

Combined facial and masseteric repetitive nerve stimulation in myasthenia gravis diagnosis: a 52 patients retrospective study.

M.C.Trapasso¹, I.Allegri¹, G.Pilurzi², E. Saccani¹, A.Tagat¹, S.Tinchelli¹, G.Pavesi¹

¹Department of Medicine and Surgery, University of Parma, Italy. ² Department of Medicine and Surgery, University of Sassari, Italy

INTRODUCTION

Our study was aimed at comparing the sensitivity of masseteric (M-RNS) and combined masseteric and facial (M/F-RNS) repetitive nerve stimulation to facial repetitive nerve stimulation alone (F-RNS) in the diagnosis of Myasthenia gravis (MG)^{1,2}

MATERIALS

RNS retrospective data of 52 MG patients, followed in our Neurological Division from 2001 to 2016, were collected. Diagnosis was set if patient presented clinical symptoms of MG and at least one of the subsequent features: abnormal single fiber EMG in frontalis muscle or two positive RNS in different nerves, positive anti-AchR antibodies titer, positive response to pyridostigmine treatment.

METHODS

The masseteric nerve was stimulated by a monopolar needle (cathode) inserted between the mandibular incisure and the zygomatic arch, the surface electrode (anode) was placed over the contralateral cheek (Figure 1). Facial nerve was stimulated with a bar electrode at the tragus. Compound muscle action potentials from Masseter and Nasalis muscles were recorded in a belly-tendon montage. Trains of nine stimuli were delivered at 3 Hz frequency, at rest and over 4 minutes (every 30 seconds) after 30 seconds of maximum effort. Sensitivity of M-RNS, F-RNS and M/F-RNS were calculated as the percentage of patients positive to the test (M/F-RNS considered positive when at least one test was altered). Data were compared using the Chi-square test analysis. Significant values were set at $p < 0.05$.

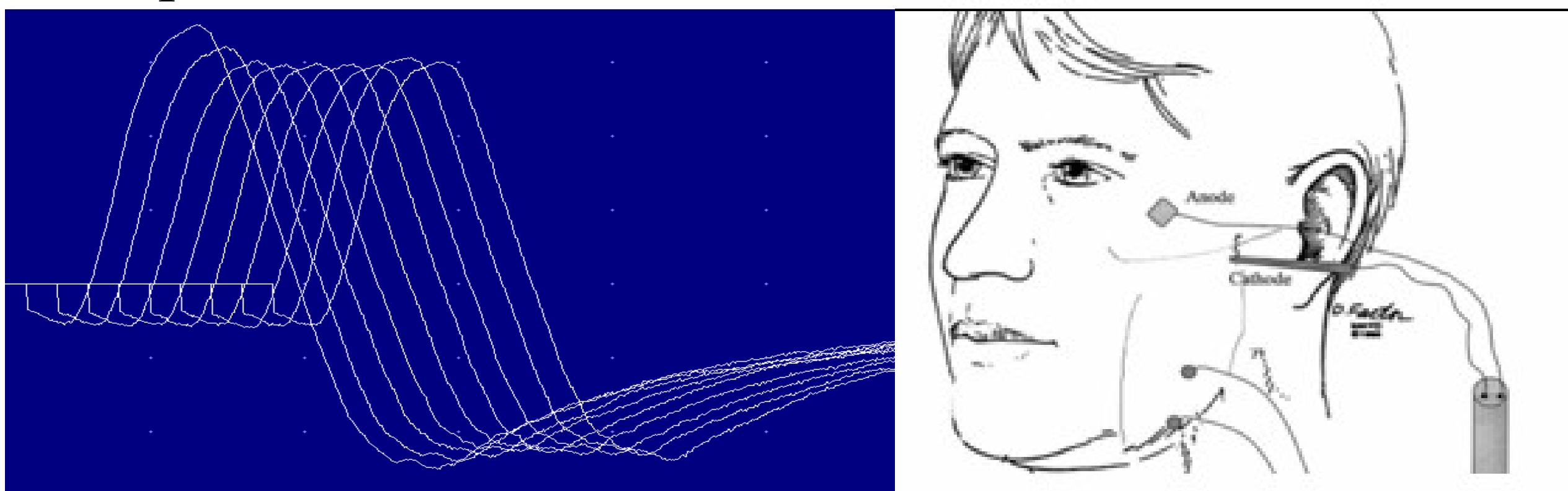


Figure 1: M-RNS of a representative subject and experimental setup.

References

- [1]Pavesi G., Cattaneo L., Tinchelli S., Mancina D. (2001) Masseteric repetitive nerve stimulation in the diagnosis of myasthenia gravis. *Clinical Neurophysiology* 112, 1064-1069
- [2]Chiou-Tan F.Y., Gilchrist J.M. (2015). Repetitive nerve stimulation and single-fiber electromyography in the evaluation of patients with suspected myasthenia gravis or Lambert-Eaton myasthenic syndrome: review of recent literature.

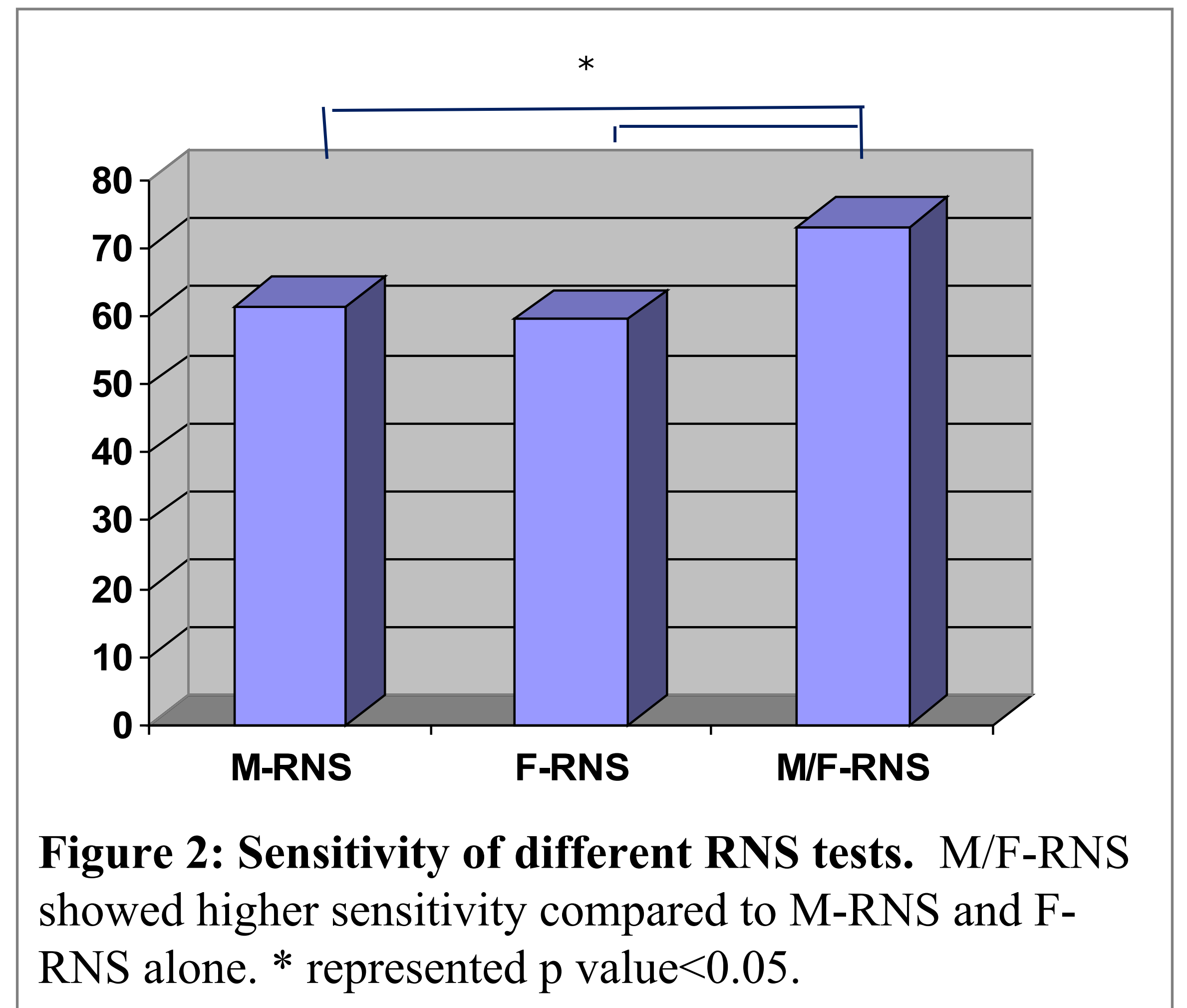


Figure 2: Sensitivity of different RNS tests. M/F-RNS showed higher sensitivity compared to M-RNS and F-RNS alone. * represented p value < 0.05 .

RESULTS

No side effects were observed after masseteric stimulation in all subjects. Thirty-two out of 52 patients (61.5 %) resulted positive on M-RNS, thirty-one (59,6%) positive on F-RNS; thirty-eight (73.1%) were positive on M/F-RNS. The sensitivity of M-RNS alone was not significantly different from that of F-RNS alone. The number of patients positive to combined M/F-RNS was significantly higher ($p < 0.03$) respect to the number of patients positive F-RNS or M-RNS tests alone (Figure 2).

DISCUSSION

Previous data showed the utility of M-RNS in the diagnosis of MG¹. In our sample, the M-RNS sensitivity showed no differences compared to F-RNS. However, the combined use of M/F-RNS was more sensitive than the use of M-RNS and F-RNS alone.

CONCLUSION

Masseteric RNS is a simple and well tolerated test. It can be used alone or combined with facial RNS for the diagnosis of MG.