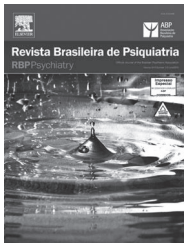
Rev Bras Psiquiatr. 2012;34:114-115

ELSEVIER

Revista Brasileira de Psiquiatria
RBPPsychiatry
Official Journal of the Brazilian Psychiatric Association
Volume 34 • Number 1 • March/2012



Letter to the Editors

Hypoplastic splenium of the corpus callosum and co-occurrence of attention deficit/hyperactivity and language disorders: a case report

Hipoplasia do esplênio do corpo caloso e co-ocorrência de transtorno de déficit de atenção/hiperatividade e transtorno da linguagem: relato de caso

Dear Editor,

There is some evidence of an association between attention deficit/hyperactivity disorder (ADHD) and structural abnormalities in the brain. For instance, changes in the splenium of the corpus callosum (SCC) have been reported recurrently in studies using magnetic resonance imaging (MRI) and functional imaging, suggesting a possible relationship with ADHD.[1,2] Despite their high incidence, language disorders are often unrecognized, probably because they generally co-occur with other psychiatric disorders,[3] with ADHD representing one of the most common co-morbid conditions. This association suggests a possible etiologic correlation between these disorders. Here we report a case of a child with a hypoplastic SCC and secondary ADHD symptoms associated with language disorder.

Case report: H, an eight-year-old boy, had been followed for two years due to "agitation" and language disabilities. The agitation involved distractibility, inability to focus, and school complaints about his restless and troubled behavior, which suggested the presence of ADHD. His language impairment was severe, with only a few spoken words and difficulty in comprehending sentences. Clinical examination revealed epicanthus, bulbous nose, syndactyly of second/third/fourth right toes and second/third left fingers. He had been to a geneticist, and a karyotype (G-banding) test was performed revealing a mosaicism (47 XY, +mar /46 XY), with no abnormalities observed in his parents. An electroencephalogram showed non-specific alterations and the MRI revealed a hypoplasia of the SCC (Figure 1). He had been a premature (eight-month) baby of a 46-year-old mother, and had developed complications as a newborn (pneumonia followed by cardiac arrest). His behavioral and cognitive development was marked by a delay in walking and speech. There was no significant psychiatric family history. The genetic assessment was nonconclusive, leaving us with the diagnoses of ADHD and receptive-expressive language disorder, based on DSM-IV-TR criteria. He had been treated with periciazine followed by sulpiride, with poor response. After our evaluation, we started him on methylphenidate, 0.5 mg/kg/day, with satisfactory control of the hyperactivity without improvements in communication.

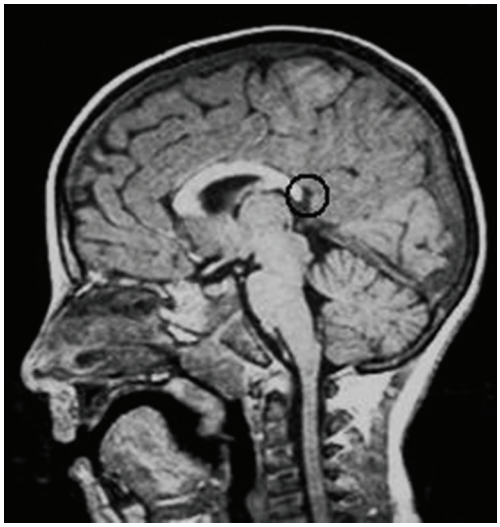


Figure 1 MRI scan showing circumscribed hypoplasia of the splenium portion of the corpus callosum.

Some case reports have already described total/partial agenesis of the corpus callosum associated with ADHD.[4] Although these reports describe cases with co-morbid conditions, to our knowledge this is the first report on the association of ADHD, SCC hipoplasia, and a well defined mixed language disorder. With this type of language disorder, a higher risk for psychiatric comorbidity is observed, particularly ADHD that is present in 30-60% of such patients.[3]

Imaging studies are providing evidence of involvement of structural brain abnormalities in the etiology of ADHD; brain regions implicated include the SCC, cerebellum, basal ganglia, frontal and temporal cortices, and the cingulate gyrus.[2] Due to the role it plays in transferring language information through the inter-hemispheric connection of fibers of the temporal and occipital lobes,[5] the SCC could represent a structural link between language disorders and ADHD.

This case report provides further support for structural alterations in the brain in ADHD. The corpus callosum is important as an area of inter-hemisphere connection,[5] and its structural changes may be linked not only to psychiatric disorders but to various neurodevelopmental disabilities, such as communication disorders.

Emerson Nunes,[2,3] Bruno Schneider,[2] Serdar Dursun,[1,3] Glen Baker,[1,3] Jaime Hallak[2,3]

[1] University of Alberta, Canada;
[2] Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo, Ribeirão Preto;
[3] INCT-TM – National Institute for Translational Medicine, CNPq, Brazil.

Disclosure

Emerson Nunes
Employment: *University of Alberta, Canada.*
Bruno Schneider
Employment: *Faculdade de Medicina da Universidade de São Paulo (HC-FMUSP), Brazil.*
Serdar Dursun
Employment: *University of Alberta, Alberta Hospital Edmonton, Canada; INCT-TM (National Institute for Translational Medicine).*
Glen Baker
Employment: *University of Alberta, Alberta Hospital Edmonton, Canada; INCT-TM (National Institute for Translational Medicine).*
Jaime Hallak
Employment: *Faculdade de Medicina da Universidade de São Paulo (HC-FMUSP), Brazil; INCT-TM (National Institute for Translational Medicine).*
* Modest
** Significant
*** Significant: Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.
The founding sources had no role in the study design, collection, analysis and interpretation of data, writing of the report, and decision to submit the paper for publication.

References

1. Valera EM, Faraone SV, Murray KE, Seidman LJ. Meta-analysis of structural imaging findings in attention-deficit/hyperactivity disorder. Biol Psychiatry. 2007; 61:1361-9.
2. Pastura G, Mattos P, Gasparetto EL, Araújo APQC. Advanced techniques in magnetic resonance imaging of the brain in children with ADHD. Arq Neuropsiquiatr. 2011; 69:242-52.
3. Cohen NJ, Vallance D, Barwick M, Im N, Menna R. The interface between ADHD and language impairment: An examination of language, achievement, and cognitive processing. J Child Psychol Psychiatry. 2000; 41:353-62.
4. Philipsen A, van Elst LT, Perlov E, Ebert D, Hesslinger B. Corpus callosum dysplasia in adult attention-deficit/hyperactivity disorder: a case report. J Clin Psychiatry. 2007; 68(12):1985-8.
5. Westerhausen R, Luders E, Specht K, Ofte SH, Toga A W, Thompson PM, Helland T, Hugdahl K. Structural and functional reorganization of the corpus callosum. Cereb cortex. 2011; 21:1012-7.