



Inflammatory bowel disease in children

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The disorders known as inflammatory bowel disease (IBD) can present at any age; up to one quarter of diagnoses are made in children and adolescents (1,2). Recent reports indicate increasing rates of IBD in young people, although the reasons for this are not well understood (3,4). Paediatric onset IBD is typically more extensive and aggressive than adult-onset IBD (5).

As well as specific gastrointestinal symptoms, such as diarrhea and abdominal pain, IBD in children can be characterized by poor weight gains (or weight loss), impaired linear growth and delayed puberty. Furthermore, children with IBD may have extra-intestinal manifestations (EIM) of their disease, various disease complications or potentially face adverse psychological impacts (such as depression or anxiety). Consequently, children and adolescents with IBD require a broad management approach: therapies to induce and maintain remission, nutritional support, psychological support and potentially surgical intervention. Ongoing regular monitoring of growth, psychological well-being and disease activity in the setting of a multidisciplinary IBD clinic are key elements of ongoing management.

This special issue focuses on IBD in children. The included reports consider the patterns of IBD in children, therapeutic approaches to IBD, nutritional aspects of IBD and elements of management approaches relevant to IBD in children and adolescents.

Although IBD typically presents with gastrointestinal symptoms, various other organ systems can also be involved. Jang *et al.* (6) review the pattern and types of EIM of IBD, with emphasis upon children. The authors' Korean experience indicates that almost one of every four children with IBD were found to have one or more EIM over a period of up to 7 years from diagnosis. In comparison, EIM were seen in 13.7% of a group of 143 children from New

Zealand diagnosed between 1996 and 2015 (4).

IBD can have significant impact upon nutrition in children, and can disrupt many normal growth processes. Furthermore, IBD can impact adversely upon various micronutrients. Ishige (7) reviews the pathogenesis of growth failure in children with IBD. Within this article, the author provides a summary of new data from a Japanese administrative data-set that outlines the growth patterns and outcomes of children with IBD. Consequent to these well-described adverse impacts on growth, close attention to nutrition and anthropometry is a critical component of initial assessment at diagnosis and of ongoing monitoring in children with IBD.

Specific nutritional treatments for IBD are generally utilized more commonly in children than in adults. Exclusive enteral nutrition (involving a number of weeks of a liquid diet without solid food) is now recommended in several guidelines as the preferred treatment to induce remission in children with active CD (8). Another nutritional approach, the CD Exclusion Diet (CDED), is based upon the exclusion of various foods and food components that are likely to trigger or perpetuate gut inflammation (9). The initial report of the use of the CDED in Israeli children and young adults suggested promising efficacy. In the current issue, Chiba *et al.* (10) outline a further nutritional approach to the management of IBD: a plant-based diet (PBD). This report describes the rationale for considering a PBD and describes some initial outcomes of this approach in the hands of the authors. Further consideration of this novel approach, with assessment of benefits across different patient groups, is clearly required.

IBD can impact adversely upon the levels of various micronutrients, including iron and vitamin D. Carman *et al.* (11) report their prospective experience with ferric carboxymaltose given as a rapid intravenous infusion in

101 Australian children with IBD. The authors conclude that this preparation of iron is safe, well-tolerated and efficacious. Following this, Martin *et al.* (12) report the outcome of single high dose vitamin D therapy in a group of New Zealand children. As well as improvements in vitamin D status, the authors also reported that the levels of several inflammatory markers appeared to be improved following vitamin D administration. Although this was not the objective of this work, the findings do suggest that further examination of the impact of vitamin D status in children with IBD is required.

Medical therapies for IBD include those aimed to induce remission (such as corticosteroids) and those that have roles in the maintenance of remission (for example, azathioprine). Many reports indicate that antibiotics may play roles in the management of IBD, especially for the induction of remission. In this special issue, Ledder (13) reviews the place of antibiotics in children with IBD and provides a rationale for their observed benefits. Traditionally, medical therapies have been administered to patients across the board, without consideration for individual patient or disease related factors. Ashton *et al.* (14) provide their perspective on the application of personalized medicine in IBD. This fine-tuned, individualized approach has much promise in the future, with consequent potential enhanced outcomes.

Although typically inflammatory at diagnosis, IBD can be complicated by the development of strictures or fistulae. Grover (15) reviews the application of medical therapies with a view to preventing the development of these complications. Key aspects include the use of the right drug at the right time.

Further to the individualization of care for children with IBD, optimization of patient outcomes clearly requires consistent and comprehensive care systems. Georgy *et al.* (16) review the role of quality improvement in the management of IBD in children. These concepts can be applied to provide ongoing objective review of IBD Clinic systems, providing ongoing cycles of improvement and enhancement. The application of quality improvement principles also emphasizes the multi-disciplinary requirements of care for children and adolescents with IBD.

The final article in this special issue considers some aspects of transition of adolescents from pediatric care to adult gastroenterology services in a New Zealand context (17). Individuals in this time have increasing autonomy while continuing to develop and mature. Ineffective transition can result in lost access to health

care, increased non-adherence and increased morbidity. Consequently, ensuring effective transition processes are undertaken is a further key element of the management of young people with IBD. This report evaluated patient perspectives of the transition period and emphasizes that patient perspectives and opinions may not reflect physician perspectives. Clearly a successful transition system must incorporate many elements (such as patient, parent and physician) to ensure that the process is optimal and patient-appropriate.

In conclusion, this special issue includes and emphasizes a number of important aspects of the approach to and management of IBD in children. This condition, which is becoming increasingly prevalent, comprises multiple facets: full consideration of these aspects is essential in optimizing care and patient outcomes. Whilst this special issue does not cover all aspects of IBD in children, it does emphasize some key aspects.

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Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

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