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ORIGINAL ARTICLE

Association between medication use and adverse gastroenterologic events in patients receiving enteral nutrition therapy at a University Hospital☆

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Abstract
Introduction: Enteral Nutrition Therapy (ENT) is considered an important tool for the appropriate maintenance of nutritional conditions. ENT tolerance may be limited due to gastrointestinal (GI) events resulting from formula composition and/or simultaneously administered drug therapies.
Aims: To verify the possible association between GI events and drug therapies being administered to patients receiving ENT at a university hospital.
Methods: A prospective observational cohort study was conducted. Medical records from 95 patients requiring ENT at the *Hospital de Clínicas de Porto Alegre* (*HCPA*) were randomly evaluated until discharge, death, or initiation of oral or parenteral diet occurred. Details of the administered medications and enteral formula, together with the presenting patient disease and digestive manifestations, were recorded by the medical team. Three experienced gastroenterologists evaluated the possible association between the digestive symptoms and the medications employed. The study protocol was approved by the *HCPA* Research Ethics Committee and patient consent forms were signed.
Results: Mean patient age: 65 ± 17 (24-95) years; 94.70% presented with GI events: constipation 70.50%, diarrhea 38.90%, abdominal distension 18.90%, vomiting 16.80%, and pulmonary aspiration 1.10%. ENT was most indicated in neurologic (50.50%) and neoplastic (25.30%) disease. Medications given to the patients showed a positive relation: 63.20% to 86.70% of GI symptoms could be attributed to the drugs being administered.
Conclusions: GI complications during ENT are common; they are frequently linked to administered drug therapy. Health care teams should consider all risk factors present, specifically those related to prescribed medication, before modifying/suspending ENT.

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PALABRAS CLAVE
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Brasil

Asociación entre el uso de medicamentos y efectos adversos gastrointestinales en pacientes que reciben terapia con nutrición enteral en un Hospital Universitario

Resumen
Introducción: La terapia de apoyo con nutrición enteral (TNE) se considera una herramienta importante para el mantenimiento adecuado de la condición nutricional. La tolerancia de la TNE puede estar limitada por los efectos gastrointestinales (GI) que resultan de la composición de la fórmula y/o de tratamientos farmacológicos administrados simultáneamente.
Objetivo: Determinar la posible asociación entre efectos GI y tratamientos farmacológicos administrados simultáneamente, a pacientes que reciben TNE en un Hospital Universitario.
Métodos: Se llevó a cabo un estudio prospectivo observacional de cohorte. Los expedientes médicos de 95 pacientes que requirieron TNE en el *Hospital de Clínicas de Porto Alegre* (*HCPA*) fueron aleatoriamente evaluados hasta que ocurriera su egreso, muerte o iniciación de vía oral o dieta parenteral. El equipo médico registró los detalles de los medicamentos administrados y la fórmula enteral en conjunto con la enfermedad presentada por los pacientes, así como las manifestaciones digestivas. Tres gastroenterólogos experimentados evaluaron la posible asociación entre los síntomas digestivos y los medicamentos utilizados. El protocolo de estudio fue aprobado por el Comité de Investigación y Ética del *HCPA*; y los pacientes firmaron un consentimiento informado.
Resultados: La edad media de los pacientes fue: 65 ± 17 (24-95) años; 9470% presentó efectos GI: estreñimiento 7050%, diarrea 38,90%, distensión abdominal 18,90%, vómito 16,80%, y aspiración pulmonar 1,10%. La TNE fue indicada con mayor frecuencia en enfermedades neurológicas (50,50%) y neoplásicas (25,30%). Los medicamentos administrados a los pacientes mostraron una relación positiva: 63,20% a 86,70% de los efectos GI fueron atribuidos a los tratamientos farmacológicos.
Conclusiones: Las complicaciones GI durante TNE son comunes. Se asocian con frecuencia a los tratamientos farmacológicos administrados. Los equipos encargados del cuidado de la salud de estos pacientes deben considerar todos los factores de riesgo presentes, específicamente aquellos relacionados con los medicamentos ordenados antes de modificar/suspender la TNE.

Introduction

Gastrointestinal (GI) events in Enteral Nutrition Therapy (ENT) may be a result of the nutritional formula that is infused, the drug therapy being taken by these patients, or the background illness justifying its use.[1] Adverse events occurring from medications can vary depending on the drug prescribed, as well as on the clinical condition of the patient. Medications to be administered should be carefully evaluated in order to prevent such problems, primarily in the hospital setting where patients are undergoing multiple drug therapies.[2] Few studies have attempted to investigate this association between medication use and patients in such a scenario.

The aims of this study were to verify the frequency of GI complications (diarrhea, abdominal distension, nausea/vomiting, and constipation) associated with the use of ENT in adult inpatients at the *Hospital de Clínicas de Porto Alegre* (*HCPA*), and to identify the possible association with medications simultaneously administered during treatment.

Methods

Design and patients

A prospective observational cohort study was conducted using data collected from medical records of the *HCPA* inpatients requiring enteral nutrition support. The sample included patients with a minimum age of 18 years that required ENT for more than five days. Patients receiving parenteral nutrition, enteral nutrition for less than five days, oral intake concomitant with enteral nutrition, pregnant women, and women who had recently given birth were excluded from the study.

The study was approved by the Research Ethics Committee of the *HCPA* and consent forms were signed by all participants.

Data collection

The prospective selection of study participants was carried out from a list of ENT users at the *HCPA*, using the existing institutional database that is part of its electronic medical prescription system. Patients were enumerated consecutively by placing numbered cards in a container and drawing them out at random. Data from electronic medical records were collected from day five of ENT up to therapy interruption due to patient discharge or death or to the beginning of an oral or parenteral diet. Medical records were analyzed three times a week by the same researcher on alternating days. The evaluations of the medical team and nursing staff were noted, along with medication prescriptions and occurrences of GI complications during the previous 48 h to 72 h. These data were entered in the electronic chart system of