MEASURE THE ANS
CONTROL SURGICAL STRESS
IMPROVE OUTCOMES

PTA monitor
The purpose of PTA (Parasympathetic Tone Activity) technology is to provide veterinarians with a noninvasive, easy-to-use monitoring system that offers a continuous and reliable measure of the parasympathetic tone of the animal via the ECG.

Behavioral rating scales are widely biased due to their subjectivity and clinical context, which inhibits the behavioral response of the animal. PTA technology allows optimal management of analgesia, particularly during surgery, resulting in improved recovery.

MDoloris developed a simple-to-use, non-operator dependent, heart rate variability analysis device, based on the acquisition of ECG signal. This has already been developed into specific measurements for three animal species: horses, dogs, and cats.

Why assess COMFORT?

The PTA technology provides an objective measure to evaluate the autonomic nervous system response to nociception, offering a value between 0 and 100, corresponding to the percentage of activity of the parasympathetic part of the autonomic nervous system of the animal. The higher the PTA value, the higher the comfort of the animal is.

In the absence of clear verbal communication, the expression of pain in animals is behavioral. Behavioral rating scales have been developed, however, these tools have two major limitations: first, anthropomorphic ideals are not perfect, and second, intraoperative anesthetic context inhibits the behavioral response of the animal. Pain is a symptom which must be managed in proportionate way in relation to the potential side effects. The challenge for veterinarians is to objectively assess nociception response felt by the animal during surgery, and adapt the analgesic treatment to suit the individual animal. Better management of nociception response during surgery could mean improved awakening for the animal after surgery.
PTA evaluation to discriminate analgesia level better than haemodynamics

Mansour et al showed that a PTA below 48 increased the probability of a haemodynamic response, and a fall of 18% predicted with an accuracy of 80% a hemodynamic response.

Predict haemodynamic reactivity


PTA can detect comfort in awake animals

Marzuk et al showed that PTA is able to detect the comfort effect that pheromones produce in cats.

<table>
<thead>
<tr>
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<th>Feliway</th>
<th>Control</th>
<th>CV</th>
<th>SEM</th>
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<tr>
<td>PTAI</td>
<td>35.16</td>
<td>30.83</td>
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<td>3.21</td>
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<td>44.00</td>
<td>21.6</td>
<td>3.21</td>
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PTA can be used on dog, cats and horses

2020 Camilo Romero Nuñez, Ariadna Flores Ortega, Rafael Laura Reyes Climaco Heredia Cardenas*, Laura Miranda Contreras, Mario Marczuk Dyurich

EVALUATION OF THE EFFECT OF FELIWAY ON PARAMETERS OF PARASYMPATHETIC ACTIVITY IN CATS

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The PTA technology can be used to monitor animal comfort at the end of the surgery and anticipate analgesia needs. The assessment of pain in animals is not easy and animals are often given a standard dose of analgesics. This is not appropriate treatment and should ideally be avoided.

Leitao et al showed that PTA is better able to detect stimulation than HR, is able to clearly recognize the analgesic level between treatments, and may be used to optimize analgesic drug delivery in animals.

The main benefits of using PTA technology

Titrate opioids to avoid infra and overdosing
In my opinion, the inclusion of PTA in the monitoring protocol allows us to complete the information and refine the treatment in something as complicated as nociception, thinking not only intraoperatively but also in postoperative pain.

Miguel Angel Cabezas
Head of the Anesthesia at Hospital Veterinario Puchol, Madrid

Currently, the clinical assessment method for nociception (intraoperative ‘pain’) is based on simple but basic responses, such as sudden increases in heart and respiratory rates or blood pressure. These responses imply that we are late in providing a good pain reliever and stability plan for our patients. The PTA monitor is a novel approach and a significant advance to detect the presence of nociception, and to anticipate situations where our patients do not have sufficient analgesic coverage.

Ignacio Álvarez Gómez de Segura
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