

## Report of a Case of a Head Injury in a Mule (*Equus ferus caballus*) A Pathological Study

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### Abstract

The aim of this study was to report of a case of a head injury in a mule (*Equus ferus caballus*) by pathological study. Were studied a mule of 3 months old, with history of a head injury, collapse, shock and sudden death. Was to examined by necropsy and samples of tissue were recollected. Necropsy revealed a traumatic in head with brain injury obliquely with an open fracture of the frontal bone, about 15 cm long, 1.5 cm wide, exposure of brain tissue and significant bleeding. Severe hydrocephalus acquired approximately 15 cubic centimeters. Submeningeal hematoma on the ventral side of the frontal bone, as well as a hematoma in the left hemisphere. The histopathology of brain evidence severed edema and hemorrhage submeningeal and marked coagulation necrosis acute encephalomalacia and leukoencephalomalacia. Increased Virchow-Robbins space. Evidence is not suppurative meningitis with presence of lymphocytic diffuse. In conclusion were reported a case of trauma of head injury in a mule underlying a viral meningitis by pathological study on a mule.

**Keywords:** Head; Injury; Mule; Fracture; *Equus ferus caballus*

### Introduction

The equine head is especially prone to trauma from kicks, collisions, entrapments, and falls [1]. The specialized structures of the equine head are important in both function and appearance for their specific functions and vital. When injury causes either loss of function or cosmesis, timely treatment is paramount [1]. Brain injury after impact to the head is due to both immediate mechanical effects and delayed responses of neural tissues [1]. In horses, traumatic brain injury occurs in three main settings [2]. Poll impact in horses that flip over backwards; Frontal/parietal impact in horses that run into a fixed object and injury to the vestibular apparatus secondary. Distinct forebrain, vestibular, midbrain, hindbrain, or multifocal syndromes may be encountered in horses with traumatic brain injury [2]. Results suggest that prognosis for survival in horses with acute TBI (Traumatic Brain Injury) may be more favorable [3]. Among horses with TBI, persistent recumbency and fractures involving the basilar bones were associated with a poor prognosis [3]. In donkeys and mules there are few reports of TBI in the literature. On donkeys only report a prevalence of mortality associated with fractures and traumas of 5.3% [4]. Death investigation is a multidisciplinary effort employing the skills of different forensic specialists from fields as diverse as pathology, anthropology, odontology and entomology [5]. In the examination of skeletal trauma, the contribution of the analysis by the forensic pathologists is essential [5]. Such an analysis helps determine whether skeletal injuries are temporally associated with the events surrounding death and the mechanisms that were involved in their production [5]. The aim of this study was to report of a case of a head injury in a mule (*Equus ferus caballus*) by pathological study.

### Material and Methods

#### Necropsy

Was to study a mule of 3 months old, with history of a head injury, collapse, shock and sudden death. Were examined by necropsy and samples of tissue were recollected [6].

#### Histopathology

The tissue samples of tissue were fixed in formalin buffered 10% and processed by conventional Hematoxylin & Eosin techniques [7].

### Results

#### Necropsy

Necropsy revealed a traumatic in head with brain injury obliquely with an open fracture of the frontal bone, about 15 cm long, 1.5 cm wide, exposure of brain tissue and significant bleeding. Severe hydrocephalus acquired approximately 15 cubic centimeters (Figure 1). Submeningeal hematoma on the ventral side of the frontal bone was observed, as well as a hematoma in the left hemisphere was showed (Figures 2 and 3).

#### Histopathology

The histopathology of brain showed severed lesions edema and hemorrhage submeningeal, meningitis, marked coagulation necrosis acute encephalomalacia and leukoencephalomalacia (Figure 4). Increased Virchow-Robbins space was observed. Histological diagnostic is not suppurative meningitis with presence of lymphocytic diffuse.

### Discussion

These findings observed are consistent with viral encephalitis type early event and later in the clinical presentation of headache, ataxia, collapse suffered a severe head injury that led to the death. The clinical features of 21 horses which sustained head fractures are reviewed [8]. There was a higher incidence of TBI in males and Standard bred horses [1,8]. Surgical treatment was practical and successful in most

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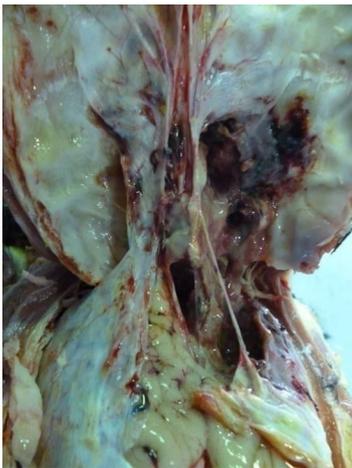
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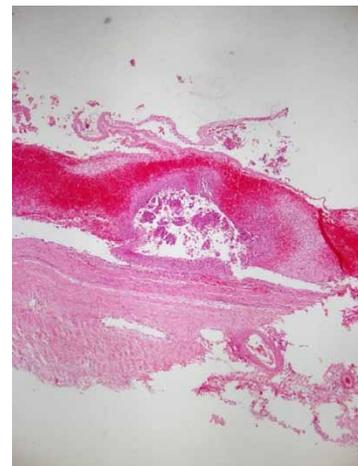
**Figure 1:** A traumatic in head with brain injury obliquely with an open fracture of the frontal bone, about 15 cm long, 1.5 cm wide, exposure of brain tissue and significant bleeding.



**Figure 2:** Submeningeal hematoma on the ventral side of the frontal bone, as well as a hematoma in the left hemisphere.



**Figure 3:** Submeningeal hematoma on the ventral side of the frontal bone, as well as a hematoma in the left hemisphere.



**Figure 4:** Histopathology of brain evidence severed edema and hemorrhage submeningeal, meningitis and marked coagulation necrosis acute encephalomalacia and leukoencephalomalacia (H&E) 4X.

cases when the fractures involved the bones of the jaws and the face. Fractures which involved the cranial cavity or the cranial nerves were difficult to treat and usually held a poor prognosis [8], as occurred in our case. The identification of perimortem trauma and its differentiation from antemortem injuries and postmortem modification is essential in skeletal trauma analysis as occurred in our case where initially observed at TBI and histological study viral meningitis. The distinction between perimortem and postmortem injuries however, is challenging, as it depends on more subtle attributes of bone tissue.

## Conclusion

In conclusion were reported a case of trauma of head injury in a mule underlying a viral meningitis by pathological study on a mule.

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