Tick Bites for the Otolaryngologist
Benjamin Walton, MD, Harold Pine, MD, FAAP
Department of Otolaryngology, University of Texas Medical Branch, Galveston, Texas

Introduction:
It is in the rare occurrence that the Otolaryngologist will be faced with a tick bite. However, the dangerous consequences of inappropriate action and decision-making can lead to pathology such as Lyme Disease and Rocky Mountain Spotted Fever. Also, tick bites are often hidden in areas such as the scalp and the external auditory canal. It is important to understand the basic principles of the tick bite, what to do when encountering a tick bite, the pathophysiology of the various tick-borne illnesses, and how to approach the tick and the tick bite.

Case Report:
10 y/o F presented to the Pediatric Otolaryngology clinic with 4 day history of left otalgia originally treated by her PCP and then an Urgent Care Clinic with suspected otitis media without improvement. Upon inspection of left external auditory canal, a brownish mass was noted in the distal end of the EAC near the anterior aspect of the canal. Patient could not tolerate close inspection due to pain. The patient was then taken to the OR for exam under anesthesia. In the OR, a large brown firm mass was noted in the distal canal. Initial attempt at needle aspiration was unable to produce any purulent fluid. Further examination of the mass revealed multiple legs consistent with a tick. The tick was then carefully removed from the canal without difficulty and then sent off for pathology. The canal was then inspected. The attachment point of the tick was mildly erythematous but without gross infection. The patient was started on Ciprofloxacin/Dexamethasone drops to the left ear. She then returned to clinic one week later without any symptoms of fevers, arthalgias, or skin rashes. No prophylactic oral antibiotics were given to the patient.

The Tick Bite:
The tick bite is not clearly understood. When the tick attaches to a human, prostaglandins are passed into the skin. These prostaglandins may decrease the production of IL-1 and TNF-alpha by macrophages and the secretion of IL-2 and interferon gamma by T-lymphocytes. These actions have an inhibitory action on the host's local immune response. Apyrase, an enzyme in tick saliva, may maintain blood flow into the bite by stimulating local vasodilation and preventing platelet aggregation. There are also inhibitors of the coagulation cascade in tick saliva that enhances blood flow to the lesion. These factors combine to enhance the ability of the tick and facilitate transmission of infectious agents to the host.

Removal of the Tick:
Removal of ticks in the external auditory canal can be challenging. Often, the tick imbeds itself into the external auditory canal. Inappropriate removal methods of tick bodies have been reported to result in complications in some cases. Applying pressure on the tick abdomen causes infusion of pathogens from the capitula in the host. Often, retained capitula can cause secondary infections. Generally, ticks naturally fall off of their host after sucking in the sufficient amount of blood. In the case of removal, it is recommended for the tick to be removed along with surrounding skin and that this be accomplished without applying pressure on the tick abdomen. Iwasaki et al describe a novel way of removal of the tick without general anesthesia. They describe a method of removing the tick in two pieces. First the tick abdomen was excised using Shea scissors. Three days after the excision, the tick had died, and the head was removed by forceps.

Important Steps in Managing the Tick Bite:
- Suspect Tick Bite: How long has the patient noticed the tick?
- Examine Area For Surrounding Rash or local Infection
- Perform safe removal of entire tick (Tick in EAC should be removed under general anesthesia)
- Send tick for identification by Entomologist. Ensure total identification of mouth parts
- Follow area after removal of tick, Order CBC to follow blood counts
- Dermacentor species main vector for Rocky Mountain Spotted Fever
- Diagnosis based on clinical signs and symptoms
- Treat with Doxycycline, Tetracycline or Chloramphenicol for minimum of 7 days
- ELISA and Latex agglutination titers usually delayed until convalescence period
- Ixodes species main vector for Lyme Disease
- Tick generally must be attached for 36-48 hours
- Test with ELISA and confirm with Western Blot
- Prophylaxis controversial, Recommend single dose 00mg Doxycycline

Bibliography: