

Original Article

Study on otitis media with effusion

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Abstract:

Objective: To study the clinical, audiological and radiological characteristics along with the management outcome of chronic otitis media with effusion.

Setting: Department of Otolaryngology & Head - Neck Surgery, Dhaka Shishu Hospital and Apollo Hospital's Dhaka, Bangladesh.

Materials and Methods : This study included three hundred and thirty patients of chronic Otitis media with effusion that have been treated in the department of Otolaryngology and Head-Neck Surgery, at Dhaka Shishu Hospital and Apollo Hospitals, Dhaka from January, 2007 to July, 2008. The data of patients included age, sex, presenting symptoms and signs, preoperative investigations like pure tone audiometry (PTA) and Impedance test, operation notes, complications of surgery and state at follow up.

Results: This study included 198 males and 132 females. 222 patients (67.27%) were in the age group of 2-5 years. Main presenting symptom was fullness of the ear (50.30%) and main presenting sign was dull eardrum (72.18%). Turning fork test and PTA have been done in the age group of 7-10 years. In 166(59.30%) patients Impedance was type B. 222 (66.69%) patients have been cured with medical treatment. 69(20.90%) patients underwent grommet insertion as medical treatment has been failed in those patients. Two patients developed postoperative chronic suppurative otitis media with central perforation and one patient developed thinned tympanic membranes that have been treated conservatively.

Conclusion: Chronic otitis media with effusion is usually not a threat to life but result in complications. As long as fluid is present in the middle ear, hearing will be affected. Hearing problems can interfere with language development in children. Any fluid that lasts longer than 3 months should be treated surgically.

Keywords: Otitis Media with effusion, myringotomy, audiometry.

Introduction:

Chronic otitis media with effusion or OME (also called secretory otitis media or glue ear) is a persistent inflammation and accumulation of sticky fluid or effusion in the middle ear. Chronic OME may develop within weeks of an acute episode of middle ear infection, but often the cause is unknown¹. Chronic OME often occurs in both ears and may be difficult to detect, since it is not painful and does not cause symptoms of an ear infection. Different kinds of fluid may be present behind the eardrum, ranging from a yellow liquid to a thick, white material that resembles

glue; hence the name is glue ear². Thicker fluid usually indicates more inflammation of the mucous membrane in the middle ear³.

Chronic OME can be much more difficult to diagnose than an acute middle ear infection, because it often has no obvious symptoms and the child usually does not appear to be ill. Chronic OME is not painful. The most common symptom a child may experience is a feeling of "fullness" in the ear⁴. Mild hearing loss is not unusual, but it may not be obvious. Instead a child might not respond to soft sounds or may appear to be inattentive in school. Because there often are no clear symptoms to suggest that child has chronic otitis media with effusion, we rely on one or several tests to make the diagnosis. A physical examination may reveal fluid behind the eardrum. The eardrum will look clear and have no signs of redness, but will not move in response to the air, as a normal eardrum would⁵. Impedance test measures middle ear pressure, which is often impaired. A hearing test often shows some degree of hearing loss. Chronic OME may develop

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within weeks of an acute episode of middle ear infection, but in many cases the cause is unknown. It is often associated with an abnormal or malfunctioning eustachian tube, which causes negative pressure in the middle ear and leaking of fluid from tiny blood vessel or capillaries into the middle ear. Problems with the eustachian tube can be caused by viral infections, injury or birth defects (such as cleft palate). Fluid from the ears of children with chronic otitis media with effusion usually does not show infection with bacteria. In some cases, however, the fluid may contain organisms such as *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis* or other bacteria⁶. For young children most physicians prefer a conservative approach, using antibiotics if the action is persistent, the child is in pain or if there is evidence of hearing loss. Most cases of otitis media with effusion get better within three months without any treatment⁷. If child continues to have repeated episodes of OME, despite taking antibiotics and antihistamines we suggest a hearing test. If OME persists for more than three months, we suggest myringotomy to insert grommet for drainage⁸.

Methods:

This study included three hundred and thirty patients of chronic suppurative otitis media with effusion that have been treated in the department of otolaryngology and Head-Neck surgery at Dhaka Shishu Hospital and Apollo Hospitals, Dhaka from January, 2007 to July, 2008. The data of each patient included age, sex, presenting symptoms and signs, preparative investigations like PTA and Impedance, operation notes, complications of surgery and state at follow up. Tuning fork test and PTA have been done only in the age group of 7-10 years as both the tests are subjective tests. Impedance has been done in all cases.

Results:

The total number of patients was three hundred and thirty. There were 198 males (60%) and 132 females (40%).

Table - I
Male, Female Ratio n=330

No. of pt.	Number	Percentage (%)
Male	198	60
Female	132	40

Table - II
Age group (n=330)

Age	Male	Female	Total (%)
2-5 years	140	82	222(67.27%)
5-7 years	32	28	60(18.18%)
7-10 years	26	22	48(14.54%)

Table - III
Presenting Symptoms

Symptoms	Number of pts.	Percentage (%)
No symptoms	125	37.87
Fullness in the ear	166	50.30
Hearing loss	80	24.24
Earache	192	30.90
Mouth breather	70	21.21

More than one symptom was present in the same patient.

Table - IV
Presenting Signs

Signs in eardrum	Number of pts	Percentage (%)
Dull eardrum	231	72.18
Air bubbles behind the eardrum	64	19.39
Fluid behind the eardrum	49	14.84
Reduced movement of the eardrum	39	11.81
No sign	65	19.69

More than one sign was present in one patient.

Table - V
Turning fork test (n = 48)

Turning fork test	Results	Number of patients	%
Rinne's tests	Negative	28	58.33
Rinne's tests	Positive	20	41.66
Weber test	Lateralized to deaf ear	18	37.50

Turning fork test has been done only in the age group of 7-10 years as it is subjective test. Rinne's test was negative in 28(58.33%) patients and positive in 20(41.66%) patients. Weber lateralized to deaf ear in 18(37.50%) patients.

Table - VI
Pure Tone Audiometry (n = 48)

Amount of hearing loss	No. of patients	%
Up to 20 dB	32	66.66
20-30 dB	16	33.33

PTA has also been done only in the age group of 7-10 years as it is subjective test. In 32 (66.66%) patients hearing loss was below 20 dB and in rest 16(33.33%) patients hearing loss was above 20dB.

Impedance test has been done in all cases as it is objective test. In 166 patients the test was type B.

Table - VII
Treatment

Treatment	No. of Patients	%
No treatment	40	12.12
Medical treatment	221	66.96
Myringotomy followed by grommet insertion	69	20.90
Adenoidectomy	45	13.63
Tonsillectomy	15	4.54
Adenotonsillectomy	9	2.72

40 (12.12%) patients have been cured without treatment. Those patients have followed some precautions. 221(66.96%) patients have been cured with medical treatment. Medical treatment included antibiotics (if necessary), anti-histamines nasal decongestant and valsalva exercise. 69 (20.90%) patients underwent grommet insertion as medical treatment has been failed for 3 months. For 15 patients we did tonsillectomy and for 9 patients we did adenotonsillectomy as both the sites were acting as source of infection for ear. 45 patients (13.63%) patients underwent adenoidectomy operation.

Out of 69 patients that underwent grommet insertion, we could assess only 20 patients with PTA test as other cases were below 7 years. Hearing gain was 100% at 12 weeks postoperative follow up.

Table - VIII
Hearing gain after surgery (n = 20)

	No. of Patients	%
Hearing gain	20	20
No gain	0	0

Two patient developed postoperative chronic suppurative otitis media with central perforation, and one patient developed thinned tympanic membranes that have been treated conservatively.

Discussion:

Otitis media with effusion (OME) refers to fluid in the middle ear cavity without symptoms of an acute ear infection. Unlike children with an acute ear infection, children with OME give fewer symptoms. Almost every acute ear infection is followed by days or weeks of OME. In addition, many children develop OME without having acute inflammation. OME occurs when the Eustachian tube becomes blocked. This tube helps drain fluids to prevent them from building up in the ear. The secretions drain from the tube and are swallowed. When the Eustachian tube is partially blocked, fluid accumulates in the middle ear. A bacterium already inside the ear become trapped and begins to multiply⁸. The following can cause the Eustachian tube to close or become blocked: Enlarged adenoids, sudden increases in air pressure (such as descending in an airplane or on a mountain road) , Drinking while lying on back. OME is most common in winter or early spring, but can occur at any time of year. It can affect people of any age, although it occurs most often in children between ages of 2-5 years.

Younger children get OME more often than older children or adults for several reasons. The tube is shorter, more horizontal, and straighter, making it easier for bacteria to enter. The tube is floppier. Young children get more colds because it takes time for the immune system to be able to recognize and ward off cold viruses.

In this study, out of three hundred and thirty patients, there were 198 males (60%) and 132 females (40%).

There were 222 patients (62.27%) in the age group of 2-5 years, 60(18.18%) patients in the age group of 5-7 years and 48 patients (14.54%) in the age group of 7-10 years. The fluid in OME is often thin and watery. It used to be thought that the longer the fluid was present, the thicker it becomes. The hallmark of OME is the lack of obvious symptoms in those who most commonly have the condition. Older children and adults often complain of muffled hearing or a sense of fullness in the ear. Younger children may turn up the television volume. Most often OME is diagnosed when someone examines the ear for another reason⁹. In present study presenting symptoms were fullness of the ear (50.30%) followed by earache (30.90%) and hearing loss (24.24%). 125 (37.87%) patients had no symptoms. A general ear examination may show dullness, air bubbles and fluid behind the eardrum or reduced movement of the eardrum. The main presenting sign in our study was dull eardrum (72.18%) followed by air bubbles (19.39%) and fluid behind the eardrum (14.84%). In 65(19.69%) patients eardrum was normal. Tuning fork test has been done only in the age group of 7-10 years as it is subjective test. Rinne's test was negative in 20(41.66%) patients. Weber is lateralized to deaf ear in 18(37.50%) patients. Impedance test is more accurate tool for diagnosing OME^{10, 11}. PTA can be done in older children as it the age group of 7-10 years as it is subjective test. In 32 (66.66%) cases hearing was below 20 dB and in rest 16(33.33%) patients hearing loss was above 20 dB.

In otherwise healthy children, the first line treatment involves changing environmental factors, if possible. This includes: avoidance of cold food and direct AC blast and encouraging breastfeeding. If the child has allergies, staying away from triggers (such as dust) can help. Most often the fluid will clear on its own. We can see if the condition worsens or trying a single course of antibiotics. If the fluid is still present after 6 weeks, treatment might include further observation, a hearing test and a single trial of antibiotics (if not given earlier). If the fluid is still present at 12 weeks, hearing should be tested. If there is significant hearing loss (> 20 decibels), grommets might be appropriate¹². Sometimes adenoid removal is necessary to restore proper functioning of the Eustachian tube¹³. In our study 40 (12.12%) patients have been cured without treatment. Those patients have followed some precautions. 221(66.96%) patients have been cured with medical treatment. Medical treatment included

antibiotics (if necessary), anti-histamines, nasal decongestant and valsalva exercise. 69(20.90%) patients underwent grommet insertion as medical treatment has been failed. For 15 patients tonsillectomy and for 9 patients adenotonsillectomy were done as both the sites were acting as source of infection for ear. 45 patients (13.63%) patients underwent adenoidectomy operation. Out of 69 patients that underwent grommet insertion, we could asses only 20 patients with PTA test as other cases were below 7 years. Hearing gain was 100% at 12 weeks. Two patients developed postoperative chronic suppurative otitis media with central perforation, and one patient developed thinned tympanic membranes that have been treated conservatively.

Conclusion:

Otitis media with effusion usually goes away on its own over weeks or months. Treatment may speed up this process. Glue ear is less likely to clear in a timely fashion than OME with a thinner effusion. OME is usually not a threat to life but may result in serious complications. As long as fluid is present in the middle ear, hearing will be affected. Hearing problems can interfere with language development in children. Any fluid that lasts longer than 3 months should be treated surgically.

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