Foreword

Disorders of the oromotor system have a direct impact on life because the correct functioning of this system, which results in proper nutrition through the intake and processing of food, is necessary for survival. Complex mechanisms of the oromotor system, such as ensuring protection of the respiratory tract from inhaled food and fluids, are also vital. These aforementioned facts are well recognised, and a large volume of literature, which is extensively reviewed in this book, has been dedicated to various aspects of oromotor disorders. However, this large volume of information is widely dispersed in many articles and book chapters that may be difficult to come by, especially for non-specialists. An overall compilation of all of the information available on oromotor disorders is necessary as very few studies specifically deal with infants and children, whose diseases, treatment, and overall management differ considerably from those in adults and in whom the clinical approach and selection of ancillary investigations must be adapted to a specific age and pathology.

Therefore, the editors of this monograph decided to dedicate an entire book to the multiple aspects of the normal functions and the disorders of the oromotor system in infants and children at various stages of development. This book extensively covers the basic structural and functional bases necessary to fully understand disturbances of the normal functions and their distant direct or indirect consequences. This book also provides a detailed description of the oromotor disorders in the paediatric age group; these disorders are often completely different from those in adults. To my knowledge, this monograph is unique in content and represents an effort to fill a serious gap in knowledge. I am convinced that this book will serve as a powerful tool for all professionals involved in the care of such patients and will, consequently, serve to benefit the patients themselves.

Tackling such a vast subject requires widely diverse competencies, from basic science to medical specialties such as paediatrics, surgery, neonatology, otolaryngology, and neurology. In addition, the

care of individuals with a number of these diseases now demands not only doctors, physiotherapists, speech therapists, psychologists, social workers, and nurses but also experts in several domains that may seem unrelated, or only distantly related, to oromotor disorders but, in fact, may be essential for the comprehensive management and long-term follow-up of some patients. Examples of these professionals include specialists in communication problems, prostheses, and other forms of technical expertise.

In addition to the large variety of skills needed, the care of these often difficult patients demands overall experience with dealing with child illnesses, dedication, and understanding, as many of these children may suffer from multiple impairments, especially with speech, facial expression, or drooling, that considerably increase their handicap and may be of even greater importance than their actual disabilities.

The editors have succeeded in rounding up a large international panel of distinguished contributors from both English- and Spanish-speaking countries. Of interest is the emphasis given in this book to a wide variety of non-medical professionals who work with and for the affected persons, which emphasises the absolute necessity of a team effort to provide the best possible care to help patients recover and achieve a normal, happy, and productive life.

The 22 chapters this book can be broken down into three parts. The first part provides, in an up-to-date and in-depth manner, the basic knowledge of the oromotor system necessary to understand the multiple aspects and consequences of oromotor problems. The second part deals with the basis for remediation of problems with the oromotor system. The third part covers the diagnosis and management of oromotor system dysfunction.

The first part of the book is concerned with the development of the anatomical structures, the functions of the oromotor system, and the correct methods of assessing these functions.

This portion of the book reviews in considerable detail the embryological development and anatomy of the neural structures, including sensory and motor cranial nerves, their connections to the brain centres, and the organisation of the neuronal circuits that control oromotor functions. Strong knowledge of anatomy and changing functions at the different stages of development, from the prenatal period to adolescence, is required. These circuits include both motor and sensory components and extend from the sensory organs, through the cranial nerves, to the brainstem, where considerable integration takes place. The extreme complexity of these circuits points to the importance of the neural control system, which is necessary for vital, mostly reflexive, digestive functions of the tongue and palate and for pharyngeal motility. These neural circuits are integrated with neighbouring circuits involved in the coordination of respiratory and laryngeal motility. The respiratory and laryngeal control circuits ensure the necessary close cooperation between the digestive and respiratory systems, which is particularly important to ensure the protection of respiratory pathways against aspiration. The circuits that fulfil mostly reflexive functions are integrated at several high levels, the most important of which is the brainstem, which is a major station in this neural system. Lesions or dysfunctions of the brainstem, whether congenital or acquired, are responsible for a considerable portion of oromotor disorders or syndromes.

These delicate and finely tuned neural circuits are also essential for the physical expression of language production. Monitoring the development and function of this system requires rigorous methods of assessment, which are also described in this section.

The brain cortex is involved at a high level in the coordination of facio-buccal motility, as demonstrated by pseudobulbar syndromes observed in individuals with abnormalities or lesions of the temporal lobe, especially congenital anomalies (micropolygyrias), but also acquired lesions, such as herpes encephalitis or vascular accidents. Even though disturbances resulting from these cortical dysfunctions have a different expression, as they affect mainly speech and facial motility without paralysis, they do also have a severe impact on swallowing and other digestive mechanisms.

Even though the role of the neural structures is of paramount importance, physicians and therapists, whose attention may be more focused on the physical, nutritional, and other vital aspects, do not always appreciate this fact. It is therefore justifiable to propose the concept of a 'neurology of feeding' given the wide spectrum and complexity of neurological abnormalities observed clinically, not to mention the role of Broca's area in speech articulation, lesions of which also contribute to difficulties in communication in some of the patients; however, Broca's area is not regarded as a part of the oromotor system.

In addition, disturbances of expressive language and abnormalities of facial expression that occur in many individuals with oromotor disorders, which also depend on the same or a closely related neural system, are in large part responsible for some essential features that distinguish human beings from animals.

Appropriate methods for the assessment of a patient include a methodical systematic clinical examination, which is extremely important not only for diagnosis but also to evaluate the extent, severity, and consequences of the disorder, and an overall assessment of the child's deficits and strengths, which has a definite bearing on treatment decisions. A nutritional evaluation is also essential to appreciate the general status and condition of a patient and to plan the most appropriate methods of correction. In many cases, a radiological study of the upper digestive system can be extremely useful, provided that it is performed correctly. However, a radiological examination is not without difficulties or even dangers, and it requires a specialised team and appropriate materials and human resources.

A large portion of the second part of the book is devoted to the review of major diseases of the oromotor system and their classification, natural history, and main causes. The classification proposed is based both on the aetiology and anatomical location and on the evaluation of the clinical clues and methods of assessment. The emphasis is on early clinical diagnosis and on the prevention of the main clinical and social consequences, allowing precise and early management. Several oromotor disorders of children are genetically determined, and parents should be informed of the reproductive risk. Important common conditions that can threaten life or give rise to serious vital or social consequences receive special attention. Examples of these diseases include Pierre Robin sequence, Charge association, facial diplegia, and Treacher-Collins syndrome.

The second part of the book also stresses the role of the nervous system, which explains the strong representation of child neurologists among the editors and authors.

The many syndromes and abnormalities of brainstem origin that cause oromotor disorders have long attracted the interest of many investigators whose names are associated with multiple syndromes of cranial nerves, nuclei, and brainstem tracts or other signs and symptoms related to the brainstem. However, the descriptions of these syndromes are not always agreed upon by different authors and often lack precision in their definition, pathology, and mechanisms. Thus, this text proposes the term

brainstem dysgenesis, which highlights the common site of origin of the lesions responsible for these eponymous syndromes. The lesions may be narrowly localised (e.g., absence of a single nerve nucleus) or involve several locations within the stem. More precision should be given by a detailed search and description of the individual symptoms, which are often different from case to case, even under the cover of the same eponym. Imaging features may also add information to the individual cases. The concept of brainstem dysgenesis is entirely reasonable. The term dysgenesis in this context includes destructive and dysplastic (malformative) abnormalities. Acquired pathology due to prenatal insults is probably the most frequent cause. However, I would suggest that the term Moebius syndrome should be kept, not only because of a taste for eponyms but also because it indicates the consistent involvement of the facial nerves. In addition, the term is frequently used, even though it is clear that it does not represent a single entity and can present with several distinct clinical features.

Cerebral hemisphere lesions also result in dysfunction of the oromotor system, albeit of a different clinical presentation, as they do not result in paralysis but in a more complex symptomatology due to a mixture of dyspraxia, weakness, and spasticity through the involvement of the corticobulbar tracts. Although the presentation is neurologically different from that of bulbar palsy, cerebral hemisphere lesions may closely simulate bulbar palsy, and the similarities can raise a diagnostic problem.

Other types of common oromotor disorders include those resulting from primary neuromuscular disorders. They may be predominantly localised to the cervico-facial region but are clinically from the most common neural syndromes with a greater extent and a distinct type and topography of the neuromuscular involvement. These types of oromotor disorders deserve consideration for their frequency and specific therapy. Involvement of the orofacial muscular system is common in certain types. Their assessment and management are also different from those of the purely oromotor distribution of weakness.

The study of feeding disorders of preterm infants raises special problems of great interest to neonatologists and paediatricians. An important chapter of the book deals with the specificity of physiological and nutritional problems in this age group and emphasises the importance of taking into account the total dependency of the infant and the utmost importance of the participation of parents in the care.

The all-important section on the topic of management and treatment is introduced by two specialists with extensive experience in dealing with patients who suffer from feeding problems of all origins and whose competence in this domain is well known.

These specialists emphasise the psychological, emotional, and relational impacts of these conditions and the social, practical familial, emotional, relational, and social aspects that may be of primary importance. These authors stress that such complex problems are often present in addition to the physical and mechanical problems; thus, these patients may face considerable social difficulties because of their facial appearance, drooling, or speech difficulties, which may compromise their assimilation into school and peer groups. Therefore, it is imperative that the whole problem of each patient, not only the technical or purely medical aspects, be discussed with the parents and family and other social groups that play an important role in the physical and psychological well-being of the affected child. Schoolteachers must be clearly informed, especially of the nature of the difficulties and the real possibilities of the children. Peers may also have a significant personal and social impact. The aim is to provide a warm and supportive, but not an overprotective, attitude.

This section also reviews in detail the management of some of the most common causes or oromotor problems, such as cerebral palsy, surgical treatment of facial and craniofacial abnormalities, and neuromuscular disorders. The authors highlight the importance of adapting treatment to the individual patient and to deal with each individual problem that is present because multiple problems are often encountered in many cases. An interesting chapter is dedicated to drooling - one of the most personally vexing and socially stigmatising phenomena.

Full management is determined by the causal disorder and the possible unusual features for each case, thus underlining the importance of a correct and full diagnosis and complete personal assessment. Special attention is given to the methods and indications of speech therapy, as speech difficulties are common and interfere with this most essential channel of interpersonal communication, which can have disastrous consequences if not properly dealt with. A full chapter is devoted to this rapidly developing discipline, which is gradually becoming more effective. The use of modern techniques will increasingly improve the possibilities of improving or replacing natural channels; therefore, this rarely used possibility is likely to become more important in the near future through technical developments .Nutritional problems are clearly a major preoccupation for a significant proportion of children who have difficulties making proper use of their oromotor system. The contribution of nutritionists is therefore important, and assessment of the changes in the appearance, taste, and consistency of food offered can be extremely useful. Rehabilitation is useful to correct or obviate difficulties with mouthing, chewing, swallowing, and drooling that often gravely physically and psychologically disturb the patients and require special techniques discussed in this book.

The editors and all contributors are to be warmly thanked for having been bold enough to embark upon and successfully produce this major piece of work. *Oromotor Disorders in Childhood* will garner the attention of all child health professionals involved in the comprehensive care of infants and children in an important domain of child heath that is relatively little known outside specialised groups and certainly deserves to be more widely recognised for the benefit to all children who have diseases that can be not only severe in their physical consequences but also stigmatising and psychologically difficult to tolerate for many. The extensive and up-to-date information offered in this book in a comprehensive and compact form should result in improvement of the quality of care in an all too often neglected or poorly dealt with part of child medicine.

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