

BACKGROUND

- Quantitative monitoring of neuromuscular block is critical for determining the depth of neuromuscular block and determining the choice and dose of reversal agent.
- Train-of-four counts (TOFC) of 1 to 3 represent moderate block and are important for determining the dose of sugammadex reversal per manufacturer's recommendation.
- Few studies characterized the subjective versus objective counting of the response to the train-of-four stimulation by a single assessor ^{1,2}.
- The purpose of this study was to compare the subjective determination of TOFC by palpation between two independent assessors.

METHODS

- The study was approved by the University of Washington institutional review board.
- Adult patients scheduled for elective procedures under general anesthesia were enrolled if one arm was accessible for the data collector during the procedure.
- TOFC were palpated every 20 seconds for the duration of the anesthetic by alternating between the two assessors who were blinded to each other.
- TOFC recorded within 30 seconds of each other were paired. The level of agreement between paired TOFC was determined by Cohen's kappa statistic.

RESULTS

- A total of 482 TOFC were gathered from 11 patients with an average of 48 data pairs per patient (Figure 1).
- Cohen's quadratically weighted kappa was 0.65, indicating 'substantial' agreement between two independent assessors.
- The majority (67%) of data pairs had agreement between two independent assessors.
- In less than 1% of data pairs, the difference in the TOFC was more than a single count.
- One of the assessors was more sensitive, obtaining higher TOFCs 29% of the time, than the other assessor, who obtained higher TOFCs only 4% of the time.

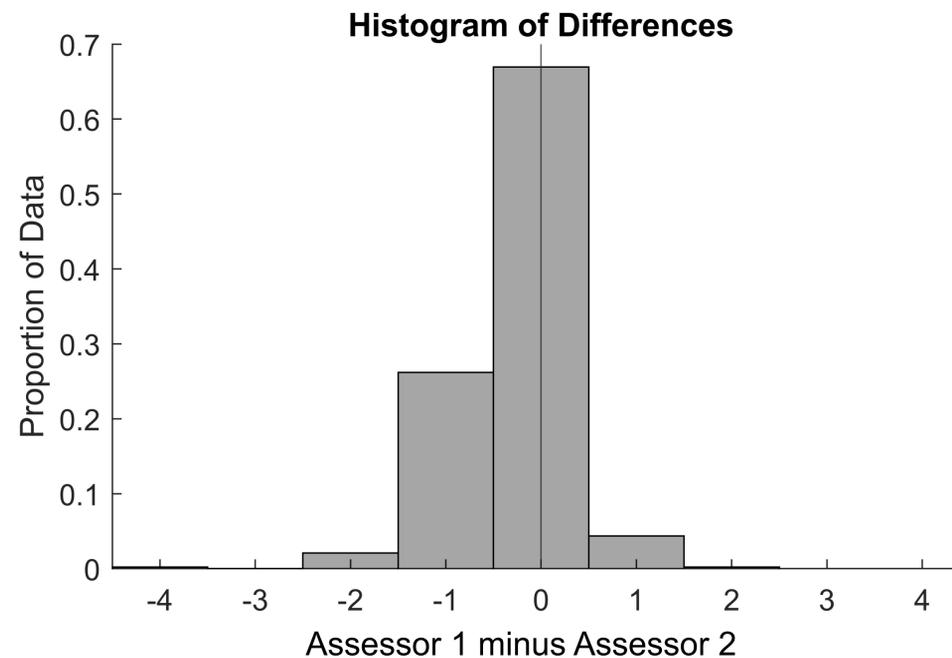


Figure 1. Histogram of the difference in TOFC between assessor 1 and assessor 2. Mean difference was -0.26.

DISCUSSION

- Subjective determination of train-of-four count by two independent assessors showed a substantial agreement, with 67% of TOFCs being the same.
- Limitations of this study include a small sample size and the use of only two assessors.
- To the best of our knowledge, this is the first study that compared TOFCs determined by two independent assessors via palpation rather than a single assessor, as reported in previous studies.

CONCLUSIONS

- Palpation is a reproducible method for determining train-of-four counts when monitoring moderate neuromuscular block.

REFERENCES

- Bowdle et al., "Counting Train-of-Four Twitch Response."
- Bhananker et al., "Comparison of Train-of-Four Count by Anesthesia Providers versus TOF-Watch® SX."

Plain Language Summary

This study aimed to compare the number of thumb twitches in response to ulnar nerve stimulation (train-of-four count) assessed by two independent data collectors in patients under general anesthesia. There was substantial agreement between the two independent data collectors, with 67% of data pairs having identical train-of-four counts.