

Use of MDoloris PTA monitor for evaluation of equine nociception in healthy standing horses

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Assessing pain in animals is challenging especially in clinical settings. Following the results of the Analgesia Nociception Index (ANI) technology to monitor human patients, MDoloris developed PTA (Parasympathetic Tone Activity), non invasive system to evaluate animals autonomic nervous system (ANS) response to nociception, and so level of analgesia. Based on heart rate variability analysis from ECG acquisition, PTA values (range 0 – 100) represent percentage of the parasympathetic part of the ANS activity. The higher the PTA value, the lower the nociception. PTA range 50 – 100 evokes adequate analgesia in small animals under general anesthesia.

In order to interpret adequately PTA index in horses and look for reference values, a clinical trial was performed in 6 standing resting healthy horses (3 mares, 2 geldings, 1 male). PTA and HR were continuously recorded through ECG during 5 mins, every morning (before paddock) and evening for 50 days. Times to set up and stabilize measurements were noticed. Morning and evening PTA and HR means were compared by and between horses. Student t-test was used to determine any statistic differences ($p < 0.05$).

HR was stable from t0 after calibration. PTA needed 30s to set up (t0 value 20% lower). PTA values were easily recorded and stay stable during the 5 mins. Lost of signal happened sometimes with sudden or important movements of the horse. PTA mean values were not different between mornings and evenings (54 +- 4 ; $p = 0.12$; mini 48 ; maxi 61) while evening HR was a little higher (33 vs 32 ; $p = 0.02$).

More studies are needed to investigate clinical situations and their analgesic management, but MDoloris PTA index seems to be considered as a valuable objective parameter of nociception, even in standing horses, with a 50 and above range as reference for "healthy zone".