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ORIGINAL ARTICLE

Neuropsychological functioning in methadone maintenance patients with HIV☆

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Abstract Although highly active antiretroviral therapy (HAART) has improved survival rates of HIV patients, HIV-associated neurocognitive disorders (HAND) still exist in a highly prevalent group of persons with this disease. In this study we seek to evaluate the influence of drug use in the neuropsychological performance of seropositive drug users. We carried out an extensive neuropsychological evaluation and compared the performance of seropositive drug users ($n = 90$) with that of a control group of seronegative drug users ($n = 48$). The results reveal that methadone maintenance programmes can make the seropositive subject neuropsychologically vulnerable. Likewise, we found that giving up drugs have a protective effect in the presence of neuropsychological alterations associated with HIV. These findings lead us to suggest that seropositivity is not sufficient to explain the neuropsychological alterations of seropositive drug users, noting that these alterations are multifactorial.

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PALABRAS CLAVE
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Reserva cognitiva;
Tratamiento de mantenimiento con metadona

Función neuropsicológica en el tratamiento de mantenimiento con metadona en pacientes con VIH

Resumen Aunque la terapia antirretroviral de gran actividad (TARGA) ha mejorado los índices de supervivencia de los pacientes infectados por el VIH, los trastornos neurocognitivos asociados con el VIH (TNAV) todavía existen en un grupo de personas altamente prevalente a esta enfermedad. En este estudio buscamos evaluar la influencia del consumo de drogas en el rendimiento neuropsicológico de los usuarios de drogas seropositivos. Llevamos a cabo una amplia evaluación neuropsicológica, y el rendimiento de los usuarios de drogas seropositivos (n = 90) se comparó con la de un grupo control de usuarios de drogas seronegativos (n = 48). Los resultados demuestran que los programas de tratamiento de mantenimiento con metadona pueden convertir en vulnerable a nivel neuropsicológico al individuo seropositivo. Asimismo, descubrimos que abandonar las drogas provoca un efecto protector frente a la existencia de alteraciones neuropsicológicas asociadas con el VIH. Estos resultados nos llevan a sugerir que la seropositividad no basta para explicar las alteraciones neuropsicológicas de los usuarios de drogas seropositivos, ya que estas alteraciones al parecer son multifactoriales.

The human immunodeficiency virus (HIV) infection is associated with a wide range of neuropsychological deficits: psychomotor functioning, information processing speed, attention, executive functioning, information processing speed, attention, executive functioning and working memory (Al-Khindi, Zakzanis, & Van Gorp, 2011; Blackstone et al., 2012; Cysique, Marruf, & Brew, 2006; Heaton et al., 2011;Vázquez-Justo, Piñón-Blanco, Vergara-Moragues, Guillén-Gestoso, & Pérez-García, 2014). The nature of these deficits is compatible with an affection of the frontal-subcortical brain disturbances, including cerebral metabolite abnormalities (Cohen et al., 2010; Paul et al., 2008) and white matter damage (Coughlin et al., 2014; Fellows, Byrd, & Morgello, 2014) and their prevalence varies considerably (Cohen et al., 2015; Heaton et al., 2010; Woods, Moore, Weber, & Grant, 2009).

The variability of the data on the prevalence of these alterations leads us to consider, as Anand, Springer, Copenhaver, and Altice (2010) put forward, that these may be modulated by the coexistence of factors other than HIV. No definitive risk factors are yet available to indicate the development of these neuropsychological alterations and, bearing in mind that the presence of cognitive disturbances is a risk factor of early death in all stages of the infection (Lescure et al., 2011; Sevigny et al., 2007), there is a pressing need to determine those factors, either related or foreign to HIV, which help to explain the intra-group differences that exist and which may also be associated with the development and progression of the dysfunction (Anand et al., 2010; Byrd et al., 2011; Muñoz-Moreno et al., 2008). The identification of these risk factors will help us to outline the characteristics of the seropositive subjects who are neuropsychologically more vulnerable.

Research dealing with this sphere of work has mainly studied the influence of variables related to the infection, such as the stage of infection (Selnes et al., 1997; Spudich & Ances, 2015), the level of immunosuppression (Farinpour et al., 2000; Grassi, Perin, Borlla, & Mangoni, 1999), the combined effects of HIV infection and APOE ε4 may lead to greater cognitive deficits, especially in those with greater neuroinflammation (Chang, Connaghan, Wei, & Li, 2014) and the viral load (Ellis et al., 1997; Muñoz-Moreno et al., 2008; Stankoff et al., 1999). However, they have also dealt with determining the influence of other variables such as depressed mood (Fellows et al., 2014; Vázquez-Justo, Rodríguez-Álvarez, & Carro-Ramos, 2003; Vázquez-Justo, Rodríguez Álvarez, & Ferraces Otero, 2003), history of neurological pathology (Hestad, Updike, Selnes, & Royal III, 1995) and of psychiatric pathology (Baldeweg et al., 1997); variables related to drug use (García-Torres, Vergara-Moragues, Piñón-Blanco, & Pérez-García, 2015; Rodríguez, 2000; Vázquez-Justo, Rodríguez Álvarez, & Rodríguez Salgado, 2000; Vergara-Moragues, Vergara de Campos, & Girón-González, 2008), high psychosocial stress and lower socioeconomic status (Rubin et al., 2015) and educational level (Satz et al., 1993). The findings of these studies reveal that the neuropsychological performance of seropositive subjects may vary according to their situation with respect to each of these variables, although the results are not consistent.

We know that HIV infection in drug users is associated with neuropsychological alterations that cannot be attributed to the history of drug abuse (Vázquez-Justo et al., 2003a, 2003b; Vergara-Moragues, Vergara de Campos, & Girón-González, 2010). When evaluating the neuropsychological performance of seropositive drug users, a variable that may affect their performance is their current situation with respect to drug consumption, i.e. whether they continue to use drugs or whether they are abstaining at the time of evaluation. In this sense, the current consumption of drugs is related to a poorer performance in neuropsychological tasks than abstinence (Ardila, Rosselli, & Strumwasser, 1991; Grassi et al., 1995). The Methadone Maintenance Programmes (MMP) offer us a suitable