# Cognitive impairment induced by benzodiazepine use disorder and its reversibility: a case report

## *Deterioro cognitivo secundario a trastorno por uso de benzodiacepinas y su reversibilidad: a propósito de un caso*

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Dear Director,

In our country, benzodiazepine use disorder (BZD) is a widespread problem. Anxiolytics and hypnotics, used for treating insomnia and anxiety, are among the most-prescribed drugs in recent years (Hollingworth & Siskind, 2010). Between 2003 and 2010, the use of these drugs in Spain has registered an increase of 34.5%, surpassing other EU countries (Vicente et al., 2013). Possibly, current society's low frustration to tolerance together with its pace of life have transformed BZDs into one of the most highly demanded drugs in Primary Care and Psychiatry consultations.

However, these medications are no panacea. Long-term efficiency is questionable and, in any case, the risk-benefit balance is poor (Baldwin, Woods, Lawson & Taylor, 2011), reasons for which international clinical guidelines do not recommend their prolonged use (NICE, 2011). In addition to the well-known risk of tolerance, abuse and dependence, we have wanted to especially focus on their cognitive effects. Long-term effects on memory continue to be debated, though many studies have observed a greater risk of dementia and/or cognitive impairment (CI) in chronic users of BZDs (Billioti de Gage et al., 2012). However, are these alterations reversible? Evidence points out that, given improvement, it is only partial (Barker, Greenwood, Jackson & Crowe, 2004).

Our study presents the case of a 48-year-old woman with a history of BZD abuse who was hospitalised in the Addictive Behaviours Unit of the Clínic Hospital in Barcelona for detoxification. At the age of 44, she was diagnosed an Adaptation Disorder and began using BZDs. Upon admission, she claimed to take 8-10 mg of clonazepam and 10-15 mg of Diazepam daily, together with 20 mg of Paroxetine, and displayed moderate, fluctuating somatic anxiety, irritability and frequent forgetfulness. Only her smoking habit is worth highlighting from her background. An MRI of her brain two years earlier due to cephalea reported a mild predominantly frontal cortical atrophy. While hospitalized, she underwent detoxification by gradually reducing clonazepam, under medical supervision, from a dose of up to 8 mg/day through to its suspension, and with pregabalin of 75 mg/day as an adjuvant, an alternative drug for detoxification treatment (Oulis & Konstantakopoulos, 2012). Paroxetine was also replaced with 15 mg/day of escitalopram. A clinical analysis suggested CD, wherefore the Neurology Department was contacted and advised Positron Emission Tomography with Fluorodeoxyglucose (FDG-PET) to exclude central metabolic alterations, without any pathological findings. Other complementary analyses (including a blood test to detect thyroid problems, serology test to identify viruses, vitamin B12 and folic acid) were normal. Upon discharge, she was referred to the Alzheimer and other Cognitive Disorders Unit. A neuropsychological evaluation revealed that her executive processes were affected and that her information processing was slightly delayed, a performance-related profile that is compatible with dysfunctional dorsolateral prefrontal areas. During follow-up, the patient's treatment included 15 mg/day of escitalo-

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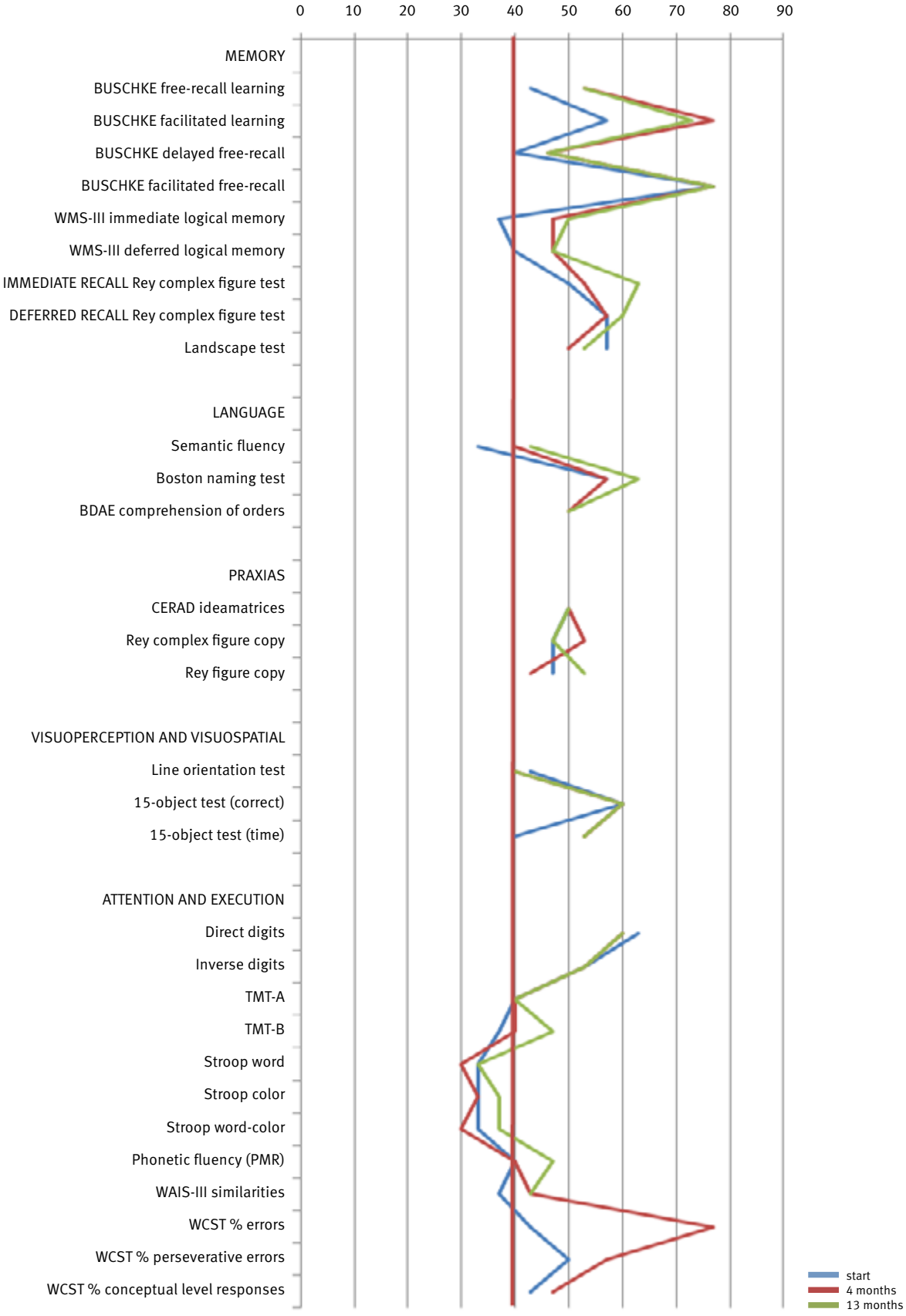


*Figure 1.* Comparative neuropsychological evaluation at start, 4 and 13 months after abstinence. Observed improvement in several of the different cognitive areas evaluated

pram and 50 mg/day of pregabalin. New evaluations were completed 4 and 13 months later, maintaining abstinence from BZDs (verified by weekly urine tests). Significant improvement was observed in attention and executive processes as well as in logical-verbal memory (Figure 1), an improvement that was also subjectively perceived by the patient and her family, who reported greater functionality and quality of life.

A cause-effect relationship has been suggested by the improvement in our patient's neuropsychological tests up to one year after the withdrawal of BZDs, as well as by the normality of complementary tests. An early withdrawal from chronic treatments with BZDs, especially in high-risk patients or in those with emerging signs of CD, may help to significantly improve quality of life and functionality across several areas, including basic tasks like job performance or driving a vehicle (Álvarez, González-Luque & Seguí-Gómez, 2015), as well as prevent irreversible deficits. Authors like Lader (Lader, 2012) have made their final appeal for reducing the risks related with BZDs, underlining the importance of adhering to clinical guidelines, limiting their use to 2-4 weeks for anxiety and 1-2 weeks for insomnia, informing users correctly, and using other first-line drugs, such as SSRIs or pregabalin (Hadley, Mandel & Schweizer, 2012) and, in more serious cases, opting for a harm reduction strategy, as used in other types of substance addictions. Beyond this scope, we also consider that awareness-raising of healthcare professionals, both those specialized in Mental Health as well as Primary Care, plays a very important role, as they must correctly opt for long-term management and security, as opposed to immediate alleviation of symptoms.

## Conflict of interests

The authors declare the inexistence of conflicts of interest.

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