

## Intrathecal Lidocaine Euthanasia Procedure in Equids and Cattle

### Materials:

- 60 cc syringes
- 2% Lidocaine hydrochloride (20 mg/ml)
  - Administered at 2.6-4 mg/kg
- 18-20 gauge, 3.5 inch spinal needle
  - Note: may need longer needle for draft horses and larger cattle
- Extension set (optional)
- Supplies for the anesthetic protocol of your choice

### Procedure:

- 1) Anesthetize animal using the anesthesia protocol of your choice. The animal must be in lateral recumbency having reached an anesthetic plane before proceeding with following steps.
- 2) Locate the atlanto-occipital (A-O) joint on **“dorsal midline at the level of the cranial border of the wings of the atlas”** (McCue et al, 2004).
  - a. Locate the joint by identifying anatomical landmarks. Flex the head so that the median axis of the head is at a 90-degree angle to the cervical vertebrae’s median axis - lifting the nose so that the lateral aspect of the head is parallel to the ground may be helpful.
- 3) Once landmarks for the A-O joint space have been identified, a 3.5-inch, 18- or 20-gauge catheter or spinal needle is introduced (bevel facing towards the head) and aimed toward the lip commissures (**Figure 2a**) or lower jaw (**Figure 2b**). Be careful to introduce needle on dorsal midline to avoid entering the A-O space but missing the subarachnoid space.
- 4) The needle should be advanced slowly through the skin, muscle, and nuchal ligament until a popping sensation accompanied by a decrease in resistance is felt as the subarachnoid space is entered. If no fluid is observed in the hub, the needle may be rotated 90 degrees to attempt to gain access to the subarachnoid space. If this is not successful, reassess the landmarks and redirect the needle as needed.
- 5) Once the subarachnoid space has been successfully entered and the stilette (if used) is removed, connect the extension set (if used). Rapidly administer 2% lidocaine hydrochloride intrathecally at the rate of 2.6-4 mg/kg (approximately 60-90 mL for a 1000 lb. animal).
- 6) Remove the needle following administration to avoid leakage of lidocaine.
- 7) Assess the animal and confirm death has occurred.

**References:**

Aleman, M. , Davis, E. , Williams, D. , Madigan, J. , Smith, F. and Guedes, A. 2015, Electrophysiologic Study of a Method of Euthanasia Using Intrathecal Lidocaine Hydrochloride Administered during Intravenous Anesthesia in Horses. *Journal of Veterinary Internal Medicine*, 29: 1676-1682.

De Lahunta A. *Veterinary Neuroanatomy and Clinical Neurology*. 2<sup>nd</sup> edition. 1983. W.B. Saunders Company. Chapter 4: Cerebrospinal Fluid and Hydrocephalus. pgs 40-41.

Johnson, P.J. and Constantinescu G.M. Satellite Article: Collection of cerebrospinal fluid in horses. *Equine veterinary education*. 2000. 12(1)7-12.

MCCue, M., Davis, E.G., and Rush, B.R. Diagnostic evaluation, clinical management, and transport of recumbent horses. *Compendium*. February 2004. 26:2.

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**Photo Key:**

- Allanto-occipital joint (Foramen Magnum)
- ★ Cranial border of the wings of the atlas (C1)
- Commissure of the lip
- ↓ Needle

Figure 1.

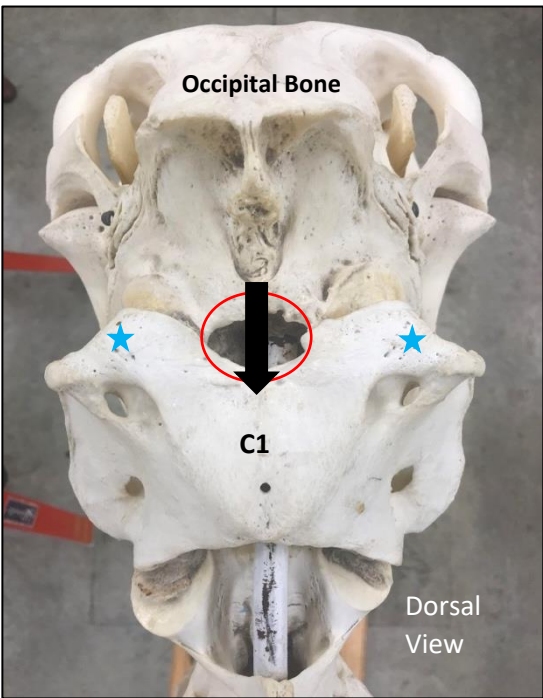


Figure 2a.

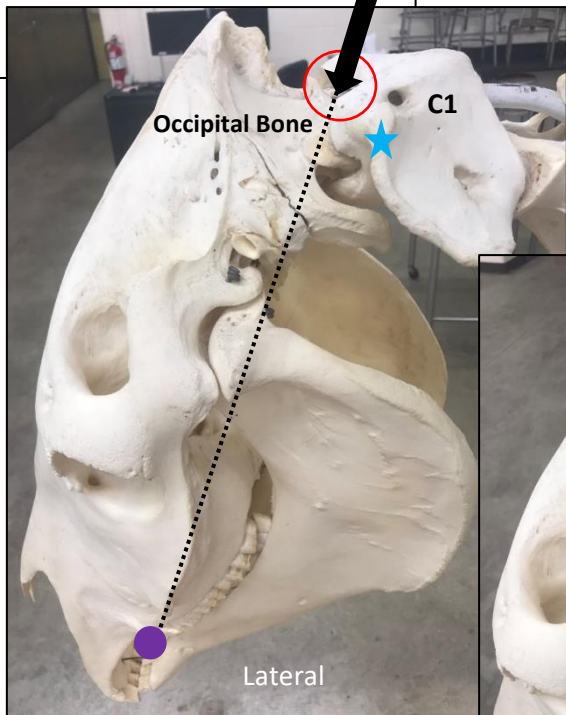


Figure 2b.

