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REVIEW ARTICLE

Early life events predispose the onset of childhood functional gastrointestinal disorders

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Abstract

Background: Functional gastrointestinal disorders (FGIDs) are common digestive conditions characterized by chronic or recurrent symptoms in the absence of a clearly recognized gastrointestinal etiology. The biopsychosocial model, the most accepted concept explaining chronic pain conditions, proposes that the interplay of multiple factors such as genetic susceptibility, early life experiences, sociocultural issues, and coping mechanisms affect children at different stages of their lives leading to the development of different pain phenotypes and pain behaviors. Early life events including gastrointestinal inflammation, trauma, and stress may result in maladaptive responses that could lead to the development of chronic pain conditions such as FGIDs.

Aims: In this review, we discuss novel findings from studies regarding the long-term effect of early life events and their relationship with childhood chronic abdominal pain and FGIDs.

Methods: A bibliographic search of the PubMed database was conducted for articles published over the last 20 years using the keywords: "Functional gastrointestinal disorders", "chronic abdominal pain", "chronic pain", "gastrointestinal inflammation", and "early life events". Forty-three articles were chosen for review.

Results: Based on the current evidence, events that take place early in life predispose children to the development of chronic abdominal pain and FGIDs. Conditions that have been studied include cow's milk protein hypersensitivity, pyloric stenosis, gastrointestinal infections, and Henoch-Schonlein purpura, among others.

Conclusions: Early events may play an important role in the complex pathogenesis of functional gastrointestinal conditions. Timely intervention may have a critical impact on the prevention of this group of chronic incapacitating conditions.

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PALABRAS CLAVE

Trastornos gastrointestinales funcionales;
Dolor crónico;
Inflamación gastrointestinal;
Trastornos en la edad temprana;
Dolor abdominal

Eventos en edad temprana predisponen al desarrollo de trastornos gastrointestinales funcionales**Resumen**

Antecedentes: Los trastornos funcionales gastrointestinales (FGID) son condiciones que se caracterizan por la presencia de síntomas crónicos o recurrentes en ausencia de una etiología orgánica. El modelo biopsicosocial utilizado como marco conceptual de las condiciones de dolor crónico propone que la interacción de diferentes factores, como la susceptibilidad genética, los eventos en edad temprana, los factores socioculturales y los mecanismos de adaptación al dolor, afectan a los niños en diferentes estadios de sus vidas y eventualmente resultan en el desarrollo de síndromes de dolor crónico. La inflamación gastrointestinal, el traumatismo y estrés en la edad temprana pueden resultar en una adaptación inadecuada que llevaría al desarrollo de condiciones de dolor crónico tales como los FGID.

Objetivos: En este artículo de revisión se analizan nuevas evidencias de estudios que examinan eventos en edad temprana y sus efectos a largo plazo, así como su relación con el desarrollo de dolor abdominal crónico y FGID.

Materiales y métodos: Búsqueda bibliográfica en la base de datos PubMed en los últimos 20 años usando los términos: «functional gastrointestinal disorders», «chronic abdominal pain», «chronic pain», «gastrointestinal inflammation» and «early life events».

Resultados: Los eventos en la edad temprana predisponen al niño al desarrollo de dolor abdominal crónico y FGID. Entre los desórdenes estudiados tenemos: hipersensibilidad a la proteína de la leche, estenosis pilórica, infecciones gastrointestinales y púrpura de Henoch-Schonlein, entre otros.

Conclusiones: Los eventos en la edad temprana cumplen un papel importante en la compleja patogénesis de los FGID. Una intervención oportuna puede ser de un impacto crítico en la prevención de este grupo de condiciones.

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Introduction

Functional gastrointestinal disorders (FGIDs) are characterized by the presence of chronic or recurrent digestive symptoms without an underlying identifiable structural or biochemical abnormality.^{1,2} As such, there are no biological markers to diagnose FGIDs. The diagnosis of FGIDs is based exclusively on the symptoms reported by the child and parents. According to the Rome III criteria,³ the subgroup of FGIDs associated with abdominal pain (abdominal pain-associated FGIDs) is subdivided into four disorders: Irritable Bowel Syndrome (IBS), Functional Dyspepsia, Abdominal Migraine, and Childhood Functional Abdominal Pain (this includes the subgroup of Childhood Functional Abdominal Pain syndrome in children with loss of daily functioning or other somatic complaints) (Table 1). A large proportion of children with complaints of chronic abdominal pain of non-organic origin cannot be diagnosed with a FGID if the Rome criteria are strictly applied. It is unclear whether there is a difference in pathophysiology or impact on quality of life between children who do not meet one or more items of the Rome criteria and children who meet all of them.

Prevalence

Chronic abdominal pain and abdominal pain-associated FGIDs are common in children. Large community-based studies conducted in geographically and socio-culturally

Table 1 Rome III classification of functional disorders in children and adolescents.

H1. Vomiting and aerophagia

- H1a. Adolescent rumination syndrome
- H1b. Cyclic vomiting syndrome
- H1c. Aerophagia

H2. Abdominal pain-related Functional Gastrointestinal Disorders (FGIDs)

- H2a. Functional dyspepsia
- H2b. Irritable bowel syndrome
- H2c. Abdominal migraine
- H2d. Childhood functional abdominal pain
- H2d1. Childhood functional abdominal pain syndrome

H3. Constipation and incontinence

- H3a. Functional constipation
- H3b. Non-retentive fecal incontinence

Adapted from Rasquin et al.³.

diverse areas found a similar prevalence of abdominal pain and FGIDs in children. Thirty-eight percent of American school-age children⁴ and 35% of Colombian children⁵ report abdominal pain weekly. A school-based study found FGIDs in 27% of Colombian children. A cross-sectional survey conducted in a semi-urban school in Sri-Lanka found FGIDs in 28.8% of the children⁶. Eleven percent of 1200 Colombian schoolchildren and 12.5% of 2163 randomly selected

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