Case 3:

EDINBURGH UNIVERSITY
EAR NOSE & THROAT
SOCIETY

The Edinburgh ENT Soc cases have not been proofread by any professionals or members of the medical school. They have been made based on the guidelines available at the time.

For questions and feedback please email us at edinburghentsoc@gmail.com or use our social media pages (@EUENTSOC on instagram, @EdinburghENTSoc on Facebook).

A 5-year-old girl attends the GP with her mother in January. Her mother exclaims she is worried about her daughter as over the past few weeks she often has to turn the TV up for her and has noticed that she becomes easily distracted when people speak to her.

Observations:

- SpO2: 98%
- BP: 108/64 mmHg
- Respiratory rate: 25/min
- Heart rate: 110 bpm
- Temperature: 36.5°C

Question 1: What is the most likely diagnosis?

Otitis media with effusion (**OME**) is the most likely diagnosis. Also known as 'glue ear', it is a build-up of fluid in the middle ear which leads to a conductive hearing loss. It is usually caused by a combination of chronic inflammatory changes and Eustachian tube dysfunction.

The history the mother gives suggests her daughter has reduced hearing. This is a common condition in 2-5-year olds. As her observations are fine (remember the ranges are different in children) and she does not present with otalgia, acute otitis media or otitis externa are unlikely.

The significance of her attending in January hints at OME's association with upper respiratory tract infections which show seasonal variation.

Question 2: Which of the following is NOT a risk factor for the development of OME?

- Bottle fed
- Swimming
- Parental smoking
- Atopy

Bottle feeding, parental smoking and atopy have all been shown to be risk factors for OME. Swimming is more commonly associated with otitis externa. These would be important factors to pick up on whilst taking a history.

Question 3: What are the most likely features to be seen on otoscopy?

A dull tympanic membrane with loss of light reflex is the classic appearance of OME on otoscopy. This finding is suggestive of fluid behind the tympanic membrane. Although, it is important to remember that a normal ear drum on otoscopy does not exclude OME.

Erythematous external ear canal with discharge would be seen in otitis externa.

A perforated tympanic membrane would be seen in chronic otitis media.

The following would also be included as part of a thorough examination/investigation:

- Nose and throat examination
- Tympanometry
- Audiometry

Question 4: What would the tympanometry trace show?

Tympanometry shows how well the eardrum can react to sound by measuring the "compliance" or freedom of movement of the middle ear structures. In OME a **flat trace** would be seen as the ear drum is immobile due to the presence of fluid behind it.

Audiometry is done to determine the level of hearing loss.

A nose and throat examination is done to examine possible risk factors for OME.

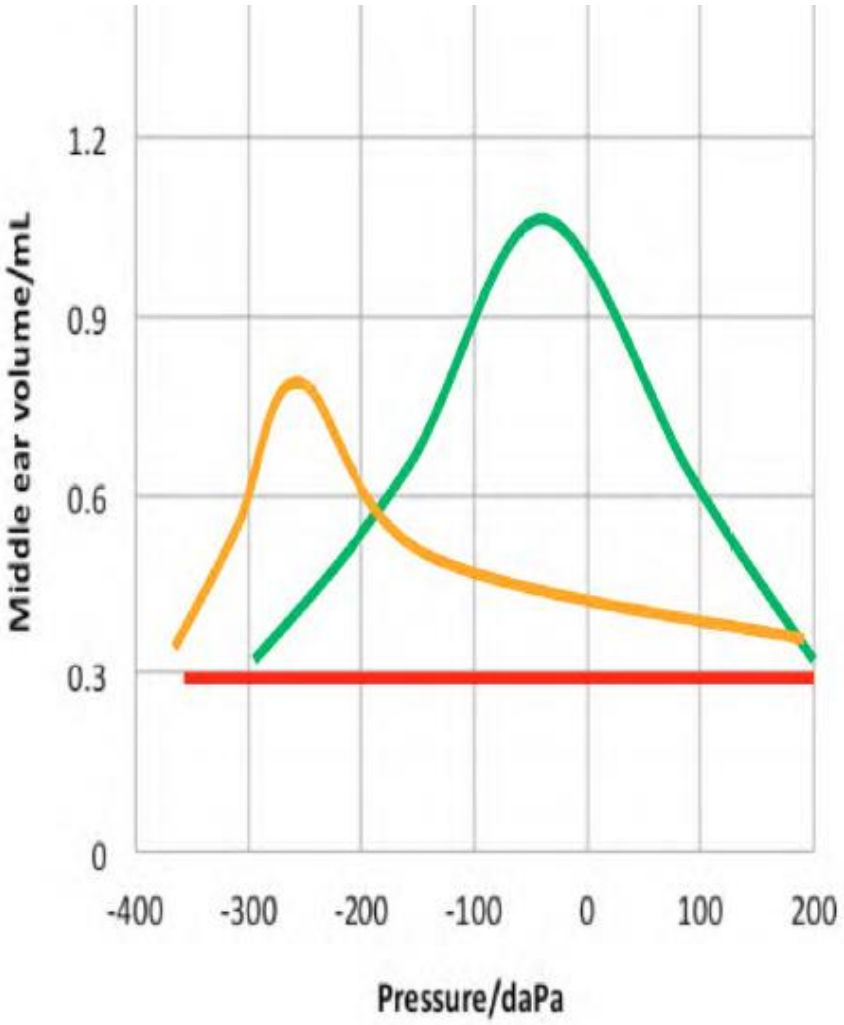

Figure 1: Tympanogram example reproduced from SFO UK Medical Students Handbook.

- Green line: Normal tympanogram. The peak occurs at around 0 decaPascals. A shallow peak would indicate a stiff eardrum e.g. tympanosclerosis.
- Red line: Flat or very low peak typical of a **middle ear effusion**.
- Orange line: Low pressure in the middle ear indicating Eustachian tube dysfunction.

It is normal practice to observe the child's OME for 6-12 weeks as spontaneous resolution is common.

Question 5: In persistent OME cases, what surgical procedure is the definitive treatment?

Myringotomy with insertion of grommets. This consists in making a small incision in the tympanic membrane and inserting tympanostomy tubes so that the ear can drain. The tube usually falls out on its own.

This relieves the pressure in the eardrum and allows ventilation. Adenoidectomy would be considered if the patient had recurrent URTI symptoms. It is important to note that children with Down syndrome or a cleft palate warrant immediate referral to ENT and are screened every 3-6 months for OME.

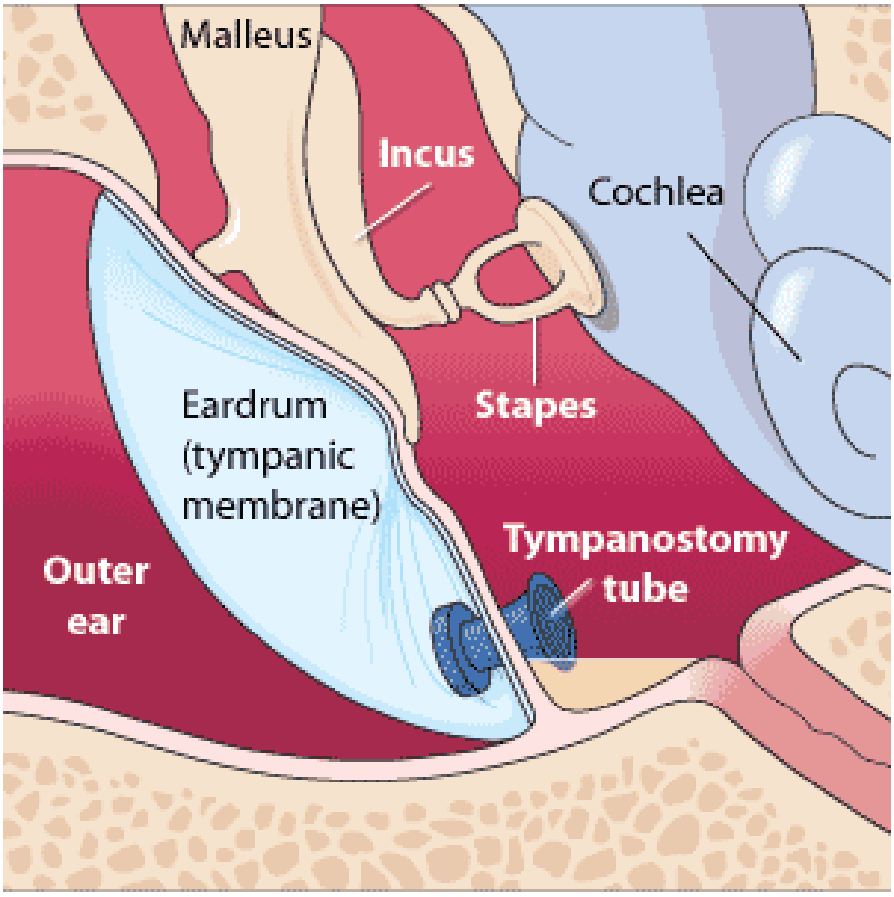

Figure 2: Diagram showing a tympanostomy tube insertion. Reproduced from: https://www.medbroadcast.com/procedure/getprocedure/tympanostomy-tube-insertion

Additional information:

OME is less common in adults, however will occur if there is any blockage of the Eustachian tube, either from infective causes or from occlusive masses. Consequently, any new case of unilateral OME in an adult should be investigated as a 'red flag' for a malignant underlying cause e.g. post-nasal space mass.

References:

- https://cks.nice.org.uk/topics/otitis-media-with-effusion/
- https://teachmesurgery.com/ent/ear/otitis-media-effusion/