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VITAMIN B12, HOMOCYSTEINE AND FOLIC ACID IN OBSESSIVE-COMPULSIVE DISORDER

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Introduction: Several models have been proposed to understand the pathophysiology underlying obsessive-compulsive disorder (OCD) that still remains unclear, although different mechanisms are with no doubt involved. Vitamin B12, vitamin D, folic acid, homocysteine, an amino acid related to their functioning, seem to play key roles in several brain functions acting on neurotransmission and brain homeostasis, and they have been associated with some psychopathological disorders, such as mood disorder. A limited information on these biomarkers is available in OCD, a common disorder, where only a few papers reporting low vitamin D levels have been published [1, 2].
Aims: The aims of the present study was to assess plasma levels of vitamin B12, folic acid, and homocysteine in OCD outpatients, as compared with normative levels, and to assess possible relationships between biomarkers and clinical features.
Methods: Two hundred and seventeen patients OCD outpatients (evaluated with DSM-5) were recruited. The OC symptom severity was assessed by the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS). Socio-demographic characteristics were recorded together with family, illness and treatment history, comorbid psychiatric and medical conditions, suicidal symptoms and attempts, sleep patterns and metabolic status. Levels of vitamin B12, D, folic acid and homocysteine were measured by common chemical-clinical laboratory tests. The Kolmogorov-Smirnov test was used to determine normality of distribution of the variables. Comparisons for continuous variables were performed with the independent-sample Student's t-test. Comparisons for categorical variables were conducted by the use of $\chi 2$ test. The possible differences in Y-BOCS total-score and obsession/compulsion subscales between the subgroups were analyzed by the Mann-Whitney test.
Results: Men showed a younger age at index evaluation and at onset, as well as a higher prevalence of lifetime and current sexual obsessional thoughts, with no significant gender differences. An earlier disease onset, a history of perinatal traumas and a chronic course were associated to more severe symptoms. The acute onset, when preceded by stressful life events was related to better clinical characteristics. Levels of vitamin B12 and folic acid were sufficient in most patients. The levels of folic acid showed a negative correlation with "resistance to obsessive thoughts" ($r = -0.270$, $p = 0.019$) and "resistance to compulsive behaviour" ($r = -0.247$, $p = 0.031$) item of Y-BOCS.
Conclusions: There is a compelling need of a novel pathophysiological model of OCD, aiming at improving an early detection and effective treatment, while considering the impact on patients' quality of life and functioning, as well as its direct and indirect community costs. Although the role of vitamins has been established in neuroplasticity and neurotrophic/neurodegenerative processes, their impact on pathophysiology of OCD has only been hypothesized. The findings of our study support the possible impact of hypovitaminosis on the overall severity and specific symptom patterns of OCD. They represent useful, cheap and easy parameters that should be routinely assessed. Further studies are needed to more thoroughly clarify their role on OCD aetiology and outcome, as well as the potential therapeutic impact of vitamins in OCD and other psychiatric conditions.
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SMARTPHONE APP-INDUCED HABIT: A THERAPEUTIC COMPONENT IN PSYCHOLOGICAL TREATMENT FOR OBSESSIVE-COMPULSIVE DISORDER

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Background. Obsessive-compulsive disorder (OCD) is a chronic illness affecting between 1-3% of the population worldwide and is responsible for significant disability. This high prevalence, nevertheless, does not translate to fully effective treatments. Cognitive-behavioural therapy (CBT) involving exposure and response-prevention (ERP) is a recommended first line treatment, however, it responds for the remission of circa 50% of the cases. A major caveat is that patients find the exposure aspects of the treatment challenging and dropout due to anxiety levels. Additionally, the costs associated to treatment and the lack of trained professionals impose important constraints. Novel treatment approaches are thus, necessary. Habit-reversal therapy (HRT), a recognised behavioural technique for treating tic and hair-pulling disorders, which involves learning a nonpathological habitual behaviour and applying it as a substitute for engaging in compulsive behaviours, provides a possible new and effective approach for delivering exposure-based therapy for OCD.
Aims and hypothesis. Introducing a learnt non-pathological habit as a component to ERP will result in better clinical outcomes compared with treatment as usual with ERP.
Methods. We conducted a naturalistic, feasibility, cohort study within primary and secondary care NHS services. Patients with DSM-5 OCD were recruited and randomly allocated to either 12 weeks of ERP (N=23) or habit-augmented ERP (N=22), involving an initial 6 weeks phase of habit training, followed by 12 weeks of ERP with the habit applied during exposure. Habit training consisted of daily practice on a mobile application involving learning two sequences of complex finger tapping movements, akin to playing the piano. Once automaticity was attained, patients entered the treatment phase. Assessments were performed by a blinded-rater and included the evaluation of OCD severity (Yale-Brown Obsessive Compulsive Scale - Y-BOCS), which was the primary outcome, depression (Montgomery-Åsberg Depression Rating Scale - MADRS), psychosocial disability (Sheehan Disability Scale – SDS), intolerance of uncertainty (Intolerance of Uncertainty Scale - IUS-12), and state anxiety (State-Trait Anxiety Inventory (STAI-S). Independent and paired samples t tests were conducted to assess group differences.
Results. Forty-five patients were randomly allocated (ERP =23; ERP with habit =22). Twenty-eight patients completed the study, with a numerically but not significantly greater number of dropouts in the ERP with habit arm (ERP + habit =11; ERP=17). Patients in both arms improved significantly from baseline on the Y-BOCS, on both the completer (ERP: $p<.001$, $d=1.6$, 95% CI [0.83, 2.26]; ERP + habit: $p=0.004$, $d=1$, 95% CI [1,1]) and on the last observation carried forward (LOCF) analysis (ERP: $p<.001$, $d=0.98$, 95% CI [0.95, 0.99]; ERP + habit: $p=0.003$, $d=1$, 95% CI [1,1]). Interestingly, the greatest numerical improvement in the experimental arm occurred during the 6 weeks training period. No significant between-group differences were found.
Conclusions. In this first of its kind study, application of a learnt habit to augment ERP for OCD was feasible, acceptable and resulted in clinical improvement. Unexpectedly, simple habit training produced positive symptomatic results. Further exploration of efficacy, tolerability, and mechanisms of effect of habit reversal techniques in OCD is indicated.
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