



AURAL ABSCESSSES

Eastern box turtle with an aural abscess.

Photo by Dr. Suzanna Brown

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CAUSE

An aural abscess, or ear abscess, is the internal swelling of the tympanic (middle ear) cavity caused by a bacterial or viral infection. Such abscesses frequently affect reptiles, particularly box turtles. The definitive cause of these aural abscesses in wild turtles is unknown; however, they are linked to Vitamin A deficiency or excessive exposure to organochlorine compounds (found in many pesticides). It is thought that these compounds impact the turtle's ability to metabolize or use vitamin A, resulting in hypovitaminosis A.

Turtles with a weakened immune system due to exposure to contaminants, a disease, during hibernation, and/or poor environmental conditions may be more susceptible to developing aural abscesses. Improper water conditions, unsuitable temperatures, and insufficient access to natural or artificial light are also potential drivers of this condition.

SIGNIFICANCE

Aural abscesses are the second most common cause of morbidity in eastern box turtles (*Terrapene carolina*). The level of impact of aural abscesses on population levels is not well understood.

SPECIES AFFECTED

Aural abscesses occur in many species of wild and captive reptiles. Common species that are affected by these infections include the eastern box turtle, the painted turtle, and the red-eared slider.

DISTRIBUTION

Aural abscesses can occur wherever reptiles are distributed.

TURTLES WITH A WEAKENED IMMUNE SYSTEM MAY ALSO BE MORE SUSCEPTIBLE TO DEVELOPING AURAL ABSCESSSES.

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TRANSMISSION

Aural abscesses are thought to occur primarily when a turtle is deficient in vitamin A. Recent studies have shown that in the wild, this deficiency may be due to a high body burden of organochlorine compounds found in wetland turtle habitats. Low levels of vitamin A cause abnormalities in the lining of the middle ear, allowing bacteria to enter the body and leading to infection. The skin, eyelids, conjunctiva (thin, clear membrane that covers part of the front surface of the eye and inner surface of the eyelids), and respiratory tract may also be affected. The infectious pathogen (bacteria or virus) begins to grow and forms a plug of caseous material (i.e., a firm cheese-like material) in one or both ear canals.

CLINICAL SIGNS

The most obvious sign of an aural abscess is swelling on one or both sides of the head, just behind the eye(s). This swelling can become so large that the turtle may not be able to retract into its shell. The turtle's head may appear asymmetrical if the aural abscess manifests on only one side. Other signs include the presence of caseous material behind the eardrum, loss of appetite, and noticeable difficulty in opening the mouth.

DIAGNOSIS

Aural abscesses are most commonly diagnosed through visual confirmation of a swelling over the ear. Additional testing includes obtaining and analyzing a sample of the caseous material to determine if a pathogen is responsible for the infection.

Caseous material protruding from the Eustachian tube into the mouth may also be considered diagnostic of an aural abscess.

TREATMENT

Treatment involves surgically opening the ear and removing the hardened pus, followed by flushing the ear canal with antimicrobials. It is commonly used for captive turtles but may also be applied to wild turtles during wildlife rehabilitation.

MANAGEMENT

At this time aural abscesses do not appear to cause high rates of mortality in reptile and turtle populations and thus management is not necessary. Captive turtles should be kept in suitable living conditions and be given sufficient vitamin A to help prevent the development of aural abscesses. Vegetables rich in vitamin A include winter squash, sweet potatoes, red peppers, and parsnips.

SUGGESTED READING

Brown, J.D. et al. 2004. Pathology of aural abscesses in free-living eastern box turtles (*Terrapene carolina carolina*). *Journal of Wildlife Diseases* 40(4):704-712.

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