GAIT DISORDER IN ALZHEIMER'S DISEASE CORRELATES TO LOWER CSF Abeta42

G. Di Lazzaro[1], T. Schirinzi[1], P. Imbriani[1], G.M. Sancesario[2], A. Martorana[1], A. Pisani[1].

1, University of Rome Tor Vergata, Rome, Italy;
2, Fondazione Santa Lucia IRCCS, Rome, Italy

INTRODUCTION

It is known that **cognitive impairment is associated**, at every stage, **with motor dysfunction**[1]: gait is now considered a higher level of cognitive function which involves the integration of attention, planning, memory and other motor, perceptual and cognitive processes. In spite of this, motor disturbances of dementia are still largely unexplored[2]. On the other hand, **CFS biomarkers**, like A*beta*42, total-*tau* and phosphorylated-*tau*, well represent **pathologic changes in central nervous system** (CNS), such as neuronal degeneration, phosphorylation of *tau* with tangle formation, and the aggregation and deposition of A*beta*42 into plaques.

SUBJECTS AND METHODS

We enrolled **58 consecutive patients** affected by cognitive impairment between 2014 and 2015 and divided into two groups:

- 32 diagnosed with Alzheimer's disease (**AD**);
- 26 diagnosed with other dementias (**non-AD**).

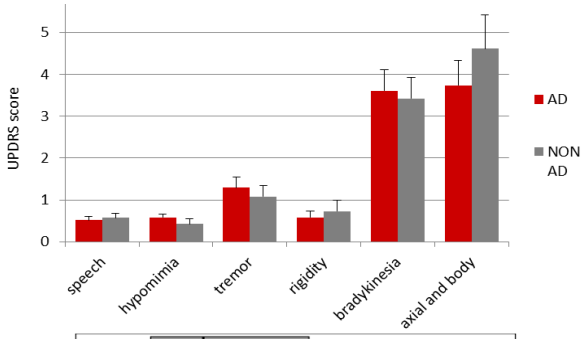
They were all assessed for motor disturbances with **UPDRS III, RSEGCD** and **Tinetti** scale. A cerebrospinal fluid (**CSF**) sample was collected from each patient to measure Abeta42, total-tau and phosphorylated-tau[3] levels. Differences between AD and NON-AD in clinical scores were calculated by means of Mann-Whitney-U test. We correlated clinical scores with CSF biomarker levels by the Spearman test and linear regression.

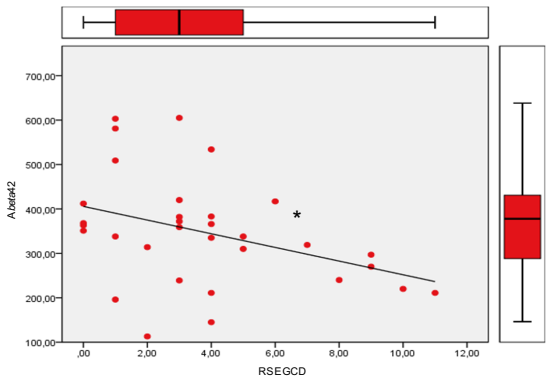
RESULTS

The two groups did not show differences in age, sex and disease duration.
We found **no significant difference** between the two groups in the **motor phenotype.**

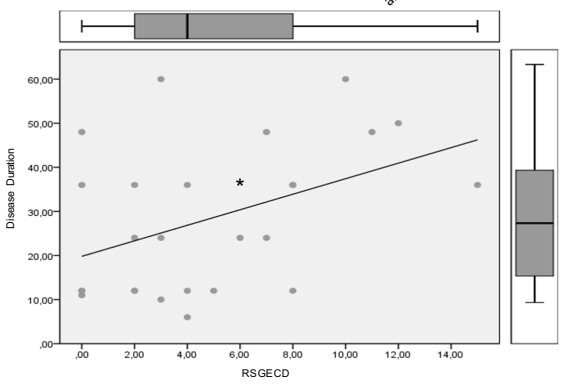
In **AD** patients the **RSEGCD score** negatively correlates with **A*beta*42** (R=-0.385, p<0.05; T=-2.245, p<0.05) whereas in **NON-AD** patients **the RSEGCD score** positively correlates with **disease duration** (R=0.402, p<0.05, T=2.335, p<0.05).

Extrapyramidal signs in patients with dementia





Linear regression gait/beta-pathology in AD



Linear regression gait/disease duration in non AD

DISCUSSION

AD and other dementias show a **similar pattern of motor disturbances**: both are characterised by mild extrapyramidal signs and gait disorders.
The degree of gait impairment yet correlates to different parameters:
- in AD, worst motor performances are correlated to lower CSF levels of beta-amyloid, regardless of disease duration;
- in non-AD, gait impairment seem to be linked to disease duration.

These results suggest that **the burden of amyloidopathy may play a role in the pathogenesis of motor disturbances in AD** while, in non AD, they are related just to disease progression.

Bibliography:
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