POSTER

P-91

SPINAL PROSTAGLANDINS MODULATE PAIN FROM UTERINE CERVICAL DISTENSION *Tong, C. Eisenach, J.C. Anesthesiology, Wake Forest University, Winston-Salem, NC* Introduction. Pain from acute uterine cervical distension (UCD) underlies the pain of labor, yet the neurophysiology and pharmacology of this visceral pain has received little attention. Spinal prostaglandins have been implicated in playing an important role in this visceral pain. As part of a series of validation studies examining acute UCD, we studied the induction by UCD of cfos expression in the thoraco-lumbar spinal cord, and the effects of spinal ketorolac on UCD evoked cfos expression and reflex contraction of abdominal wall muscles. Methods. Ovariectomized adult female rats were anesthetized and UCD induced by manual separation of two fine metal rods. This results in a reflex contraction of the abdominal wall musculature, which is quantified using the rectified, integrated EMG. Following determination of a baseline stimulus-response to UCD, animals received intrathecal ketorolac by cumulative dosing, with dose range and timing determined in preliminary experiments. Other animals were anesthetized, UCD at a near maximal force (75 g) performed, then they were peri-cardially perfused with saline and fixative, their spinal cord removed and sectioned, and spinal neuronal excitation quantified by counting the number of cells expressing the early-immediate gene protein, cfos. Data were analyzed by one- or two-way analysis of variance, with $p < 0.05$ considered significant. Results. UCD increased the number of cfos containing cells throughout the dorsal horn and deep laminar in sections from T12 to L2 compared to sham laparotomy controls. This increase in cfos expression was abolished when locally injection of lidocaine into the cervix). Intrathecal ketorolac significantly attenuated both the cfos expression in deep dorsal horn of the spinal cord and the reflex EMG response elicited by UCD. Discussion. Noxious stimulation results in cfos expression of cells in the dorsal spinal cord. The location of these cfos cells has been used as a measure of the synaptic terminals of primary afferents which were excited by the stimulus. A reduction in the number of cfos expressing cells by drug administration correlates with behavioral analgesia. These data with spinal cord cfos expression are consistent with neural tracing methods which demonstrate extensive arborization of visceral afferent terminals deep in the spinal cord, and add to previous recordings in hypogastric afferents and reflex EMG responses to validate this novel model of UCD. Ketorolac, although stated to be non-selective, is actually several hundred fold selective for cyclo-oxygenase (COX)-1 than COX-2, suggesting activation of COX-1 in the spinal cord during UCD. We propose that spinal COX-1 may be a reasonable target to examine for the treatment of labor pain. Supported in part by NIH grant GM35523 and NS41386

P-92

USE OF NIRS TO MONITOR PLACENTA TISSUE OXYGENATION *Olufolabi, A.[1] James, A.[2] Coates, E.[1] El-Moalem, H.[1] Reynolds, J.[1]* 1. Anesthesiology, Duke Medical Center, Durham, NC; 2. Ob/Gyn, Duke Medical Center, Durham, NC Near-infrared spectroscopy (NIRS) is a non-invasive spectrometric method of measuring tissue oxygenation that works by recording changes in the ratio of oxygenated and de-oxygenated hemoglobin in the region of interest. Such technology has allowed researchers to measure oxygenation in various adult and neonatal tissues and has led the FDA to approve NIRS for clinical use. The purpose of this preliminary investigation was to assess the potential of this technology to measure placental oxygenation. As blood in the placenta is directly associated with fetal oxygenation, NIRS might indirectly be used to monitor fetal status. Following IRB approval, written informed consent was obtained from third-trimester parturients (>30 weeks) with normal single pregnancies. Parturients with anterior placenta were identified using abdominal ultrasound. The NIRS probe was placed over their abdomen, overlying the position of the placenta. Placental tissue oxygenation was recorded for 10 minutes. During subsequent NIRS recording session, mothers were given 100% oxygen to induce changes in the placental oxygenation. The final recording session had the women back to breathing room air. Parturients with posteior lying placentas served as controls. To date, 10 women have been enrolled in the study: 7 had anterior located placentas while 3 had posterior-located placentas. In the latter group, there was no quantifiable signal following NIRS probe placement. Amongst the women with anterior placentas, strong NIRS signals were recorded from the region of interest in 6 of the participants. Inspiration of 100% oxygen, produced, on average, a 4.4% increase in placental oxygenation (range , 0.8 to 9.8). Ultrasound-directed placement of NIRS probe on the abdomen appears to provide information of placental oxygenation in term parturients. Further developments in technology is needed to confirm this preliminary finding. A non-invasive means of monitoring placental oxygenation may be beneficial in the management of fetal well-being.