



ORIGINAL ARTICLE

Antidote use in a paediatric emergency department^{☆,☆☆}



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Abstract

Introduction: Poisoning is an infrequent cause of consultation in a paediatric emergency department (PED), but it can be potentially serious. Paediatricians should know how to use the available antidotes properly.

Objectives: To analyse the use of antidotes in a PED and to assess the suitability of their indications.

Materials and methods: A retrospective review of antidote use in a PED between January 2008 and June 2012. Inclusion criteria were age younger than 18 years and consultation for suspicious poisoning by a substance that could be treated with an antidote. The adequacy of antidote indication was based on the recommendations of the Spanish Society of Paediatric Emergencies (SSPE).

Results: A total of 1728 consultations for suspicious poisoning (0.4% of the total visits in the PED) were recorded. In 353 cases (20.4%) the involved poison could be treated with an antidote. Sixty-seven patients received an antidote (3.9% of consultations for suspicious poisoning), and a total of 69 administrations of an antidote were made: 100% oxygen (46), N-acetylcysteine (10), flumazenil (4), naloxone (3), deferoxamine (2), vitamin K (2), bicarbonate (1), and carnitine (1). In three cases there was no indication for administration: flumazenil without respiratory depression, and vitamin K following coumarin exposure. As side effects, agitation was noted after the use of flumazenil, and a decrease in the prothrombin time during infusion of N-acetylcysteine.

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Conclusions: The administration of antidotes in this PED is uncommon and, mainly, in accordance with the SSPE recommendations, and without serious side effects. The use of flumazenil needs to be limited to the cases with a clear indication and without any contraindication.

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PALABRAS CLAVE

Antídotos;
Intoxicación;
Niños;
Urgencias

Uso de antídotos en un servicio de urgencias pediátricas

Resumen

Introducción: La intoxicación es un motivo de consulta poco frecuente en un servicio de urgencias pediátricas (SUP) pero potencialmente grave. Conviene que el pediatra conozca el uso adecuado de los antídotos disponibles.

Objetivos: Analizar el uso de antídotos en un SUP y evaluar la idoneidad de su indicación.

Materiales y métodos: Estudio retrospectivo de los pacientes que consultaron, entre enero del 2008 y junio del 2012, por sospecha de intoxicación por una sustancia para la cual existe antídoto. La evaluación de la idoneidad de la indicación del antídoto se basó en las recomendaciones de la Sociedad Española de Urgencias de Pediatría.

Resultados: Se recogieron 1.728 consultas por sospecha de intoxicación (0,4% de las visitas). En 353 (20,4%) el tóxico implicado podía ser tratado con un antídoto. Recibieron antídoto 67 pacientes (3,9% de las consultas por sospecha de intoxicación) y se realizaron en total 69 administraciones de antídoto: oxígeno 100% (46), N-acetilcisteína (10), flumazenilo (4), naloxona (3), desferroxamina (2), vitamina K (2), bicarbonato (1) y carnitina (1). En 3 casos no existía indicación del antídoto: flumazenilo sin depresión respiratoria (2) y vitamina K tras exposición a cumarínico (1). Como efecto secundario se objetivó agitación psicomotriz tras uso de flumazenilo y disminución del tiempo de protrombina durante la infusión de N-acetilcisteína.

Conclusiones: La administración de antídotos en este SUP es infrecuente, mayoritariamente acorde a las recomendaciones y sin efectos secundarios importantes. Debe insistirse en la necesidad de limitar el uso de flumazenilo a los casos claramente indicados, y comprobando siempre la ausencia de contraindicaciones.

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Introduction

Suspected poisoning is an infrequent reason for seeking paediatric emergency services in Spain (0.3%),¹ but is a potentially serious situation that calls for rapid clinical decision-making. Thus, it is crucial that paediatricians know how to manage suspected poisonings and the treatments available for them.

In 1961, Clemmensen et al. demonstrated that the use of stabilisation and supportive measures, at the opposite end of the spectrum of toxin-specific treatment, was the most successful approach to reducing mortality in severely poisoned patients.² This is still the case today, and the action algorithms for any type of poisoning start with assessment and treatment with the Airway-Breathing-Circulation approach.

Still, administration of an antidote can be the key in the management of certain types of severe poisoning. Some examples are the use of N-acetylcysteine (NAC) to treat paracetamol-induced hepatotoxicity, or more recently developed treatments like hyperinsulinaemia-euglycaemia therapy for calcium-channel blocker poisoning, fomepizole for toxic alcohol poisoning, or lipid emulsion therapy for severe cardiotoxicity induced by lipophilic toxins. At

any rate, the risks and benefits of an antidote must be weighted up before its administration, taking into account the patient's clinical status, the predicted action of the toxic substance, and the possible adverse effects associated with the antidote.

The aim of this study is to analyse the use of antidotes in paediatric patients with suspected poisoning and assess the appropriateness of their administration.

Materials and methods

We conducted a retrospective, descriptive, and observational study in the emergency department of an urban tertiary care maternity and children's hospital that serves a referral population of 1,300,000 and has about 100,000 paediatric visits a year.

We included all patients aged 0–18 years consulted for suspected poisoning with a substance that could be treated with an antidote. The study was conducted from January 2008 to June 2012.

Electronic medical records were reviewed to gather the data. We collected data on epidemiological and clinical variables, including antidote use, appropriateness of antidote administration, and any adverse effects.

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