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Original Research Paper

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A STUDY ON MANAGEMENT OF OTITIS MEDIA WITH EFFUSION AND ITS EFFECT ON HEARING OUTCOME

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ABSTRACT Otitis media with effusion is one of the leading cause of deafness in children under 12 year of age. It impact speech and social development of child. Recurrent cough, cold and Adenoid enlargement is the main feature. We did a prospective study to assess the hearing improvement pre and post surgery in 118 children. They are categorized in 4 groups as per surgical intervention. Hearing assessed 6 week, 3 month and 6 month post treatment. Hearing improvement noted at repeated follow up. OME need immediate attention for the treatment. In this study an effort is made to study the role of treatment approaches and hearing outcome in the course of OME.

KEYWORDS : OME, Myringotomy, Grommet, Adenoidectomy, Audiometry

INTRODUCTION

Otitis media with effusion is a clinical condition characterized by presence of fluid in the middle ear resulting in conductive deafness. This is the most common cause of non suppurative conductive deafness in children. Any factors that cause hypoventilation of middle ear may cause SOM. Enlarged adenoid is an important cause of recurrent or chronic SOM [1]. Myringotomy, Grommet insertion and Adenoidectomy are the mainstay of management. They helps in resolution of this condition because it is known that without hearing physical and mental development of child is impaired so it is utmost important that this condition should be properly diagnosed and treated.

MATERIAL AND METHOD

1. Study Type- Observational Study
2. Study Design- Prospective Study
3. Study Duration- 24 Months
4. Study Place-Department of ENT, Raipur Institute of Medical Sciences, Raipur, Chhattisgarh
5. Study Population- Paediatric patients aged 2 to 12 years

Inclusion criteria:

1. Children age 1 to 12 years
2. Children with otitis media with effusion
3. At least 2 episodes of OME over a period not less than 3 months
4. Cases confirmed after otoscopy, Pure tone audiometry and impedance audiometry

Exclusion criteria:

1. Child with hearing loss of more than 40 db
2. Children with sensorineural and mixed hearing loss
3. Children with active otitis externa

After selecting patients according to inclusion criteria patients were randomly selected for any one of the following three procedures:

a. Myringotomy and Grommet insertion alone
b. Adenoidectomy alone
c. Grommet insertion and adenoidectomy both

Few patients who were not willing for surgical intervention were managed conservatively.

Patients were discharged after procedure and instructed for regular follow up on 6 weeks, 3 months and 6 months interval. During follow up improvements in symptoms and signs and hearing was assessed by otoscopy and pure tone audiometry.

OBSERVATION AND RESULTS:

The present clinical study of secretory otitis media and its management included a sample population of 118 cases. All the patients were presented in ENT OPD of Raipur Institute of Medical Sciences, Raipur with complaints of recurrent cough, cold, nasal obstruction, mouth breathing, difficulty in hearing, earache and poor performance in school.

Age and sex distribution are shown in the **Table 1**. In this study male predominance was observed. Male female ratio was 3:1. It included 75% male and 25% female children. The mean age in our study was 8.25 yrs.

The youngest patient was 2 year old and oldest patient was 12 year old. According to age maximum number of patient affected in age group 6 to 10 year (57%) followed by 1 to 5 year age group (36%). Least affected age group was 11 to 15 year with 7% cases.

Table – 1 Age And Sex Distribution

Age Group (Year)	Male	Female	Total	%
1 to 5	29	14	43	36%
6 to 10	54	13	67	57%
11 to 15	6	2	8	7%
Total	89 (75%)	29 (25%)	118	100%

An increased incidence was found in the 2 to 6 year age group. Most of the cases had symptoms of more than 4 episodes per year. All the patients evaluated clinically and audiological investigations like Pure tone audiometry and impedance audiometry were done.

Mean age and patient distribution in different study groups were shown in **Table 2.** Total 118 patients of Otitis media with effusion were included in present study. All the patients were divided in 4 groups as follows:

Group 1. Myringotomy and Grommet insertion group
Group 2. Adenoidectomy group
Group 3. Myringotomy with grommet insertion and Adenoidectomy group
Group 4. Conservative treatment group

Table – 2 Study Groups Distribution

Groups	n	%	Mean Age (Yr)	M	F
1. Myringotomy & Grommet	31	25.8	8.4	21	10
2. Adenoidectomy	30	25	9.6	27	03
3. Grommet Adenoidectomy	48	41.7	8.7	33	15
4. Conservative	09	7.5	6.2	08	01
Total	118	100	8.25	89	29

In 41 % cases combined grommet insertion and adenoidectomy surgery done. In 25% cases only adenoidectomy surgery done. In another 25% cases only myringotomy with grommet insertion done. Remaining 7% cases managed conservatively with medications and nasal spray.

Pure tone Audiometry was done in 6 weeks, 3 months and 6 months postoperatively in all cases. Mean hearing loss calculated in each group. Improvement of hearing was assessed by % change or improvement in hearing. Comparative chart of pre and post operative hearing loss in all groups are shown in **Table 3**.

Most of the children in our study had mild hearing loss according to Clark's classification. Pre operative mean hearing loss was 28.3 dB, 27.8 dB, 28.5 dB and 26 dB respectively for group 1, 2, 3 and 4. Overall mean hearing loss was 27.62 dB.

After 6 weeks of surgery mean hearing loss was 10.8, 14.8, 12.5 and 20.8 dB for group 1, 2, 3 and 4 respectively. After 3 months of surgery mean hearing loss were 9.3 dB, 13 dB, 10.2 dB and 17 dB for group 1, 2, 3 and 4 respectively.

After 6 months of surgery mean hearing loss was 8 dB, 12.2 dB, 8.3 dB, 10.8 dB for group 1, 2, 3 and 4 respectively

It was evident by seeing the data that mean hearing loss was improved with increase in postoperative duration **(Table 4)**.

Table – 3 Pre And Post Treatment Mean Hearing Loss And % Improvement Of Hearing In Different Study Groups

Procedure	% improvement in Hearing loss	Pre Operative			6 week Post Operative			3 month Post Operative			6 month Post Operative		
		Rt	Lt	Mean	Rt	Lt	Mean	Rt	Lt	Mean	Rt	Lt	Mean
Group 1 (n=31)	Mean Hearing loss (dB)	29.5	27	28.3	13	8.5	10.8	10	8.5	9.3	8	8	8
	% improvement				29	26.7	27.9	29.1	26.7	27.9	29.2	26.7	27.9
Group 2 (n=30)	Mean Hearing loss (dB)	30	25.5	27.8	16	13.5	14.8	14	12	13	13.5	11	12.2
	% improvement				29.4	24.9	27.2	29.5	25	27.2	29.6	25.1	27.3
Group 3 (n=48)	Mean Hearing loss (dB)	28	29	28.5	12	13	12.5	10.5	10	10.2	8	8.5	8.3
	% improvement				27.6	28.6	28	27.6	28.7	28.1	27.7	28.7	28.2
Group 4 (n=090	Mean Hearing loss (dB)	25.5	26.5	26	20	21.5	20.8	16	18	17	10	11.5	10.8
	% improvement				24.7	25.7	25.2	24.8	25.8	25.3	25.1	26.1	25.5

Almost all interventions showed better outcomes but the combined myringotomy and grommet insertion with adenoidectomy has better hearing results then other procedures.

DISCUSSION:

In the present study total 118 children were assessed. Majority of children were in the age group of 6-10 years. It is similar with other studies [2,3,4]. The adenoid enlargement is one of the main reason for the OME. Adenoid appears to be at its largest size in the 7 year old age group [5]. In our study there is male preponderance when compared to females. The mean age in our study was 8.25 years. It is similar to other study [2]. However no apparent gender based difference in the incidence of SOM observed [6].

Table– 4 Correlation Of Mean Hearing Loss Pre & Post Treatment

Groups	Preop	6 Week Postop	3 month Postop	6 month Postop
Group 1	28.3 dB	10.8 dB	9.3 dB	8 dB
Group 2	27.8 dB	14.8 dB	13 dB	12.2 dB
Group 3	28.5 dB	12.5 dB	10.2 dB	8.3 dB
Group 4	26 dB	20.8 dB	17 dB	10.8 dB
	27.7 db	14.7 dB	12.4 dB	9.8 dB

In our study, about 96.67% presented with nasal obstruction as chief complaint, 76.67% had mouth breathing and nasal discharge with nasal obstruction.

In our study preoperatively mean hearing loss was 27.7 dB. According to Clark's classification average hearing loss was 27.76 dB. OME causes moderate conductive hearing loss, the average loss being 27 dB [7]. Glasgow studies have shown 26 dB hearing loss [8].

The overall mean hearing gains in our study were 12.4 dB and 9.8 dB respectively at 3rd and 6th month postoperatively. Satish et al found mean hearing gain at 3rd and 6th month post operatively were 5.32 and 4.09 respectively [2]. N A Black et al, observed the mean dB gain at 7 weeks and 6 months are 4.5 and 3.5 dB respectively [9].

Mean Hearing loss has improved postoperatively in each follow up in all groups. Better hearing outcome and % improvement observed after combined grommet insertion and adenoidectomy. Myringotomy and Grommet insertion showed immediate hearing improvement.

Children with conservative mode of treatment could not recover early as compared to surgical intervention group. Their hearing loss was sustained for long time. Child from the non-surgical group require approximately five-times more visits than the average child from the surgical group. The surgery limits the prescription of steroids, antibiotics, mucolytics, antibiotics, and other drugs. The reduction of prescribed antibiotics is important due to the rising resistance of bacteria to antibiotics [10].

The management of otitis media with effusion can be differs with various factors. Treatment modalities includes myringotomy, grommet insertion and adenoidectomy or a combination of all these. Few may prefer conservative and medical management. The management of OME remains controversial. Adenoidectomy has been proved to be effective in preventing recurrence of OME, recurrent AOM, or the need for repeated tympanostomy tubes [11, 12].

CONCLUSION:

Majority of cases are seen in age group of 5 to 12 years. Grommet insertion showed immediate improvement in hearing. According to our study Grommet insertion when combined with adenoidectomy showed better hearing improvement and results. The result of our study is not a actual

scenario of disease burden and its management due to limitation in the study but early diagnosis and intervention of this condition can definitive reduce the conductive hearing impairment in children.

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