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EDITORIAL

Chronic Diarrhea in Children

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Diarrhea remains a major cause of morbidity in children and one of the most important reasons for childhood death [1]. In the vast majority of cases it is acute, related to infection, and self-remitting but in some the persistence of diarrhea beyond 4 wk (chronic diarrhea) raises the possibility of more significant disorders that need appropriate evaluation and management to limit morbidity and mortality. This symposium on chronic diarrhea (CD) in children is timely and brings together a series of articles by established specialists in the field to address the key conditions and considerations that underlie this challenging and complex clinical scenario as well as its management.

Tripathi and Srivastava set the scene by laying out a practical clinical approach to a child presenting with CD, which can pose a considerable challenge for the clinician in terms of elucidating the cause and, ultimately, the correct diagnosis [2]. They incorporate useful diagnostic and treatment strategies and algorithms depending on the clinical picture (*e.g.,* nature of stools), age of presentation and the predominant pathophysiological mechanism involved. Importantly, they discuss the judicious application of both routine and specialised tests (*e.g.,* serological tests, imaging, endoscopy, histopathology), specifically highlighting the increasingly important role of genetic evaluation especially in congenital diarrheas, monogenic inflammatory bowel disease (IBD) and immunodeficiency disorders. Finally, they underscore the need not only for timely diagnosis, but also management including appropriate nutritional support and etiology specific therapy.

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Celiac disease presents one of the commonest causes of CD worldwide, yet in many countries of the world remains under-recognised within a myriad of other conditions such as infectious diarrhoea and poorly managed despite an arguably simple and straightforward dietary treatment. Bolia and Thapar provide a contemporary update of this condition highlighting the now largely non-classical presentation as well as current diagnostic approaches that, although based on serology and endoscopy, also allow for a non-biopsy diagnosis in selected cases [3]. Current treatment remains limited to a strict life-long gluten free diet although novel pharmacological approaches are emerging that help optimise compliance and outcomes.

Jois and Alex highlight and discuss the current understanding of another immune-mediated condition, inflammatory bowel disease (IBD), which continues to show a rising incidence in both children and adults across the globe [4]. In the global setting IBD needs to be distinguished from chronic infections such as intestinal tuberculosis to help direct optimal treatment. They discuss a management approach that has become increasingly standardised with improved classification into subtypes and severity as well as algorithms for treatment, of which the mainstay are immunosuppressive therapies. These include novel biologics and strategies to control disease to improve quality of life and limit complications of poorly controlled disease, including the need for surgery. They highlight the ideal of a multi-disciplinary team with expertise in IBD to optimise management and improve the chances of sustained remission with endoscopic healing.

Malik and Kaul tackle cow's milk protein allergy, one of the commonest food protein allergies, as a cause of CD. They not only highlight the importance of clinician awareness of this eminently treatable condition but, in the absence of good diagnostic tests, the need to use basic clinical skills of comprehensive history and physical examination to identify children with such allergies [5]. Critically, they draw attention to the need for diligence around elimination diets ensuring optimal nutrition is maintained and they are only used where required, including the need for rechallenge.

Rajindrajith and colleagues provide an enlightening overview of functional diarrhea, one of a number of so-called disorders of gut-brain interaction. Having gone through a few

iterations of terminology including toddlers' diarrhea this troublesome clinical presentation is now increasingly recognised across all age groups [6]. Although a number of dietary factors have been implicated the pathophysiology, and thus optimal treatment, is largely unknown. The authors reiterate the need to differentiate this condition from other more significant and potentially treatable disorders and to focus on better understanding the mechanisms that underlie this enigmatic condition.

Diet is increasingly implicated in human disease although a direct causal relationship or offending aspect is not always substantiated or clear. Beyond Celiac disease and food allergy Shankar and Durairaj highlight the significant advances that are helping improve our understanding of congenital diarrheas and enteropathies [7]. Early recognition and institution of dietary therapies for these conditions, especially congenital osmotic diarrheas are critical. The authors further discuss the putative role of dietary factors in older children and adolescents presenting with CD. They highlight the role of diet therapies in managing a number of chronic diseases but raise caution regarding the blanket use of exclusion diets in the management of CD given the negative aspects such as nutritional deficiencies, cost and potential to escalate maladaptive eating.

Kijmassuwan and Balouch present an approach to congenital diarrhea and enteropathies (CODEs) covering a group of rare genetic disorders with a specific focus on microvillus inclusion disease (MVID), congenital tufting enteropathy (CTE), congenital chloride diarrhea (CLD), and congenital sodium diarrhea (CSD) [8]. These conditions are characterized by severe diarrhea and malabsorption in the neonatal period or early infancy and timely diagnosis and treatment is essential to prevent life-threatening complications. This review offers a simplified approach to the diagnosis of CODEs and covers treatment options for CODEs albeit recognising that these are limited, often relying on total parenteral nutrition for hydration and nutritional support. In severe cases, intestinal transplantation may be considered.

Sathiyasekaran et al. in their article on other causes of diarrhea cover some of the most challenging causes relating to immunodeficiency, intestinal lymphangiectasia, secretory and malignant tumours of the GI tract, endocrinopathies as well as others from tropical sprue and small intestinal bacterial overgrowth to spurious or factitious diarrhea [9]. Importantly, they address increasingly recognised entities of eosinophilic GI diseases and drug induced diarrhea. Although many such conditions range from relatively to very rare, early recognition is essential as these conditions are often difficult to manage and can be life-threatening. These disorders underpin the importance of ensuring the history encompasses a clear understanding of the onset and key associated features such as other morbidities *e.g.,* recurrent infections as well as of broadening the battery of tests where the condition is severe or remains unclear.

In summary, CD results from a vast array of diverse conditions ranging from congenital to immune mediated diseases with newer entities being described [10]. Such conditions vary in overall clinical presentation, incidence, severity and complexity, which may be influenced by age, background health issues and both geographical and socio-economic context. It is essential that clinicians are aware of the various disease entities that underlie CD and develop a structured approach to their diagnosis and management. Early recognition and institution of appropriate or tailored therapy is critical, especially in those conditions that would otherwise be life-threatening. Nutritional optimisation remains an essential consideration in management, irrespective of cause. In more complex or severe cases, including where a cause cannot be identified, referral to expert centres, more in-depth investigations such as tissue biopsy and genetics as well as more intensive management may be indicated. If we are to improve the outlook of children suffering CD, future initiatives focussed on enhancing our understanding of pathophysiology, improving timely definitive diagnosis and the development of tailored treatments remain a priority.

Declarations

Conflict of Interest None.

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