Head Tilt in Rabbits

Basics

OVERVIEW
• Tilting of the head to one side, away from its normal orientation with the body and limbs
• Usually associated with disorders of the vestibular system (middle/inner ear and brain stem), which maintains the animal’s normal sense of balance
• In rabbits, vestibular disease is most commonly caused by bacterial infection of the inner or middle ear, Encephalitozoon cuniculi infection, trauma, or idiopathic vestibular disease (idiopathic meaning of unknown cause, which usually resolves with time).

SIGNALMENT
Dwarf breeds, older, and immunosuppressed rabbits may be more predisposed to signs due to infection with E. cuniculi or bacterial disease of the middle/inner ear.

SIGNS
• Tilting of the head to one side
• Short, rapid movements of the eyeball (known as nystagmus)
• Not eating, lack of appetite due to nausea
• “Drunken” or incoordinated gait (known as ataxia)
• Disorientation
• Rolling
• Other signs depend on underlying cause of the head tilt

CAUSES
• Infection or inflammation of the middle and inner ear (known as otitis media and otitis interna); primarily bacterial infection. Infection may spread from the outside of the ear, through the eardrum, to the inner/middle ear where balance is controlled, or may spread through the eustachian tube (tube connecting the back of the throat with the ear). Most rabbits have never had visible evidence of ear disease of the external ear canal; most infections spread through the eustachian tube.
• Unknown cause (so-called idiopathic disease)—many rabbits improve with supportive care alone
• Encephalitozoon cuniculi infection is believed to be a very common cause of vestibular disease in rabbits; however, how often E. cuniculi actually causes vestibular disease is controversial since it cannot be accurately diagnosed in the live animal, and postmortem diagnosis does not correlate well with clinical disease.
• Trauma—fracture of bones near the ear; rough ear flushing or cleaning
• Toxic—some antibiotics such as aminoglycosides; lead poisoning

RISK FACTORS
• Suppression of the immune system, especially for E. cuniculi or bacterial infection—predisposes to clinical disease: stress, poor diet, concurrent disease, and steroid medications or antitumor chemotherapy
• For inner/middle ear infections—previous respiratory infections, since most infections spread from the respiratory tract via eustachian tube; abnormal or breed-related conformation of the external canal (e.g., lopeared breeds); excessive moisture (e.g., from frequent cleanings with improper solutions) can lead to infection
• Administration of medications or products that are toxic to the ear (known as ototoxic drugs)

**TREATMENT**

**APPROPRIATE HEALTH CARE**
• Inpatient versus outpatient—depends on severity of the signs (especially severity of “drunken” or incoordinated gait [vestibular ataxia]) and need for supportive care
• Supportive fluids—replacement or maintenance fluids (depend on clinical state); may be required in the sudden (acute) phase when disorientation, rolling, and nausea prevent the rabbit from drinking and eating

**ACTIVITY**
• Restrict activity (such as avoiding stairs and slippery surfaces) to protect the animal, according to the degree of loss of equilibrium (“equilibrium” is the state or condition of being balanced); provide padded cages for rabbits that are severely affected, seizuring, or rolling.
• Encourage return to activity as soon as safely possible; activity may enhance recovery of balance.

**DIET**
• It is absolutely imperative that the rabbit eat. Although rabbits cannot vomit, many appear to experience nausea with balance disorders, and stop eating. If this happens, potentially life-threatening disease of the intestinal tract may occur (GI stasis, bacterial overgrowth). Offer a large selection of fresh, moistened greens such as cilantro, romaine lettuce, parsley, carrot tops, dandelion greens, spinach, collard greens, etc., and good-quality grass hay. Also, try offering the rabbit’s usual pelleted diet. If the rabbit refuses these foods, syringe-feed a gruel such as Critical Care for Herbivores (Oxbow Pet Products) or Emeraid Herbivore (Lafeber Company, Cornell, IL); feed as much as the rabbit will readily accept. Alternatively, pellets can be ground and mixed with fresh greens, vegetable baby foods, water, or juice to form a gruel. Do not feed starchy, sweet, or fatty foods.
• Encourage drinking by offering fresh water and wetting leafy vegetables.
• Feed carefully; animals with severe head tilt and lack of equilibrium may be prone to aspirating food into their lungs.

**SURGICAL CONSIDERATIONS**
Surgery may be indicated in some cases of inflammation of the middle ear (otitis media) to drain the middle ear (procedure known as bulla osteotomy).

**MEDICATIONS**
• Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered all-inclusive.
• Infection/inflammation of the middle ear and inner ear (otitis media and interna)—broad-spectrum antibiotic that penetrates bone, while awaiting bacterial culture and sensitivity results; examples include trimethoprim-sulfa; quinolones (Baytril, ciprofloxacin, marbofloxacin); treatment often required for 4 to 6 weeks
• *E. cuniculi*—antiparasitic drugs that are effective against *E. cuniculi* have been shown to prevent experimental infection in rabbits. However, how often these are effective in rabbits with clinical signs is unknown. Common antiparasitic drugs used include fenbendazole, oxibendazole, and albendazole. Adverse reactions to these drugs include life-threatening bleeding disorders.
• Trauma—supportive care (such as anti-inflammatory drugs, antibiotics, intravenous fluids)
• Meclizine—used to treat dizziness and accompanying nausea
FOLLOW-UP

PATIENT MONITORING
• Most rabbits gradually improve over a course lasting days to months. Supportive care, including assisted feeding if the appetite is not normal, confining, padded bedding, and keeping the fur clean and dry, is needed until balance returns.
• Many rabbits will have a head tilt that is to some degree lifelong. Most rabbits seem to adapt to this; they walk around normally, eat, drink, and enjoy a good quality of life.
• Monitoring the complete blood count (CBC) may be recommended if treating with antiparasitic drugs

POSSIBLE COMPLICATIONS
• Progression of disease with deterioration of mental status and quality of life
• Permanent head tilt
• Facial droop due to paralysis of facial nerves
• New episodes of head tilt may occur at some point in the rabbit’s life.

EXPECTED COURSE AND PROGNOSIS
• Head tilt may persist
• Depends on the cause and extent of disease. Some rabbits will not improve, even with intensive supportive care and antibiotic or antiparasitic drugs.
• Rabbits that improve or appear to completely recover may suffer from one or more episodes of head tilt later in life.

KEY POINTS
• Head tilt is usually caused by disease of the vestibular system, including the inner/middle ear or brain.
• There is no way to definitively diagnosis E. cuniculi as the cause of head tilt. Usually, the diagnosis is based on eliminating all other causes of head tilt. A positive blood test (serologic or antibody test) does not mean that E. cuniculi is causing nervous system disease, only that the rabbit has been exposed to the parasites. Many rabbits (up to 80% in some studies) have been infected with E. cuniculi in the past; they may never develop disease, yet will still test as positive lifelong.
• Diagnosis of bacterial inner/middle ear disease or extension of infection into the brain is difficult. The inner ear cannot be readily accessed to obtain samples for diagnosis. Advanced imaging techniques, such as CT scan or MRI, may be need.
• Most rabbits will improve with supportive care antibiotics or antiparasitic drugs. It is most important to be certain that the rabbit continues to eat and pass normal stool to prevent serious intestinal disease (GI stasis).
• Weeks, and sometimes months, of supportive care may be necessary before improvement is seen.
• Some rabbits that improve will always have a head tilt. Most adapt to this and have a good quality of life.