

Late life depression and poetry recitation: the He.s.i.o.d. study (Hexameter Study In Older Depressed)

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Context

Context: Late life Major Depression (LLMD) features affective, neurovegetative and anxiety symptoms, as well as biological abnormalities both in the central nervous system and peripheral homeostatic systems. Consistently, evidence shows that LLMD worsens the prognosis of physical illnesses, as well as increasing the risk of cardiovascular diseases and dementia. More recently, studies suggest there may be a link between LLMD and specific physical conditions, such as dyspnea, Fear of Falling (FOF) and risk of falls (Neuman et al., 2006; Denking et al., 2015). These features are scarcely responsive to drug treatment, and they further contribute to worsen patient quality of life and prognosis.

LLMD is most commonly treated within Primary Care using antidepressant drugs, such as SSRIs. However, even after first-line antidepressant drug treatment it remains associated with unsatisfactory outcomes, a tendency to chronicity and significant residual symptoms.

Thus, there is a great need of novel, effective interventions to treat LLMD. The optimal management of LLMD should comprise non-pharmacological interventions, such as psychotherapy, physical rehabilitation or physical exercise (Alexopoulos et al., 2013; Bridle et al., 2012). Recently, we showed that adding aerobic physical exercise to antidepressant drugs can improve the outcomes of LLMD (Belvederi Murri et al., 2015), but its use is limited by: 1) reduced efficacy among patients with higher levels of anxiety (Zanetidou et al., 2016); 2) limited applicability among patients with severe physical comorbidity.

Objective: The objective of this study was to test the safety and effectiveness of a newly developed experimental intervention for LLMD. The intervention is based on the combination of antidepressants and physical rehabilitation, consisting in breathing and postural exercises, aimed to improve patients' anxiety, mood, postural stability, dyspnea and fear of falling.

Methods

The He.s.i.o.d. study (Hexameter Study In Older Depressed) is an open-label (non-randomized) pilot study.

Setting: Recruitment is based on a Psychiatric Consultation-Liaison Program for Primary Care.

Participants: patients aged 65+, with non-psychotic recurrent LLMD without significant cognitive impairment

We compared the effectiveness of two intervention groups:

1) BREATHING/POSTURAL EXERCISES PLUS ANTIDEPRESSANT DRUG (HESIOD+SSRI). The intervention consists in breathing and postural exercises, under trained staff supervision (professional actor and graduate in Sport Science). Respiratory exercises consist in respiratory muscles training, forced expiration, thoracic expansion techniques, during the rhythmic recitation of hexameter poetry. Hexameter recitation has known positive effects on cardio-respiratory synchronization (Cysarz et al., 2004). Postural exercises involve upper and lower limb strengthening, motor coordination and education. The one-hour sessions are held weekly in groups of 5-10 subjects, for 24 weeks.



2) GROUP READING PLUS ANTIDEPRESSANT DRUGS (READING-SSRI). The intervention consists in weekly reading group under the supervision of a trained psychiatrist. Participants are asked to read, comment and discuss short pleasurable stories and fables that have been written by students. The one-hour sessions are held weekly in groups of 5-10 subjects, for 24 weeks.



Outcome Measures:

- Symptoms: Dysphoria, Anxiety, Vegetative symptoms.** Changes in Montgomery-Asberg Depression Rating Scale (MADRS) factor scores (from Parker et al., 2003), clinician report
- Fear of falling.** Changes in Fall Efficacy Scale - International (FES-I) scores, self-report.
- Subjective dyspnea and dyspnea-related functional limitation.** Changes in Pulmonary Functional Status & Dyspnea Questionnaire-Modified (PFDQ-M) scores, self-report
- Timed Up and Go test (TUG).** A smartphone-based system developed by mHealth Technologies to assess postural stability (Palmerini et al., 2013). The smartphone (SP) is worn on the lower back by means of a case waist belt and a custom application is used to record inertial signals from the embedded sensors. The extracted features include: the total duration and the duration of the test sub-tasks; the root mean square (RMS) and range of the signals; cadence, step/stride regularity and variability; the normalised jerk of the walk; the jerkiness of the postural transitions and of the turns.

Statistical analyses

- Pearson correlation was used to investigate the association between depression severity and other variables (FOF, dyspnea, indices of postural stability).
- To examine changes of outcome measures in the whole sample we used Paired Samples T-test (baseline scores and 12 weeks scores).
- To examine the effectiveness of the intervention we used the Independent Samples T-test to compare individual pre-post test score differences (baseline minus 12 weeks scores) between subject in the HESIOD-SSRI group and READING-SSRI group. Alpha level was set at 0.05.

Results

We present preliminary results obtained on 45 subjects, assessed at baseline and 12 weeks (HESIOD+SSRI: n=23; READING-SSRI: n=22). All patients were treated with SSRI antidepressants at standard dosage. Females 75.6%; mean age 72.3 ±7.6. Mean MADRS score for the entire sample was 25.8 ±8.5, indicating moderate severity.

Baseline assessments revealed there were no significant between-group differences in age or gender (all p>0.10), MADRS total scores (HESIOD+SSRI: 25.7 ±9.0; READING-SSRI: 25.9 ±8.3; p=0.93) MADRS subscale scores (all p>0.10), FES-I scores (p=0.18), ratings of dyspnea (all p>0.40) or parameters from the TUG test (all p>0.10).

Depression severity correlated with fear of falling (r=0.45; p=0.006), ratings of subjective dyspnea (r=0.46, p=0.002) and dyspnea-related functional limitation (r=0.36, p=0.02).

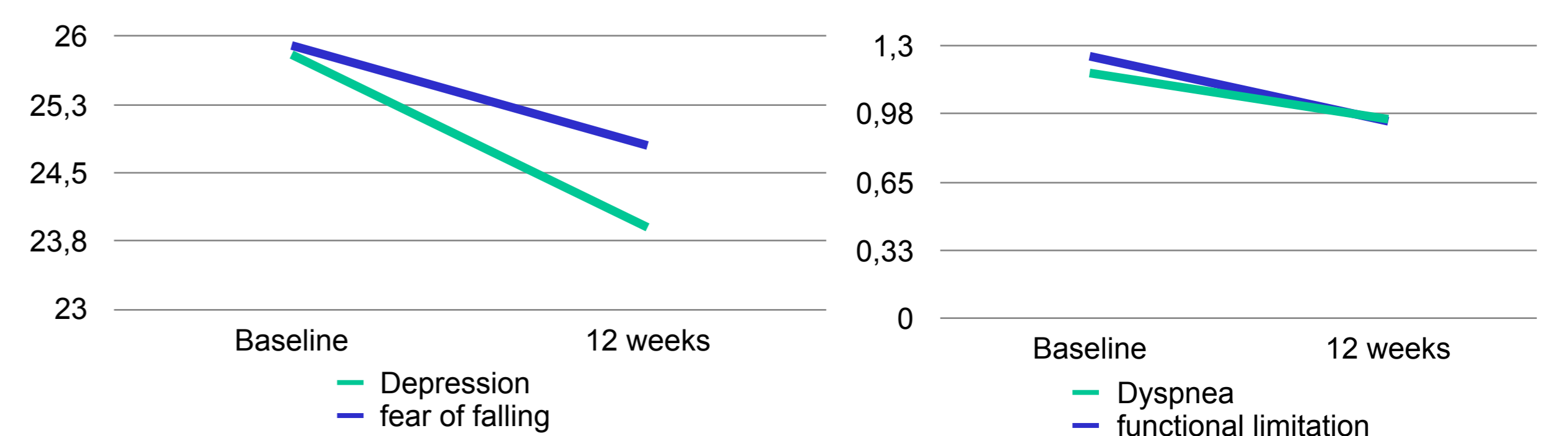


Figure 1. Changes in depression severity and fear of falling in the whole sample (n=45)

Figure 2. Changes in dyspnea and related functional limitation in the whole sample (n=45)

In the whole sample (n=45), there was a statistical trend for improvements of depression severity (MADRS total scores: p=0.07), driven by a significant improvement of anxiety (MADRS Anxiety factor: p=0.02). Moreover, subjective dyspnea and dyspnea-related functional limitation showed significant improvements (p=0.02 and p=0.01, respectively). Whereas, fear of falling improved without reaching statistical significance (p=0.11).

Comparing the two intervention groups, there were no significant differences in terms of depression severity, fear of falling, dyspnea indices (all p>0.10). Whereas, the HESIOD-SSRI group displayed greater improvements of anxiety compared with the READING-SSRI group (0.40 vs. -0.23 points; p=0.015).

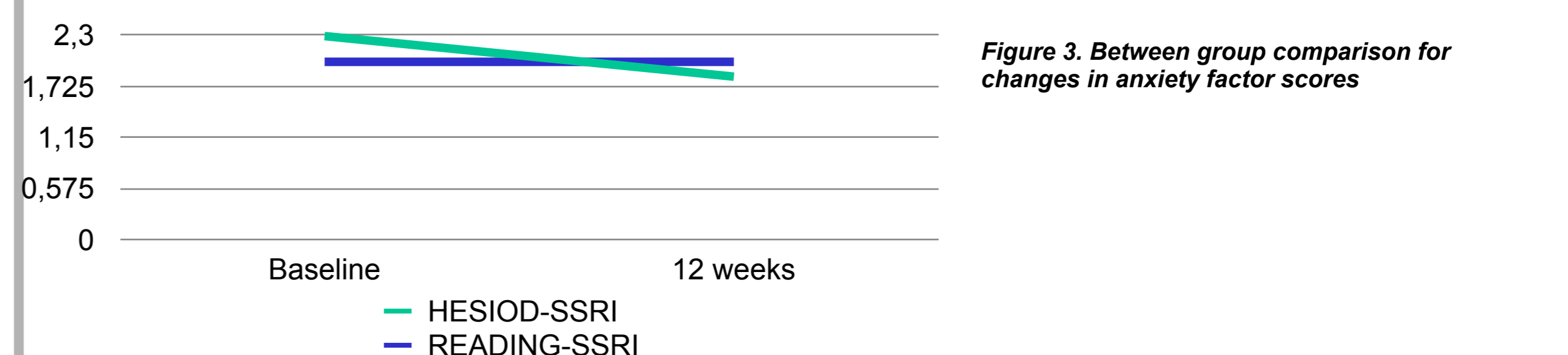


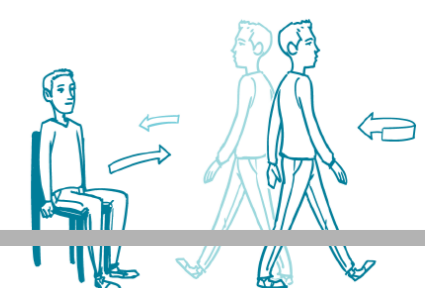
Figure 3. Between group comparison for changes in anxiety factor scores

Time up and go results

At 12 weeks, the Jerk Score of the Antero-Posterior (AP) Acceleration during the Turn-to-Sit Transition and the Number of Steps in the 180°Turn were significantly different (p=0.02 and 0.045, respectively).

The Jerk Score is a measure of smoothness of the movement. The Turn-to-Sit Transition is the most complex subtask of the TUG test. It is highly related to the cognitive capacities of the subject because of the motor planning component that is associated with this motor task. The higher smoothness for the intervention group is an index of lesser difficulties to perform the motor task that involves high cognitive capacities.

On average, after the intervention the HESIOD-SSRI subjects did on average one step more than READING-SSRI subjects during the 180°turn. This suggests that subjects adopted a more conservative strategy to perform the turn.



Conclusions

The study confirmed there is an association between late life depression, fear of falling and dyspnea symptoms. The experimental intervention based on respiratory and postural exercises was safe and led to initial improvements of anxiety, which is a common and disabling aspect of late life depression. Of note, both antidepressants and different psychosocial interventions have reduced efficacy against symptoms of anxiety in the context of LLMD.

By recruiting a larger number of patients and examining follow up evaluations, this study will clarify if the HESIOD intervention is also effective improving fear of falling and dyspnea. However, results should be further confirmed through a randomized trial.

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