Head Trauma

A. Courtenay Freeman, DVM
Marc Kent, DVM, DACVIM (Small Animal and Neurology)
Simon R. Platt, BVM&S, MRCVS, DACVIM (Neurology), DECVN

BASIC INFORMATION

Description

The skull is a bony case that protects the brain from injury. Trauma to the skull can result in brain injury. Any traumatic impact to the head may result in skull fractures, bleeding within the brain, or bruising of brain tissue (concussion/contusion). In addition to the direct injury, fluid buildup (edema) in brain tissue can develop, which worsens the brain damage. Because the brain is encased in the skull, it is trapped if it begins to swell. Swelling of the brain causes the pressure within the head to increase (elevated intracranial pressure). This increased pressure can lead to deterioration of clinical signs.

Causes

Head trauma most commonly occurs from automobile accidents. Other causes include falls, blows to the head, gunshot and bite wounds, and other types of accidents.

Clinical Signs

Clinical signs depend on the location and severity of brain damage. Common clinical signs include depression, seizures, circling, alteration in the size of the pupils of the eye, decreased vision, head tilt, falling to the side, an uncoordinated gait, and loss of consciousness (coma). Following automobile accidents, animals often have additional injuries to other areas of their bodies that may be life-threatening.

Diagnostic Tests

Diagnosis is based on a history of trauma and compatible clinical signs. If a traumatic event was not observed, injuries to other areas of the body may provide evidence of a traumatic insult. Thorough physical and neurologic examinations are usually performed. Routine blood tests, a urinalysis, and x-rays of the chest and abdomen are often needed to evaluate injuries to other areas of the body. X-rays of the head may reveal skull fractures, but they do not image or assess the brain.

Advanced imaging techniques such as magnetic resonance imaging (MRI) or computed tomography (CT scan) may be recommended to evaluate skull fractures and to identify bleeding, bruising, or inflammation of the brain. Careful evaluation of each animal is necessary prior to advanced imaging, because these procedures require general anesthesia, and anesthesia may need to be delayed until the animal is stable.

TREATMENT AND FOLLOW-UP

Treatment Options

Initial therapy is directed at stabilizing the animal's general condition and usually requires hospitalization. Other injuries must be addressed prior to treatment of the brain trauma, and measures must be taken to ensure normal blood pressure, hydration, and the ability to breathe properly. Many of the initial stabilizing treatments, such as intravenous fluid and oxygen therapy, have beneficial effects on the brain. Specific treatment for brain injury is usually aimed at decreasing intracranial pressure with diuretics and other drugs. Anticonvulsant therapy may be required if seizures develop after the trauma. Occasionally, surgery is required to treat a fracture of the skull or a blood clot in the brain, but surgery is usually delayed until after medical therapy has been attempted.

Follow-up Care

During hospitalization, affected animals are monitored frequently with serial neurologic examinations. Your veterinarian may refer your pet to a specialty center if round-the-clock monitoring and treatment are required. Once at home, frequent follow-up visits are usually needed to monitor neurologic signs and to assess recovery from other injuries. During the recovery period, notify your veterinarian immediately if any new neurologic signs develop or if previous ones recur or worsen. If the animal recovers and becomes normal again, long-term follow-up may not be necessary. Animals with persistent seizures require ongoing monitoring, as outlined in the handout on **Seizures: Treatment**.

Prognosis

Prognosis depends on the severity and location of the brain damage. The first 72 hours after the injury are critical. Most mildly affected animals will improve, and many regain normal neurologic function. Severe head trauma can result in death or long-term disability. Some animals develop seizures that require lifelong treatment.

IF SPECIAL INSTRUCTIONS HAVE BEEN ADDED, THEY WILL APPEAR ON THE LAST PAGE OF THE PRINTOUT.