Examining Awake Volunteer Pain Scores and Operator Ease of Use of a Novel Neuromuscular Blockade Monitor

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Abstract

Postoperative neuromuscular blockade is a significant problem that affects patients to varying degrees, and it is often difficult to determine when patients have recovered sufficiently to be ventilated or extubated. However, current neuromuscular monitoring techniques are time-consuming and lack objective end points for recovery. The TOF-Watch (Senzime, Uppsala, Sweden) is a novel neuromuscular monitor that decreases stimulating current density and likely, the pain associated with neurostimulation. The investigators found that VAS scores obtained with TetraGraph™ were less painful neurostimulation than the TOF-Watch device in awake, healthy adults.

Introduction

Residual neuromuscular block, the persistence of neuromuscular blockade longer than 90 minutes after the intended recovery time, has been associated with clinical outcomes such as postoperative respiratory complications and death. The TOF-Watch is an accelerometer-based neuromuscular monitor that aims to improve neuromuscular recovery by providing an objective end point for complete recovery. The TOF-Watch was designed as an alternative to traditional monitors such as train-of-four (TOF) and acceleromyography (AMG). The TOF-Watch is capable of monitoring neuromuscular function and calculating the amplitude of evoked muscle responses.

Methods

At the TOF-Watch, 10 adult volunteers gave informed consent to participate in the study. The study protocol was approved by the Mayo Clinic Institutional Review Board. A standard TOF-Watch was used to perform TOF stimulation, with the ratio calculated as a TOF count. The investigators found that VAS scores obtained with TetraGraph™ were less painful neurostimulation than the TOF-Watch device in awake, healthy adults.

Results

The TetraGraph™ monitor is a motion-based monitor that utilizes a novel EMG-based sensor to detect changes in neuromuscular function. The investigators found that VAS scores obtained with TetraGraph™ were less painful neurostimulation than the TOF-Watch device in awake, healthy adults.

Conclusions

The TetraGraph™ monitor is a motion-based monitor that utilizes a novel EMG-based sensor to detect changes in neuromuscular function. The investigators found that VAS scores obtained with TetraGraph™ were less painful neurostimulation than the TOF-Watch device in awake, healthy adults.

References


Table 1

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Figure 1

The TOF-Watch is a novel neuromuscular monitor that decreases stimulating current density and likely, the pain associated with neurostimulation. The investigators found that VAS scores obtained with TetraGraph™ were less painful neurostimulation than the TOF-Watch device in awake, healthy adults.

Figure 2

Specially-Designed Electrodes

Figure 3

Sensing Electrode Placement

Disclosures

Brull SJ is a consultant of the Board of Directors of the Mayo Foundation for Medical Education and Research (MFMER).