



REVIEW ARTICLE

Signs and symptoms associated with digestive tract development[☆]



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KEYWORDS

Gastroesophageal reflux;
Constipation;
Crying;
Milk hypersensitivity;
Infant;
Infant formula

Abstract

Objective: To analyze the development and prevalence of gastrointestinal signs and symptoms associated with the development of the digestive tract, and to assess the measures aimed to reduce their negative impacts.

Source of data: Considering the scope and comprehensiveness of the subject, a systematic review of the literature was not carried out. The Medline database was used to identify references that would allow the analysis of the study topics.

Synthesis of results: Infants frequently show several gastrointestinal signs and symptoms. These clinical manifestations can be part of gastrointestinal functional disorders such as infantile colic, infant regurgitation, and functional constipation. Allergy to cow's milk protein and gastroesophageal reflux disease are also causes of these clinical manifestations and represent an important and difficult differential diagnosis. The diseases that course with gastrointestinal signs and symptoms can have an impact on family dynamics and maternal emotional status, and may be associated with future problems in the child's life. Comprehensive pediatric care is essential for diagnosis and treatment. Maternal breastfeeding should always be maintained. Some special formulas can contribute to the control of clinical manifestations depending on the established diagnosis.

Conclusion: During the normal development of the digestive tract, several gastrointestinal signs and symptoms may occur, usually resulting from functional gastrointestinal disorders, gastroesophageal reflux disease, and allergy to cow's milk protein. Breastfeeding should always be maintained.

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PALAVRAS-CHAVE

Refluxo gastroesofágico;
Constipação intestinal;
Choro;
Hipersensibilidade a leite;
Lactente;
Fórmulas infantis

Sinais e sintomas associados com o desenvolvimento do trato digestivo**Resumo**

Objetivo: Analisar o desenvolvimento e a prevalência de sinais e sintomas gastrintestinais associados com o desenvolvimento do tubo digestivo e as medidas que visam diminuir suas repercussões negativas.

Fontes dos dados: Considerando a abrangência e amplitude do tema, não foi realizada revisão sistemática da literatura. Utilizou-se a base de dados do Medline para a identificação de referências bibliográficas que permitissem contemplar os temas de estudo.

Síntese dos resultados: O lactente apresenta com elevada frequência vários sinais e sintomas gastrintestinais. Estas manifestações clínicas podem fazer parte de distúrbios funcionais gastrintestinais como a cólica do lactente, regurgitação do lactente e constipação intestinal funcional. A alergia à proteína do leite de vaca e doença do refluxo gastroesofágico também são causas destas manifestações clínicas e representam um importante e difícil diagnóstico diferencial. As doenças que cursam com sintomas e sinais gastrintestinais podem ter consequências na dinâmica familiar e no estado emocional das mães. Podem se associar com problemas na vida futura da criança. A atenção pediátrica completa é fundamental para o diagnóstico e o tratamento. O aleitamento natural deve sempre ser mantido. Algumas fórmulas especiais podem contribuir para o controle das manifestações clínicas na dependência do diagnóstico estabelecido.

Conclusão: Durante o desenvolvimento normal do tubo digestivo podem ocorrer vários sinais e sintomas gastrintestinais em geral decorrentes dos distúrbios gastrintestinais funcionais, da doença do refluxo gastroesofágico e da alergia à proteína do leite de vaca. Aleitamento natural deve sempre ser mantido.

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Introduction

Since the conception, characterized by the moment when the sperm enters the egg, the biological potential for the formation of a new human being develops into a fascinating process of cell multiplication and differentiation. The maturation of the individual occurs during the course of different stages of life. Currently, the first 1000 days, starting at conception, are considered to be a critical period to define the health status of the individual and can have consequences throughout life.^{1,2}

The first two years of life are an important part of this period, which is characterized by accelerated growth rate and development of several organs and systems. Therefore, gastrointestinal signs and symptoms can occur in infants,^{3,4} which may be linked to several anatomical and functional changes observed at this stage of life. In addition to these clinical manifestations, there may be repercussions in the individual's future,⁵ as well as consequences that will interfere in family dynamics and the parents' emotional status.

It can be said that the development of the digestive system comprises not only the anatomical and functional aspects of its organs but also local and systemic interactions with the intestinal immune system and the establishment of the gastrointestinal microbiota. The interaction among these three processes has been the object of many basic science and clinical studies searching for alternatives that can provide favorable results during the first 1000 days and several future cycles of life.

This article aimed to analyze the emergence and prevalence of gastrointestinal signs and symptoms associated with the development of the gastrointestinal tract and measures aimed to reduce their negative impacts.

Methods

Considering the scope and comprehensiveness of the subject, a systematic review of the literature was not carried out. The Medline database was used to identify literature references that included the subject of the study. Among others, were used the following terms in the search for information, "digestive," "tract," "ontogeny," "microbiota," "development," "premature," "oral," and "tolerance". When necessary, the research was restricted to humans. The author also used his personal experience and trends discussed in national and international scientific events.

Anatomical and functional development of the gastrointestinal tract

The intestine is one of the most complex organs in the human body, both from the anatomical and functional point of view. The intestinal cells and tissues are formed from all three germ layers. Intestinal stem cells derive from the mesoderm, the muscle tissue of the endoderm, and the enteric nervous system of the ectoderm.⁶ In addition to the digestive and absorptive functions, there are also the intestinal endocrine system (involved in the regulation of systemic levels of nutrients and feeding behavior) and the so-called

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