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CASE REPORT

Pediatric neurofunctional intervention in agenesis of the corpus callosum: a case report☆

Sheila Cristina da Silva Pacheco*, Ana Paula Adriano Queiroz, Nathália Tiepo Niza, Letícia Miranda Resende da Costa, Lilian Gerdi Kittel Ries

Universidade do Estado de Santa Catarina (UDESC), Florianópolis, SC, Brazil

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KEYWORDS
Agenesis of corpus callosum;
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Abstract
Objective: To describe a clinical report pre- and post-neurofunctional intervention in a case of agenesis of the corpus callosum.
Case description: Preterm infant with corpus callosum agenesis and hypoplasia of the cerebellum vermis and lateral ventricles, who, at the age of two years, started the proposed intervention. Functional performance tests were used such as the neurofunctional evaluation, the Gross Motor Function Measure and the Gross Motor Function Classification System. In the initial evaluation, absence of equilibrium reactions, postural transfers, deficits in manual and trunk control were observed. The intervention was conducted with a focus on function, prioritizing postural control and guidance of the family to continue care in the home environment. After the intervention, there was an improvement of body reactions, postural control and movement acquisition of hands and limbs. The intervention also showed improvement in functional performance.
Comments: Postural control and transfers of positions were benefited by the neurofunction intervention in this case of agenesis of the corpus callosum. The approach based on function with activities that involve muscle strengthening and balance reactions training, influenced the acquisition of a more selective motor behavior.

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☆Study conducted at Universidade do Estado de Santa Catarina (UDESC), Florianópolis, SC, Brazil.
*Corresponding author.
E-mail: sheilapacheco.fisio@hotmail.com (S.C.S. Pacheco).

PALAVRAS-CHAVE
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Estimulação precoce;
Transtornos das habilidades motoras;
Criança

Intervenção neurofuncional pediátrica em agenesia do corpo caloso: relato de caso

Resumo
Objetivo: Descrever um relato clínico pré e pós-intervenção neurofuncional num caso de agenesia de corpo caloso.
Descrição do caso: Após o nascimento prematuro foi detectada agenesia do corpo caloso e hipoplasia dos ventrículos laterais e vérmis cerebelar. Aos dois anos iniciou a intervenção proposta neste estudo. Uma avaliação neurofuncional, além da Medida da Função Motora Grossa e o Sistema de Classificação da Função Motora Grossa, foi utilizada para obter o desempenho funcional da criança. Na avaliação inicial havia ausência de reações de equilíbrio e de transferências posturais, e déficits no controle manual e de tronco. A intervenção foi realizada com enfoque na função, priorizando o controle postural e a orientação da familia para continuidade do tratamento em ambiente domiciliar. Após a intervenção houve melhora das reações corporais, controle postural e aquisição de movimentos de mãos e membros. A intervenção também mostrou melhora no desempenho funcional.
Comentários: O controle postural e as transferências de posições foram beneficiadas por intervenção neurofuncional nesse paciente com agenesia de corpo caloso. O enfoque baseado na função com atividades que envolvem fortalecimento muscular e treinamento das reações de equilíbrio influenciaram a aquisição do comportamento motor mais seletivo.

Introduction

The central nervous system (CNS) is responsible for the interpretation and transmission of sensory, cognitive, and motor information. In its central region lies the corpus callosum (CC), which transmits the information between the cerebral hemispheres[1] through a single, exclusive tract used for integration.[2]

Alterations characterized by partial genesis (dysgenesis) or complete absence (agenesis) of the CC can generate an inter-hemispheric disconnection.[3,4] The incidence of agenesis and dysgenesis of the corpus callosum (ADCC) is estimated at one per 1,000 live births,[5] with a prevalence of 2.3% in North America and unknown in Latin countries.[4]

Congenital malformations of the CNS, in general, may be associated with other malformations (brain or other segments) in 21% of cases.[6] In ADCC, for instance, extra- and intracranial abnormalities[7] may occur concomitantly, such as hydrocephalus,[8] seizures,[9] syndromes,[10] and CNS malformations,[11] among others.

The associated diseases may potentiate or add other clinical characteristics to ADCC cases. Thus, cognitive, social, visual, auditory, motor, and somatosensory deficits[12] are typically observed in affected individuals. Some children with CC dysgenesis may have a typical development, but with some deficiency in psychosocial behavior.[13] However, it is observed that children with ADCC often have delayed motor development, which can be demonstrated by maladjustment in performing skills, bilateral coordination, and manual control deficits.[11,14]

The motor intervention aims to reduce alterations resulting from the neurological disorder, capitalizing on the plasticity of the CNS through specific interventions.[15] In addition to seeking techniques that promote rehabilitation, there is a concern regarding the forms of intervention, which should aim at functional capacity.[16] Considering that rehabilitation plays a pivotal role in promoting functionality and the stimulation of motor development, this study aimed to describe a case before and after a neurofunctional intervention in a child with agenesis of the corpus callosum (ACC).

Case report

This study was performed at Clínica Escola de Fisioterapia do Centro de Ciências da Saúde e do Esporte (CEFID) of the Universidade do Estado de Santa Catarina (UDESC), and was approved by the Ethics Committee for Research in Human Subjects according to Edict 263/2009, after the child's guardian signed the informed consent.

During prenatal care, the ultrasonography findings evidenced that the child had hydrocephalus. In the sixth month of pregnancy, the mother received a diagnosis of preeclampsia, which resulted in an emergency C-section delivery. The male child was born at 35 weeks and 4 days of gestational age, with Apgar score at 1 and 5 minutes of 7 and 8, respectively; weight of 2,020 g; length of 48 cm; head circumference of 34 cm; and small for gestational age. During the 17 days in the neonatal intensive care unit (NICU), agenesis of the corpus callosum (ACC) was detected, as well as hypoplasia of the lateral ventricles and cerebellar vermis (Fig. 1).

After NICU discharge, the infant was referred to early intervention at 3 months of corrected age at the Associação de Pais e Amigos dos Excepcionais in Florianópolis. During the first two years of life, he underwent surgical procedures for inguinal hernia removal, polydactyly repair, left