assembled, and cost-effective way to decrease animal deaths and improve clinical and research outcomes.

PS44 Evaluation of a Novel Scoring System to Assess Postoperative Pain in Rats

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Rat pain scoring presents a challenge in veterinary medicine as, being prey animals, rats tend to mask signs of pain and distress. The Rat Grimace Scale is a commonly used tool for evaluation of pain in rats. However, it is primarily based on still images and can be difficult to apply in real-time. Using a novel scoring system originally developed by the University of Finland, we evaluated 2 surgical models for evidence of postoperative pain, comparing it to our facility standard using the of dichotomous variables of "painful" versus "non-painful." The novel rat pain scoring system evaluated several variables, including posture, fur quality, movement/activity, orbital tightening, and fecal quality on a scale of 0-3, while ensuring minimal stimulation of the animals during evaluation. A total of 125 rats were evaluated, with 80 animals receiving an intrathecal or epidural dose of a test article, and 45 animals receiving a spinal contusion at the level of C5 or T7. All animals received buprenorphine SR perioperatively, therefore scoring was primarily used to identify insufficient analgesic or break-through pain. Scoring was performed twice daily starting the day prior to surgery and continued for 3 to 5 d postsurgery. All animals were noted to have a pre-operative score of 0. The highest score achieved during the intrathecal/epidural dosing was a total score of 1 and all animals were noted to be nonpainful. Total scores for the spinal contusion model reached a maximum value of 7. However, all of these animals were noted to be nonpainful using the traditional scoring system. These variations between the scoring systems support the need for a more refined scoring system. Additionally, it was noted that model type and strain of rat can impact scoring, and therefore these should be taken into consideration when using this novel pain scoring system.

PS45 Jacketed Telemetry in Rats: Noninvasive Method for Refinement of Cardiorespiratory Monitoring During Exercise

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Protocols involving physical exercise are used to study physiology and pathophysiology of major functions both in humans and animals. Refining the way exercise-induced variations in cardiorespiratory function are monitored is of one of the keys to achieve enhanced animal welfare and results' quality. The aim of this work was to evaluate the feasibility of cardiorespiratory monitoring using the novel DECRO telemetric jacket for rats during continuous treadmill exercise. For this purpose, the effects of an incremental exercise protocol on a training treadmill were monitored with a non-invasive telemetric jacket on an experimental group of sedentary rats (n = 9). This protocol consisted of a progressive increase of speed level (from 10 to 35 cm/sec max) every 2 min. Heart rate (HR), respiratory rate (RespR), and activity level (AL) were measured during a control state (Baseline) and during the last 30 s of each speed levels. All animals were successfully dressed with the jacket and were placed in their cage. After 25 min of baseline, HR was 392±36 bpm, RespR was 173±53 brpm, and AL was 15±12 mg. All animals managed to run with the jacket until 35 cm/s speed. The monitoring tool measured a significant overall physiological increase in HR (+26%, 104±21 bpm, $P < 0,01$) and RespR (+73%, 126±22 bpm, $P < 0,01$) induced by exercise at 35 cm/s. In conclusion, this work provides evidence that this novel telemetry jacket can be used to monitor cardiorespiratory parameters adaptation during a standard forced exercise protocol in a noninvasive manner. Such an alternative to the current tools (implanted telemetry, metabolic chamber) could be used to refine exercise protocols requiring monitoring and offers new perspectives to study cardiac and respiratory changes in various pathological models.

PS46 Survival Cerebrospinal Fluid (CSF) Collection: A Novel Method for Serial Collection of Cerebrospinal Fluid from Rats

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The blood brain barrier (BBB) is a specialized cellular barrier critical to controlling the passage of substances into the cerebrospinal fluid (CSF), which protects the brain against circulating toxins and pathogens. Many central nervous system drug discovery programs require the successful collection of clean CSF samples to assess exposure levels because of penetration and distribution of new chemical entities through the BBB. Rodents are the most frequently used animal model for these studies. However, collection of clean CSF samples (void of blood) has historically required terminal surgery (sampling) under anesthesia, sacrificing animals to collect a single sample. Furthermore, since only 1 sample could be collected per animal, the robustness of the data was rate-limiting and warranted a 3Rs alternative approach. Our goal was to refine rat CSF collection by reducing the number of animals used and improving the quality of the samples collected in a conscious animal. We evaluated a novel indwelling Cisterna Magna (CM) catheter for ease of use, duration of use, impact on animal health, and quality of samples. This novel CM catheter reliably enabled repeated collections of CSF from a single animal for the duration of our study. Three animals were used in this validation. We were able to collect clean samples from each animal for up to 2 wk post implantation. In addition, we were able to pair the catheter with a specialized collection device to tightly control the exact volume of CSF collected, protecting the animal's health while eliminating any samples containing blood.