ENT NEWS

A Service of the Ear, Nose, & Throat Center, PC

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Post Ventilation Ear Tube Drainage

Post intubation otorrhea occurs in about 15% of patients with tympanostomy tubes at some time during the 6 to 24 months tubes typically stay in place. Of course each of these patients were having ongoing and/or recurrent ear problems otherwise they would not have tubes placed. Usually the problem is minor and in a great majority of cases improves either spontaneously or with ear drops. Suctioning and drying the ear is usually very helpful but are difficult to accomplish in the primary care setting. These things are a bit easier done in the ENT office with the use of the operating microscope and micro-suction tips. Some cases may persist despite conservative measures and require tube removal which usually can be done in the office. Extremely rare cases may need IV antibiotics or even mastoid surgery.

The pathogenesis of otorrhea post ventilation tube insertion is varied. Most commonly water or sweat enter the middle ear from a non-sterile during swimming/summer activities or viral induced middle ear fluid exudate associated with upper respiratory infections drains through the tube. Occasionally the child's ear may already be infected at the time of surgery resulting in early post-op drainage. Pathogens responsible for sinusitis and adenoiditis may also gain access to the middle ear via the eustachian tube. Finally, allergic reactions of the nasal mucosa and Eustachian tube make the middle ear more susceptible to infection.

The ear's response to such events can be varied but typically there is no permanent change to the ear drum or ear structures. It is not uncommon for granulation tissue to form on the eardrum especially if the otorrhea is recurrent. The granulation tissue appears as a red polyp or tissue sometimes obscuring view of the tube or even filling the ear canal. The granulation tissue bleeds easily leading to blood in the drainage. Sometimes an irritated margin of the eardrum adjacent to the tube will bleed as well. Such bloody drainage often causes great parental concern but is not indicative of an emergent or more serious problem and can wait a day or two to be seen. The granulation tissue can usually be suctioned off in the ENT office which typically resolves the drainage.

The microbiologic characteristics of tympanostomy tube otorrhea have been well described in the literature. The top five bacterial isolates are staphylococcus aureus, streptococcus pneumoniae, pseudomonas aeruginosa, haemophilus influenzae and Moraxella catarrhalis. Occasionally fungus, most typically Candida, may be causative.

Treatment of the draining ear should start with ototopical therapy. Oral antibiotics are not typically required and topical therapy is both successful and not associated with systemic side effects or the development of antibiotic resistance. It is also not advisable to give children
oral floroquinalones which can however be applied topically without such restrictions to treat the commonly present pseudomonas infection. The patient or parent should try to wick out
the drainage with some cotton prior to instillation of drops. It is best to let the ear drain freely to allow the infected material to come out and the ear canal to dry. Therefore occluding the canal with cotton should be avoided although if the drainage is profuse this may be necessary to help the patient get through the school or work day. A "tragal pump" should be applied after placing the ear drops in the external ear canal. If the ear canal is quite swollen it may be necessary to place a wick in order to allow the medication to access the ear canal. This wick is left in place typically for one to two days.

Whenever possible preparations that contain ototoxic components such as gentamicin or neomycin (one of the active ingredients in Cortisporin) should be avoided when the middle ear space is accessible through a tube or a perforated eardrum. Although these preparations have been used extensively in the past, this precaution is currently taken as hearing loss has rarely been reported with their use and non-ototoxic preparations are now available.

If the otorrhea does not resolve oral antibiotics could be tried although with the cost of many oral antibiotics referral might be more cost effective. The otolaryngologist will suction and clean the ear canal as described above to aid in drop delivery to the middle ear space and remove the debris which is a great culture medium. Sometimes the problem is caused by a tube sitting free in the ear canal which cannot be appreciated or removed until the drainage is cleaned. If drainage fails to resolve, cultures for anaerobic/aerobic bacteria and fungus are obtained. Other reasons to refer the patient to the otolaryngologist include severe pain, suspected granulation tissue, recurrent episodes, or significant secondary cellulitis of the auricle or face, the latter being an indication for oral antibiotics.

Sometimes the infection will pass through the canal skin into the post-auricular area causing erythema and swelling that mimics mastoiditis. These patients will have fluid noted in the middle ear and mastoid as well if one does a CT scan prompting the radiologist to render a reading of "mastoiditis." However without "coalescence" of the mastoid air cells or erosion of the mastoid cortex this is probably not the case. Such patients can usually be treated as an outpatient if the ear is examined and cleaned by the otolaryngologist saving the cost and inconveniences of hospitalization and CT scanning.

Ciprodex (ciprofloxin plus dexamthasone) is used as a first line topical drop in post tympanostomy tube otorrhea. Topical quinolones have not been shown to be ototoxic. Studies of tube otorrhea comparing Ciprofloxin to Ciprofloxin and dexamethasone reveal a significant shortening of the time of both pain and otorrhea in the Ciprodex group indicating that the steroid component is quite helpful. In studies comparing Ciprodex to Ofloxacin, the Ciprodex also had superior cure rates and shorter duration to resolution of otorrhea.

Secondary dermatitis of the auricle is often caused by the drainage of inflamed fluid over the skin which then may weep and crust. The crusted material may be gently cleaned with a warm wash cloth (perhaps after leaving the cloth in place for a while to soften the crusts) followed by application of 1% hydrocortisone cream once or twice a day for a few days. (Such application is considered safe on the auricle for up to two weeks.)

Other adjunctive treatments include pain medication if needed as well as appropriate treatment of associated conditions such as a viral infection with decongestants or acute sinusitis with antibiotics. Ototopical anesthetics such as Auralgan should be avoided as they are quite thick and prevent drainage and drying of the infected material.

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