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**POSTERS**



after a C2 hemisection. Swallow was elicited by infusion of 3ccs of water into the oropharynx. Acute C2 cervical hemisection significantly increased EMG amplitudes across all upper airway muscles during swallow, and swallow frequency increased from  $3.3 \pm 1.2$  to  $8 \pm 1.4$  per infusion. Significant changes in swallow-breathing coordination were noted with all swallows occurring in E1 (as opposed to late E2), significantly increasing the risk for potential aspiration. These results support a theory of spinal cord inhibition/modulation of the swallow pattern generator and upper airway muscle excitability, as well as the importance of its role in swallow/breathing integration. Supported by R00- HL 111215, The Kentucky Spinal Cord and Head injury Trust, The Commonwealth of Kentucky Challenge for Excellence, the Rebecca F Hammond Trust and RCS-VA RR&D B9249S. The contents of this abstract do not represent the views of the DVA or US government.

## 15.2

### **MAPPING CFOS EXPRESSION AFTER CEREBELLAR AND MEDIAL PREFRONTAL DEACTIVATIONS IN RATS TRAINED TO ACQUIRE COCAINE-INDUCED PREFERENCE CONDITIONING**

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Pavlovian memories of preference for drug-related stimuli are crucial components to drive motivational trigger of drug seeking and drug taking behaviours. Despite growing data in the last years, the cerebellum has remained excluded from the circuitry sustaining these behaviours. However, the cerebellum presents close anatomical and functional connectivity in several key regions in the striatum-cortico-limbic circuitry. Recently, we have found two cerebellar hallmark signatures of conditioned preference for cocaine: an increase in cFos expression in cells at the apex of the granule cell layer and a strong expression of the perineuronal nets in the same region of the cerebellar vermis. In the present investigation, we evaluated the effects of different medial prefrontal cortex (mPFC) and cerebellar deactivations in rats before starting with the conditioning training to acquire preference for an olfactory stimulus paired with cocaine. Two groups of rats were subjected before training to a temporary prelimbic or infralimbic inactivation by lidocaine. Another two groups were treated with quinolinic acid for a permanent lesion in the dorsal or ventral area of lobule VIII in the cerebellar vermis. Sham control rats received vehicle in the same regions. cFos expression was evaluated in different areas of the striatum-cortico-limbic circuitry to analyse changes in activity patterns after these brain interventions. The inactivation of infralimbic cortex or the lesion of the dorsal cerebellar vermis promoted the acquisition of cocaine-induced preference conditioning. Interestingly, the combined lesions of both areas regions prevented the facilitation of this conditioned response. Opposite results were found after either prelimbic deactivation or ventral cerebellar lesion. The change in cFos expression patterns was restricted to specific regions of amygdala and thalamic complex after dorsal cerebellar lesion. In this case, cFos expression increased significantly. Also, neural activity in either infralimbic cortex or cerebellum was enhanced after deactivations of each of these distal sides. The results suggest that the infralimbic cortex and dorsal posterior cerebellum work together and take part in the circuit that allow the inhibitory control of drug-related emotional memories.

## P15.3