CORRELATION BETWEEN MOTOR UNIT NUMBER INDEX (MUNIX) AND MUSCLE ULTRASOUND MEASUREMENTS AND CLINICAL OUTCOME IN ALS PATIENTS: AS NOVEL BIOMARKERS

Background: Previous literature has evaluated the prognostic role of MUS and MUNIX for people with amyotrophic lateral sclerosis (ALS). There are limited data to assess their correlation with clinical variables. The aim of this study is to detect the relation between the clinical variables and paraclinic findings (MUNIX and MUS.(

Method: A prospective study was performed, it included 20 definite or probable ALS patients based on revised El-Escorial criteria with at least ALSFRS-R score of 30 and 20 control age-matched subjects. Demographic data such as age, weight, gender, disease duration and clinical variables including ALSFRS-R, 9 Peg Hole test and Dynamometry were registered. Ultrasound measurement of muscle Thickness and echo-intensity were measured in the following distal muscles bilaterally: abductor pollicis brevis, abductor digiti minimi and tibialis anterior. MUNIX protocol was assessed in the same muscles. Results were compared with 20 healthy control subjects.

Result: we found decreased muscle thickness, increased echo-intensity and declined MUNIX in ALS group compared to control subjects. Moreover, this study showed a very strong correlation between the echo-intensity and MUNIX values in all tested upper limb muscles($r=0.8$, $p=0.001$). There was moderate correlation between ALSFRS-R and upper limb muscles MUNIX and echo-intensity ($r=0.5$, $p=0.05$, $r=0.6$, $p=0.002$, respectively.(

Conclusion: MUS can detect lower motor neuron involvement such as decrease in muscle thickness, increased echo-intensity and as prognostic biomarkers. In addition MUNIX is a technique for assessment of motor unit loss and could be as a reliable and sensitive marker for monitoring disease progression and follow up in treatment trials.