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Original article

Association between academic performance and cognitive dysfunction in patients with juvenile systemic lupus erythematosus



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ABSTRACT

Objective: To determine whether there is an association between the profile of cognitive dysfunction and academic outcomes in patients with juvenile systemic lupus erythematosus (JSLE).

Methods: Patients aged ≤ 18 years at the onset of the disease and education level at or above the fifth grade of elementary school were selected. Cognitive evaluation was performed according to the American College of Rheumatology (ACR) recommendations. Symptoms of anxiety and depression were assessed by Beck scales; disease activity was assessed by Systemic Lupus Erythematosus Disease Activity Index (SLEDAI); and cumulative damage was assessed by Systemic Lupus International Collaborating Clinics (SLICC). The presence of autoantibodies and medication use were also assessed. A significance level of 5% ($p < 0.05$) was adopted.

Results: 41 patients with a mean age of 14.5 ± 2.84 years were included. Cognitive dysfunction was noted in 17 (41.46%) patients. There was a significant worsening in mathematical performance in patients with cognitive dysfunction ($p = 0.039$). Anxiety symptoms were observed in 8 patients (19.51%) and were associated with visual perception ($p = 0.037$) and symptoms of depression were observed in 1 patient (2.43%).

Conclusion: Patients with JSLE concomitantly with cognitive dysfunction showed worse academic performance in mathematics compared to patients without cognitive impairment.

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Associação entre desempenho acadêmico e disfunção cognitiva em pacientes com lúpus eritematoso sistêmico juvenil

R E S U M O

Palavras-chave:

Lúpus eritematoso sistêmico juvenil
Disfunção cognitiva
Desempenho acadêmico

Objetivo: Determinar se há associação entre o perfil de disfunção cognitiva e os resultados acadêmicos em pacientes com lúpus eritematoso sistêmico juvenil (LESj).

Métodos: Foram selecionados pacientes com idade de início da doença ≤ 18 anos e com escolaridade mínima do quinto ano do Ensino Fundamental seguidos em um hospital universitário. A avaliação cognitiva foi feita de acordo com as recomendações do Colégio Americano de Reumatologia (ACR). Os sintomas de ansiedade e depressão foram avaliados pelas escalas Beck, a atividade da doença foi avaliada pelo Systemic Lupus Erythematosus Disease Activity Index (Sledai) e o dano cumulativo pelo Systemic Lupus International Collaborating Clinics (Slicc). Também foram avaliados a presença de autoanticorpos e o uso de medicação. Adotou-se nível de significância de 5% ($p < 0,05$).

Resultados: Foram incluídos 41 pacientes com média de $14,5 \pm 2,84$ anos. Disfunção cognitiva foi observada em 17 (41,46%). Observou-se pioria significativa no desempenho de matemática em pacientes com disfunção cognitiva ($p = 0,039$). Sintomas de ansiedade foram observados em oito pacientes (19,51%) e estavam associados à percepção visual ($p = 0,037$) e sintomas de depressão foram observados em um paciente (2,43%).

Conclusão: Pacientes com LESj com disfunção cognitiva apresentam pior desempenho acadêmico em matemática em relação a pacientes sem disfunção cognitiva.

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Introduction

Systemic lupus erythematosus (SLE) is a chronic and autoimmune inflammatory disease of connective tissue. Of unknown etiology, SLE is linked to genetic, hormonal, environmental factors, and to the use of some medications. This disease mostly affects women in childbearing age, especially between 15 and 50 years. However, approximately 20% of patients are affected during childhood or adolescence (JSLE), being predominantly of female gender.¹⁻³

JSLE patients show a more severe form of the disease and develop neuropsychiatric symptoms at higher frequencies than in adult patients.⁴ Cognitive disorders are common and affect mainly attention, concentration, learning, memory, information processing and executive functions, even in the apparent absence of disease activity or of other neuropsychiatric events.⁵⁻⁸

Few studies available in the literature suggest that JSLE patients are at risk of poor academic performance,^{9,10} especially causing difficulties in arithmetic learning, reading comprehension, visual memory and inability to solve complex problems.¹⁰ For these reasons, patients with SLE can meet fewer educational milestones, for example, not finishing high school or college graduation – factors associated with a lower probability of employment and of success at work.¹⁰⁻¹² In this scenario, the aim of this study was to determine whether there is an association between the profile of cognitive dysfunction and academic outcomes in patients with JSLE.

Materials and methods

Consecutive patients with JSLE seen at the Pediatric Rheumatology Outpatient Clinic, Hospital das Clínicas, Universidade

Estadual de Campinas (UNICAMP), whose clinical and laboratory manifestations were routinely studied according to an already established protocol, were selected.^{13,14} Inclusion criteria were: patients with age of onset of disease ≤ 18 ,¹⁵ and with fifth grade of elementary school as the minimum level of scholarship. The study was approved by the Research Ethics Committee (CEP No. 920/2007) of UNICAMP and all the participants and legal guardians signed an informed consent form (FICF).

Cognitive assessment was performed by a qualified psychologist through the application of a survey battery lasting about two hours, consisting of tests adapted to the juvenile population and validated for the Portuguese language and selected from the battery recommended by the American College of Rheumatology (ACR).¹⁶ The following tests for evaluation of cognitive functions were selected:

- Picture Arrangement Test: evaluates temporal reasoning^{17,18}
- Code Test: evaluates processing speed^{17,18}
- Picture Completion Test: evaluates visual perception^{17,18}
- Cube Test: evaluates spatial reasoning^{17,18}
- Digit Test: assesses immediate and working memory^{17,18}
- Vocabulary Test: evaluates semantic memory, educational background and general intelligence^{17,18}
- Rey Complex Figure Test: evaluates perceptual organization, planning, praxis and memory¹⁹
- Boston Naming Test: evaluates visual recognition and naming capacity²⁰
- FAZ Verbal Fluency Test: assesses verbal-phonological fluency²¹
- Trail Making Test: assesses visual tracking, sustained attention and motor dexterity²²

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