial sickness. An intense OME is characterized by the presence of middle ear effusion for more than 3 weeks, sub acute from 3 weeks to 90 days and constant for over 90 days. Pathogenesis of ongoing OME is more unpredictable than can be clarified by a single cause. It likely addresses a connection between hereditary inclination and setting off elements such as infection and allergy.<sup>1,2</sup>

**Materials and Methods:** A randomized, forthcoming, controlled examination was directed in the division of ENT ,KFMSR Coimbatore for a time from September to December 2013, .Likelihood tests by straightforward different inspecting method has been received for the arbitrary task of the members to treatment bunches in the current examination.

**Results:** Absolute 20 instances of safe OME with hearing misfortune were analysed in the current examination. Every one of the patients gave hearing hindrance and aural fullness (100%) as their main complaints. Tinnitus (20%) and irregular ear infection (10%) were other related grumblings.

**Discussion:** Otitis media (OM) is the commonest youth illness after viral upper respiratory diseases virus. In contrast to acute Otitis Media (AOM), it doesn't display intense disease indications, and it is the incendiary response of the Middle ear that is characterized by effusion in the tympanic cavity.<sup>2</sup>

**Conclusion:** Otitis media with emission is a multifactorial infection and treatment alternatives for OME are restricted as clinical therapy, myringotomy with goal of fluid and ventilation tube addition for ongoing cases.

### **INTRODUCTION:**

The Otitis media with Effusion (OME) is a multifactorial sickness. An intense OME is characterized by the presence of middle ear effusion for more than 3 weeks, subacute from 3 weeks to 90 days and constant for over 90 days. Pathogenesis of ongoing OME is more unpredictable than can be clarified by a single cause. It likely addresses a connection between hereditary inclination and setting off elements such as infection and allergy.<sup>1,2</sup> Obsessively, the sickness is described by secretory transformation of the epithelium coating the middle ear cavity and subepithelial edema, and penetration of phagocytes and lymphocytes. The liquid in the middle ear cavity might result from one or the other seepage or exudation and dynamic discharge from the epithelial cells.<sup>3</sup>

The pervasiveness of OME shifts broadly with age. However the investigations on pervasiveness of OME in various pieces of the world are accessible, comparable examinations are limited on Indian populace, all the more so in more established age group. Kumari MS et al revealed a predominance of OME (16.6%) in an investigation on south Indian population.<sup>4</sup> The predominance of various assortments of OME (acute, subacute, constant and safe) couldn't be found for Indian /eastern Indian populace even with broad hunt of the writing.

OME is a main source of hearing hindrance. Early and legitimate administration of OME forestalls its results. Nonetheless, treatment of OME stays a questionable issue.<sup>5,6</sup> Basic myringotomy and grommet don't give significant restorative outcomes since their recuperating span goes on a few days.<sup>7,8</sup> Right now, center ear air circulation through tympanostomy or ventilation tube (VT) inclusion is the administration of decision for constant emanation that doesn't react to clinical therapy.<sup>9</sup> Yet, VT addition might cause unfavorable impacts, for example, tube otorrhea, with a detailed occurrence rate going from 29 to 64%.<sup>10,11,12</sup> Basic steroids are known to work on hearing levels in abrupt sensorineural hearing misfortune (SSNHL), Meniere's illness and other internal ear sicknesses. Intratympanic (IT) steroid injection has the potential to achieve higher steroid focuses in the internal ear while keeping away from the foundational side effects.<sup>13</sup>

Cutler et al and Roland et al thought that immediate use of steroid into middle ear mucosa through tympanostomy tube or intratympanic infusions of dexamethasone (ITD) were additionally found more effective in the decrease of granulation tissue than anti-microbial treatment alone.<sup>14,15</sup>

The point of the current investigation was to analyze the viability of intratympanic steroid injection and traditional clinical treatment (Anti-infection, intranasal cortico-steroid, oral antihistaminic, fundamental steroid) in safe instances of OME with hearing misfortune.

#### **Materials and Methods:**

A randomized, forthcoming, controlled examination was directed in the division of ENT KFMSR Coimbatore in from September to December 2013. Likelihood tests by straightforward different inspecting method has been received for the arbitrary task of the members to treatment bunches in the current examination.

The patients matured over 10 years old, attending out patient office (OPD) with tenacious hearing misfortune after ordinary clinical treatment with anti-microbials, nasal skin decongestants, intranasal corticosteroid, antihistaminic with or without foundational corticosteroid for a term of about a month and a half, an otoscopic assessment reminiscent of OME in one or the two ears, unadulterated conductive deafness with typical bone conduction estimates at 500 Hz, 1 and 2 KHz and B/C sort tympanogram, were included in the examination.

The patients with blended hearing misfortune, familial Muco-ciliary sicknesses (like-Kartagener's disorder), sino-nasal pathology (strayed nasal septum, sino-nasal mass and so on), other foundational co-morbidities (hypertension, diabetes mellitus, congestive cardiovascular breakdown and so forth) were prohibited from the investigation.

A definite history of each case was taken, which included main grievances, history of present sickness, history of past ailment, family ancestry and individual history and the information was recorded in a proforma. The beginning, term and the advancement of the infection side effects were enquired for, which included deafness, ear blockage or totality, ear infection, tinnitus, dizziness and ear release, assuming any. Otosopic assessment of the tympanic

membrane and Tuning fork tests were acted in every one of the cases followed by pure tone audiometry and tympanometry. Front and back rhinoscopy were done in every one of the cases to avoid sino-nasal pathology.

The investigation included 20 patients matured more than 10 years, with safe OME. They were relegated haphazardly into 2 gatherings (10 patients in each gathering) for the relative investigation, subsequent to taking composed educated assent. In Gathering A (study bunch) the patients got intratympanic dexamethasone infusion and in Group B (control bunch) patients kept on getting traditional clinical treatment for an additional a month and a half. Intratympanic steroid infusion was given in the outpatient center under vision with a binocular magnifying instrument. The patient was put prostrate and the head went to the contrary side, the neighborhood anaesthesia of the tympanic film was accomplished with 2% Inj. Xylocaine. Roughly 0.4 – 0.6 ml of dexamethasone arrangement (4 mg/ml) was stacked into a 1-mL needle with a long 25-measure needle joined on it and infused into the tympanic depression through an opening made in the antero-inferior quadrant of tympanic layer. The patient was approached to abstain from gulping and stay similarly situated for an additional 10 minutes after infusion to permit contact of steroid with the middle mucosa. Hence, patients got postoperative prophylactic oral antibiotics and in case there was no unfavorable occasion, were released on the equivalent day of the strategy. These infusions were rehashed once a week for 3 successive weeks. In Gathering B, patients got traditional clinical treatment for about a month and a half, comprising of anti-microbial, intranasal corticosteroid, oral antihistaminic, fundamental steroid and so forth. Every one of the patients were followed up at first week (before initiation of treatment) and at second, third and twelfth week by pure tone audiometry. In pure tone audiometry, air conduction pure tone normal (AC-PTA) at discourse frequencies (0.5, 1 and 2 KHz) were recorded for every one of the patients at each visit. The consultation acquire at twelfth week in correlation with first week were determined. The consequences of both the gatherings were contrasted and genuinely dissected and the assistance of understudies unpaired t-test.

Tympanometry were done in both the gatherings at first week and at twelfth week and level of progress from type B /C to type A/As tympanogram were calculated and looked at. OME goal (sickness free status) was characterized as the vanishing of aural complaints, typical discoveries on otoscopy, improvement in hearing as not exactly or equivalent to 20 dB AC-PTA and type A tympanogram. Patients were additionally assessed for complexities such as tympanosclerosis, otorrhea, and constant TM perforation. regular clinical treatment for an additional a month and a half. Intratympanic steroid infusion was given in the outpatient facility under vision with a binocular magnifying instrument. The patient was set prostrate and the head went to the contrary side, the nearby anaesthesia of the tympanic layer was accomplished with 2% Inj. Xylocaine. Roughly 0.4 – 0.6 ml of dexamethasone arrangement (4 mg/ml) was stacked into a 1-mL needle with a long 25-measure needle appended on it and infused into the tympanic cavity through an opening made in the postero-mediole quadrant of tympanic film. The patient was approached to abstain from gulping and stay similarly situated for an additional 10 minutes after infusion to permit contact of steroid with the center ear mucosa. In this manner, patients got postoperative prophylactic oral antibiotic and in case there was no unfriendly occasion, were released on the equivalent day of the strategy. These infusions were rehashed once a week for 3 continuous weeks.

In Gathering B, patients got regular clinical treatment for about a month and a half, comprising of antibiotic , intranasal corticosteroid, oral antihistaminic, fundamental steroid and so on Every one of the patients were followed up at first week (beforeinitiation of treatment) and at second, third and twelfth week by pure tone audiometry. In pure tone audiometry, air conduction pure tone normal (AC-PTA) at discourse frequencies (0.5, 1 and 2 KHz) were recorded for every one of the patients at each visit. The consultation acquire at twelfth weekin correlation with first week were determined. The consequences of both the gatherings were contrasted and genuinely examined and the assistance of understudies unpaired t-test.

Tympanometry were done in both the gatherings at first week and at twelfth week and level of progress from type B /C to type A/As tympanogram were calculatedand analyzed. OME goal (infection free status) was characterized as the vanishing of aural fulness, typical discoveries on otoscopy, improvement in hearing as not exactly or equivalent to 20 dB AC-PTA and type A tympanogram. Patients were additionally assessed for intricacies suchas tympanosclerosis, otorrhea, and persevering TMperforation.

## RESULTS

Absolute 20 instances of safe OME with hearing misfortune wereanalysed in the current examination. Every one of the patients gave hearing hindrance and aural fullness , (100%) as their main complaints. Tinnitus (20%) and irregular ear infection (10%) were other related grumblings.

The mean time of cases in bunch A was 31.9 years and

29.1 years in bunch B, with a reach from 15 to 45 years.Among 20 cases, 11 (55%) were guys and staying 9 (45%) were female, with a Male: Female proportion of 1.22:1.(Table I)

On otoscopic assessment, no huge anomaly was found in outer hear-able trench. The tympanic layer was dull with loss of light reflex and versatility in every one of the cases. Grade I withdrawal of the tympanic film was seen in 20% of the ears.

The patients of gathering A (n=10, ears=17) were treated with ITDI and gathering B (n=10, ears=15) patients

Table II: Ears influenced with safe OME

| GROUP AFFECTED EAR   | TOTAL NO OF EARS |       |           |    |
|----------------------|------------------|-------|-----------|----|
|                      | LEFT             | RIGHT | BILATERAL |    |
| Gathering – A (n=10) | 1                | 2     | 7         | 17 |
| Gathering – B (n=10) | 3                | 2     | 5         | 15 |

kept getting ordinary clinical treatment. (Table II)

Every one of the cases were noticed for 90 days in this study.There were no indications of perforation), tenacious otorrhea or different difficulties in any of the patients.

Results were assessed with pure tone audiometry in first, second, third week and toward the finish of follow up period (twelfth week) after the treatment. 15 ears (46.88 %) gave moderate conductive misfortune for example with 30-45 dB of Air Bone Hole(gap) at discourse frequencies. Extreme conductive misfortune was available in 13 ears (40.63 %) and gentle in 4 ears (12.5 %). The mean air conduction pure tone normal (AC-PTA) at discourse frequencies improved at twelfth week by 22.88 dB in bunch A and by 6.83 dB in bunch B in comparison to first week. The improvement acquired in the examination bunch (Group A) were discovered to be amazingly genuinely huge in comparison to the benchmark group (Group B). (Table III) Tympanometry was done in all patients at first week and at twelfth week to analyze middle ear contents, middle ear pressure and the bends. Every one of the patients had either type B/C bend at the inception of treatment for example at first week. Among 17 ears (n=10) of group A, type B/C bend changed to type A/As bend in 13 ears (76.47 %). Though in bunch B (n=10), just 7 out of 15 ears (46.67%) were found to have changed from type B/C to type A/As bend. (Table IV)

#### **Discussion :**

Otitis media (OM) is the commonest youth illness after viral upper respiratory diseases (VURI). In contrast to acute Otitis Media (AOM), it doesn't display intense disease indications, and it is the incendiary response of the Middle ear that is characterized by effusion in the tympanic cavity.<sup>2</sup> Han et al. have asserted that an intratympanic injection of dexamethasone can be utilized as a line of treatment in OME. In their investigation on 84 patients with OME of close to 2 months length, it was accounted for that both oral organization(intake) and an intratympanic infusion of glucocorticoid are powerful for the treatment of OME.<sup>16</sup> Paksoy et al. completed an examination on 64 patients of OME, who had been dealt with already either by clinical or by careful treatment without goal. A big part of their patients had gotten another course of medical treatment as a benchmark group and the other half was directed 0.5 ml dexamethasone once week after week for about a month. They saw greater improvement in patients in the investigation bunch than the control group.<sup>17</sup>

Cutler et al. also, Florea et al. performed experimental study in a creature model and detailed that intratympanic steroid infusions decreased lipopolysaccharide, which induces middle ear effusion. They additionally recommended that their outcomes upheld the momentum utilization of calming otological like corticosteroids, in the treatment of fiery middle ear infection, accordingly keeping away from fundamental side effects.<sup>14,18</sup>

A few investigations have inferred that intratympanic infusion of long acting steroids is more powerful than ordinary treatment in the decrease of hearing misfortune and center ear pressure.<sup>15,19</sup>

A short course of oral prednisolone is definitely not a compelling treatment for most kids matured 2–8 years with diligent otitis media with effusion, however is well tolerated.<sup>20</sup>

In the current investigation, the patients who have gotten intratympanic steroid infusion showed huge hearing improvement contrasted with the benchmark group who have gotten customary clinical treatment.

#### **Conclusion:**

Otitis media with effusion is a multifactorial infection and treatment alternatives for OME are restricted as clinical therapy, myringotomy with goal of fluid and ventilation tube addition for ongoing cases.

We have introduced aftereffects of intratympanic injection of dexamethasone, which is a protected and viable method for early goal of safe instances of otitis media with effusion. Improvement of hearing and tympanogram was discovered to be better in the gathering which got ITDI than traditional clinical treatment. No complications like tympanic layer perforation and/or tangible neural hearing misfortune was seen.

#### References:

1. Arola M, Ziegler T, Lehtonen O-P, Puhakka H, Ruuskanen O. Rhinovirus in otitis media with effusion. *Ann Otol Rhinol Laryngol.* 1990; 99 (6 I):451-3
2. Bluestone Cd, Doors GA, Klein JO, Lim DJ, Mogi G, Ogra PL et al. Ongoing advances in otitis media. Board reports. 1. Definitions, terminology, and arrangement of otitis media. *Ann Otol Rhinol Laryngol.* 2002; 111:8-18
3. Ovesen T, Borglum JD. Superoxide dismutase in center ear liquid from kids with secretory otitis media. *Acta Otolaryngol.* 1992; 112:1017-24
4. Kumari MS, Madhavi J, Krishna NB, Meghanadh KR, Jyothy. Predominance and related danger variables of otitis media and its subtypes in South Indian populace. *Egypt J Ear, Nose, Throat Associated Sci.* 2016;17:57-62
5. Yousaf M, Inayatullah, Khan F. Clinical versus careful administration of otitis media with effusion in kids. *J Ayub Drug Coll Abbottabad* 2012; 24(1):83-5
6. Kuo CL, Wang MC, Chu CH, Shiao AS. New remedial procedure for treating otitis media with effusion in post lighted nasopharyngeal carcinoma patients. *J Jawline Medications Assoc.* 2012; 75(7):329-34
7. Prokopakis EP, Lachanas VA, Christodoulou PN, Bizakis JG, Karatzanis Promotion, Velegrakis GA. Ramifications of laser helped tympanostomy in grown-ups. *Otol Neurotol.* 2005; 26(3):361-3
8. Sedlmaier B, Jivanjee A, Gutzler R, Huscher D, Jovanovic S. Ventilation season of the center ear in otitis media with effusion (OME) after CO2 laser myringotomy. *Laryngoscope* 2002;112(4):661-8
9. Silverstein H, Light JP, Jackson LE, Rosenberg SI, Thompson JH Jr. Direct utilization of dexamethasone for the therapy of constant Eustachian tube brokenness. *Ear Nose Throat J* 2003;
10. Han Z, Zhibin C, Dengyuan W, Xia X, Xiaonian Z, Guangqian X. The helpful impacts of oral organization and intratympanic infusion of glucocorticoid in the treatment of otitis media with effusion. *Diary of Audiology and Discourse Pathology* 2009;17(6):560-2
11. Paksoy M, Altin G, Eken M, Hardal U. Viability of intratympanic dexamethasone in otitis media with effusion resistant to customary treatment. *Indian J Otolaryngol Head Neck Surg.* 2013; 65(Suppl 3):461-7 doi:10.1007/s12070-011-0281-z
12. Florea A, Zwart JE, Lee CW, Depew A, Recreation center SK, Inman J et al. Impact of effective dexamethasone versus rimexolone on center ear irritation in exploratory otitis media with effusion. *Acta Otolaryngol.* 2006;126(9):910-5. doi: 10.1080/00016480600606699
13. Datema FR, Vemer-van cave Hoek JG, Wieringa MH, Mulder PM, Baatenburg de Jong RJ, Blom HM. A visual simple scale can evaluate the impact of careful therapy in kids with ongoing otitis media with effusion. *Int J Pediatr Otorhinolaryngol.* 2008; 72(4):461-7. doi:10.1016/j.ijporl.2007.12.004
14. Francis NA, Cannings-John R, Waldron CA. Oral steroids for resolution of otitis media with effusion in youngsters (OSTRICH): a twofold dazed, fake treatment controlled randomized preliminary. *Lancet* 2018; 392:557-68.