EDITORIAL

Neurosciences applied to pediatrics: the value of multidisciplinary work

Neurociencias aplicadas a la pediatría: el valor del trabajo multidisciplinario

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Neurological disorders represent an important cause of morbidity and mortality in the pediatric population. They may manifest from the earliest stages of life, resulting in long-term consequences in children's cognitive, emotional, and social development (1,2).

Advances in neuroscience, particularly in the development of advanced neuroimaging techniques and in the understanding of the genetic and molecular bases of various neurological disorders, have significantly transformed the approach to these conditions in the pediatric population (3,4). However, the biological and clinical complexity of these disorders requires an approach that goes beyond a single specialty. In current clinical practice, the diagnosis and treatment of neurological diseases, central nervous system tumors, congenital malformations, and other complex neurological conditions in children require the coordinated participation of multiple disciplines. These include neurology, neurosurgery, radiology, pathology, psychology, and rehabilitation. International evidence has shown that multidisciplinary teams contribute to improved diagnostic accuracy, optimized therapeutic decision-making, and comprehensive patient- and family-centered care (5–7).

This collaborative model also recognizes that the impact of these conditions in childhood is not limited to their clinical manifestations. The long-term cognitive, emotional, and social repercussions associated with neurological disorders require the participation of professionals from various fields, such as nursing, psychology, rehabilitation, and social work, who contribute to comprehensive patient follow-up and support for their families. In this context, multidisciplinary work has become an essential component of high-complexity pediatric care, particularly in specialized centers where different clinical disciplines and advanced technological resources converge (8–10).

At the Instituto Nacional de Salud del Niño San Borja, this approach is reflected in the daily practice of highly specialized teams that share a common objective: to provide timely, coordinated, and humanized care to pediatric patients with complex clinical conditions. From the moment of patient admission, various professionals, including nursing technicians, nurses, physicians from different specialties, and other health professionals, actively participate in clinical evaluation and management. This approach allows prioritization of care, discussion of cases requiring further analysis among specialists, and comprehensive definition of the most appropriate therapeutic strategy to improve patients' quality of life.

A representative example of this multidisciplinary approach was the recent successful separation of pygopagus conjoined twins. This highly complex procedure required the coordinated participation of neonatologists, pediatric surgeons, neurosurgeons, neurologists, plastic surgeons, anesthesiologists, intensivists, and nursing staff. Surgical planning also incorporated advanced technological tools, such as virtual reality and 3D printing, which enabled optimization of the surgical strategy. This case illustrates how the integration of scientific knowledge, the use of emerging technologies, and the coordinated work of multiple specialties can transform clinical challenges into extraordinary opportunities to improve the quality of life of patients and their families.

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In this special issue of the journal Investigación e Innovación Clínica y Quirúrgica Pediátrica, original articles, case reports, and reviews are presented in the fields of neurology, neurosurgery, psychology, and other disciplines related to neuroscience, addressing different aspects of the management of high-complexity pediatric cases. The included studies explore various dimensions of neuroscience applied to pediatrics, ranging from the diagnosis and follow-up of neurological diseases to the management of tumors and malformations of the central nervous system, as well as the use of neurophysiological tools and emerging technologies in clinical practice.

In the Peruvian context, where the epidemiological description of neurological disorders in the pediatric population is limited, and most of the evidence comes from hospital-based studies, these articles are particularly relevant in clinical practice and constitute a foundation for future studies in our country. Overall, the included studies highlight the value of the multidisciplinary approach in clinical practice and contribute to strengthening the available evidence on the management of neurological disorders in the pediatric population, as well as promoting clinical research and interdisciplinary collaboration in this field.

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