

Considerations regarding the visual and social limitations of children with congenital Zika syndrome

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Commentary

Congenital Zika syndrome (CZS) results from maternal exposure to the Zika virus during pregnancy. A large number of newborns were affected during the Zika virus outbreak occurred in some Northeast regions of Brazil during the years 2015 and 2016 [1].

Clinical characteristics of CZS include microcephaly, brain malformation, arthrogryposis, and atrophic retinal lesions [1,2]. Macular atrophic lesions and optic nerve hypoplasia or atrophy were observed in newborns with CZS [3]. Studies have revealed that ocular findings and neurological anomalies associated with CZS cause severe visual impairment [4].

Affected children present a complex array of profound visual and neurological abnormalities, significantly affecting not only visual function but also motor, cognitive, and social development [5-7].

From an ophthalmological perspective, the overlapping ocular anomalies will induce to low vision condition. Optic nerve hypoplasia severely impairs the transmission of visual signals from the eye to the brain, compromising visual acuity potential from the anatomical origin. The presence of a macular scar affecting the region responsible for high-definition central vision exacerbates visual impairment, particularly diminishing the ability to perceive fine details, such as facial recognition and the manipulation of small objects.

Identified cerebral atrophy further contributes to the neurological dysfunction, suggesting that even visual stimuli that reach the visual cortex may not be adequately processed, thereby further limiting the child's adaptive responses. Additionally, the presence of high myopia distorts and degrades the quality of the retinal image, while strabismus disrupts binocular coordination, preventing proper ocular alignment. The absence of stereopsis which is the ability to perceive depth severely restricts spatial perception, which is essential for coordinated motor activity and safe interaction with the environment. Nystagmus, characterized by involuntary, rapid eye movements, further destabilizes visual fixation and tracking capabilities.

The chronic administration of anticonvulsant medications, necessary for the management of epileptic seizures, may also negatively influence alertness, muscle tone, and visual responsiveness, thereby exerting secondary effects on the child's overall development.

Social and Functional Impact

These severe visual limitations substantially compromise the child's autonomy and capacity for social interaction. Visual communication is a critical foundation for the development of interpersonal relationships in early childhood and in this case, it is markedly impaired. There is an increased risk of social isolation, difficulties in establishing affective bonds, and challenges in interpreting facial expressions and non-verbal cues.

Regarding educational inclusion, the CZS affected children will require extensive accommodations, including the provision of tactile learning materials, educational strategies based on multisensory stimulation, and consistent support from a multidisciplinary team comprising an ophthalmologist, neurologist, occupational therapist, physical therapist, speech therapist, and educational psychologist.

Despite the magnitude of these challenges, early intervention, specialized rehabilitation, and a nurturing family environment are essential factors that may facilitate functional development, promote quality of life, and expand the child's opportunities for communication and interaction within their environment.

Recommendations for Intervention

While one previous article appropriately emphasizes the severity of the impairments and reinforce opportunities for progress through early intervention, assistive technology, or caregiver training enhancing the tone of hope and support [7].

In addition to the previously discussed visual and neurological impairments, it is imperative to address the significant motor dysfunctions commonly observed in children with CZS. Studies indicate that a substantial proportion of these children experience severe motor impairments, often classified at level V of the Gross Motor Function Classification System (GMFCS), reflecting profound limitations in movement and posture. These motor deficits further hinder the child's autonomy and capacity for environmental interaction [5,6].

Given the multifaceted nature of CZS, a comprehensive, individualized rehabilitation program is essential, encompassing both motor and visual therapies. Such programs should be tailored to the unique needs of each child, focusing on enhancing postural control, mobility, and social engagement. For instance, intensive home-based physical therapy interventions have demonstrated improvements in postural alignment and mobility, thereby facilitating better social interaction.

We emphasize that through early intervention program, assistive technology, and caregiver training, patients with severe visual and motor impairments can achieve significant opportunities for global progress and comprehensive development.

In addition to addressing the complex medical needs of children with CZS, it is crucial to provide comprehensive support and education to their families. Effective family education and guidance can enhance caregiving skills, promote child development, and alleviate caregiver stress. Implementing structured support programs has demonstrated significant benefits. Community-based program engages experienced mothers as facilitators alongside health professionals. Media groups organized focusing on practical caregiving skills and emotional support are an option in this way.

Families should receive tailored information about CZS, including potential developmental challenges and available resources. Establishing a centralized, coordinated approach to healthcare can ensure consistent monitoring and management of the child's health needs. Additionally, connecting families with local and national support networks can provide emotional support and practical advice from others facing similar challenges. Early intervention services are vital; they offer specialized therapies aimed at enhancing the child's developmental outcomes.

Healthcare providers should adopt a family-centered approach, recognizing the emotional and psychological impact on caregivers. Regular counselling sessions can help address concerns, set realistic expectations, and develop coping strategies. By empowering families with knowledge, skills, and support, we can improve the overall well-being of both the child and their caregivers.

Conflict of Interest

None exists for any author.

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