Neuropsychology of patients with fibromyalgia syndrome: its relationship with pain and anxiety

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Methods

Participants

Women belonging to a local FMS society in Spain, ages ranging between 18 and 60 years old (n=250), were invited to participate in this study. Eighty-five potential subjects responded to the invitation and sought further information. These patients were examined by a rheumatologist, and FMS diagnosis was confirmed based on the classification criteria of the American College of Rheumatology (Wolfe et al., 1990). A group of 35 healthy women, matched by age, education level, and work status, was recruited to determine the differences between FMS patients and healthy individuals.

Individuals with a history of drug or alcohol abuse, neurological or psychiatric diseases, and other autoimmune rheumatic conditions (lupus erythematosus, rheumatoid arthritis, etc.), were excluded both from the subject and control groups.

All participants were subject to a clinical interview by a neuropsychologist following the guidelines provided by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) of the American Psychiatric Association (Pichot, López-Ibor Aliño, and Valdéz Miyar, 1995) to rule out any psychiatric disorder. Before the investigation, patients interrupted all psychoactive medications for three weeks, except for established doses of serotonin reuptake inhibitors used for the treatment of FMS symptoms, because these pharmacological agents do not inhibit cognitive function (McBeth and Silman, 2001).

Based on the selection criteria, two patients were excluded because of a history of neurological diseases, and two others for presenting other chronic rheumatoid autoimmune conditions, leaving a final count of 81 women diagnosed with FMS. Table 1 shows that there were no significant differences in age, work status, or education level between FMS patients and the healthy group.

This study was approved by the Aragón Clinical Investigation Ethics Committee (Aragón, Spain).

Diagnostic Tests

The neuropsychological assessment consisted of a battery of tests that measure a group of functions that have been shown to be affected in patients with FMS. The selected tests have been shown to be sensitive both discriminating cognitive disorders (Grace et al., 1999; Park et al., 2001; Suhr, 2003; Leavitt and Katz, 2003; Munguía-Izquierdo and Legaz-Arrese, 2007) and determining therapeutic interventions (Munguía-Izqierdo and Legaz-Arrese, 2007).

The selected tests are the leading indicators of intentional and executive matrixes. The following is a list of the selected functions and tests: Attention and working memory: direct and reverse digits (Barcelona Test) (Peña, Guardia, Bertan, Manero, and Jarne, 1997). Alternating attention and executive function: Trail Making Test (TMT) (Reitan and Wolfson, 1985). Working memory and information processing speed: Paced Auditory Serial Addition Task (PASAT) (Brittain, La Marche, Reeder, Roth, and Boll, 1991). Verbal fluidity: Controlled Oral Word Association Test (COWA) (Spreen and Strauss, 1998). Episodic verbal memory: Rey Auditory Verbal Learning Test (RAVLT) (Rey, 1958).

We measured the anxiety level and pain threshold as FMS clinical variables. The anxiety level was determined by the Anxiety Trait Questionnaire (Spielberger, Gorsuch, and Lushene, 2002), and the pain threshold by the pressure dolorimetry method of the calibrated syringe (Munguía-Izqierdo and Legaz-Arrese, 2007). This method consists of placing the base of the plunger of a 20 cm^3

syringe with its exit blocked, right on a painful spot, and measuring how many centimeters of pressure can be applied before the patient experiences pain. The pressure required to cause pain in each of the 18 anatomical points established by the American College of Rheumatology was measured for each patient (Wolfe et al., 1990).