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ORIGINAL RESEARCH ARTICLES

Investigation and management of foreign body ingestion in children at a major paediatric trauma unit in South Africa



Étude sur la prise en charge de l'ingestion de corps étrangers chez les enfants au sein d'une grande unité de traumatologie pédiatrique en Afrique du Sud

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Introduction: Foreign body (FB) ingestion is a common paediatric presentation to emergency centres in South Africa (SA). There are no guidelines for the management of FB ingestion in children in SA. This study describes the presentation, investigation, and management of FB ingestion at a tertiary paediatric trauma unit in SA. **Methods:** A retrospective chart review was conducted on all children presenting to Red Cross War Memorial Children's Hospital Trauma Unit with a history of FB ingestion. Data was gathered from referral letters and hospital records, including any radiographs performed. **Results:** 146 patients were included with a median age of 32 months. Of these, 90% were asymptomatic at presentation. The main types of FB ingested were: 62% metallic, 14% non-metallic, and 15% food. In the metallic group, the most common FB was a coin, ingested by 45% of children. Radiographs were performed in 94% of patients, with a total of 202 radiographs performed on 137 children. The FB was identified by radiographic means in 68% of cases (39% in the oesophagus and 34% in the stomach) and removed endoscopically in 41 patients. Following endoscopy there were minor complications in 7 patients, all of which were managed conservatively. **Conclusion:** The age distribution and types of FBs ingested are comparable to other published studies, though the investigation and management of FBs varied widely. Most patients with FB ingestion had several radiographs performed, exposing them to potentially harmful radiation. The use of a hand-held metal detector in emergency centres could reduce the number of radiographs performed. Guidelines for the investigation and management of FB ingestions in children in SA are necessary.

Introduction: L'ingestion de corps étrangers (CE) constitue une urgence pédiatrique courante au sein des centres d'urgence en Afrique du Sud (AS). Il n'existe aucune directive pour la prise en charge de l'ingestion de CE chez les enfants en AS. Cette étude décrit la présentation, l'examen et la prise en charge de l'ingestion de CE au sein d'une unité de traumatologie pédiatrique tertiaire en AS.

Méthodes: Une révision rétrospective sous forme de diagramme des informations disponibles a été menée sur tous les enfants s'étant présentés suite à l'ingestion d'un CE au sein de l'unité de traumatologie de l'hôpital pour enfants du Red Cross War Memorial. Les données ont été recueillies à partir de lettres de référence et dossiers hospitaliers, y compris les éventuelles radiographies effectuées.

Résultats: 146 patients ont été inclus dans l'étude, âgés en moyenne de 32 mois. Parmi ceux-ci, 90 % ne présentaient aucun symptôme à leur arrivée. Les principaux types de CE ingérés étaient les suivants : objets métalliques, 62 %, objets non métalliques, 14 %, aliments, 15 %. Au sein du groupe « objets métalliques », les CE les plus fréquemment rencontrés étaient des pièces de monnaie, ingérées par 45 % des enfants. Des radiographies étaient réalisées sur 94 % des patients, un total de 202 radiographies ayant été réalisées sur 137 enfants. Le CE était identifié par radiographie dans 68 % des cas (39 % dans l'œsophage et 34 % dans l'estomac), et retiré par endoscopie chez 41 patients. Des complications se sont présentées suite à l'endoscopie chez sept patients, qui ont toutes fait l'objet d'un contrôle raisonnable.

Conclusion: La répartition par âge et les types de CE ingérés étaient comparables aux données contenues dans d'autres études publiées, bien que l'examen et la gestion des CE variaient dans une large mesure. La plupart des patients ayant ingéré un CE ont fait l'objet de plusieurs radiographies, les exposant à d'éventuelles radiations nocives. L'utilisation d'un détecteur de métal manuel dans les centres d'urgence pourrait réduire le nombre de radiographies réalisées. Des directives pour l'examen et la prise en charge des ingestions de CE chez les enfants en AS sont nécessaires.

African relevance

- Foreign body ingestion is a common presentation to the African Emergency Centre, affecting mainly the 6–36 month age group.

- The coin is by far the most common ingested foreign body in children.
- There are no established practice guidelines for the management of foreign body ingestion available in South Africa.

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Introduction

Foreign body (FB) ingestion in paediatric patients is a common presentation to emergency centres worldwide,¹ with as many as 125,000 cases reported in 2007 in the United States.²

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In South Africa (SA), FB ingestion is the fifth most common cause of admissions to Red Cross War Memorial Children's Hospital Trauma Unit (RCWMCH TU), which treats approximately 6500 children per year.³

Young children are curious by nature and learn by exploration, which can lead to the unintentional swallowing of foreign objects. The most common accidental ingestants in children are metal objects (coins, pins, paper clips, and button batteries), non-metal objects (wood, toy parts, plastic parts), and food particles such as fish and chicken bones.⁴⁻⁶ Poverty, overcrowding, young maternal age, single parent households, and low maternal educational status all confer risk and make children more vulnerable to both intentional and unintentional injury.⁷ The investigation and management of FB ingestion is well defined and based on evidence-based guidelines in many health systems, but in SA, there are no clear guidelines.^{3,4} The hand-held metal detector (HHMD) is a device infrequently used in SA that has revolutionised the investigation and management of FB ingestion in higher income countries (HIC), with dramatically less radiation exposure than use of screening with traditional radiograph series.⁸

In a resource-limited country like SA, establishing guidelines incorporating the use of HHMDs could reduce both referrals to major centres and the number of radiographs performed in children with FB ingestions. Multiple radiographs incur large doses of radiation (particularly with higher penetration films such as abdominal films).⁹ Paediatric patients have immature tissues and excessive radiation exposure increases the risk of developing malignancies later in life.^{9,10}

This study will describe the current presentation and subsequent management of children with FB ingestions at a tertiary paediatric hospital in SA.

Methods

A retrospective chart review was performed for the period 1 January to 31 December 2010 at RCWMCH TU. RCWMCH is a tertiary paediatric hospital, a referral hospital for many of the children (up to age 13 years) of the Western Cape. The trauma unit is staffed by medical officers and trainee specialists, with specialist surgeon supervision (offsite after hours). Study patients were identified from the trauma unit (TU) register, which documents details of all children presenting to the TU, including the main reason for each presentation. All the TU registers for the period were retrieved to identify patients with the main reason for the visit being FB ingestion.

Patient records were retrieved from medical records. If records were missing, a second attempt was made to locate them. The referral letter, notes on the initial TU presentation, investigations, subsequent management, follow-up, and information on any complications were reviewed by the principal investigator (CD). Inclusion criteria were all patients ≤ 13 years of age presenting with a history of oral FB ingestion to the RCWMCH TU in the study period. Exclusion criteria were hospital records that were incomplete or unobtainable.

Data was collected with aid of a data sheet completed by hand and then entered into an Excel data sheet on a password-protected computer. The following data was collected: characteristics of patients, time to presentation from ingestion of FB, presenting symptoms, type of FB ingested, investigations performed, results of investigations, management of

patients, discharge and follow-up of patients, any patients who returned for the same problem, advice given to caregivers' of the patients at discharge, and recorded complications. The principal investigator (CD) reviewed all available patients' radiographs to identify the FB and location. Descriptive statistics were used to describe the information using Microsoft Excel (2010, Microsoft Corp., Redmond WA) and STATA (8.0, Statacorp LP, College Station TX). The study was approved by the Human Research Ethics Committee at the University of Cape Town. Patient consent was not required as this study was a retrospective review of patient notes, and patient identities were protected.

Results

A total of 184 patients were eligible for the study, with 146 (79%) patients ultimately included (see Fig. 1). The median age of study patients was 32 months (IQR 19–60 months) with 55% being male. Of patients seen at RCWMCH TU with FB ingestion, 72/146 (49%) were referred from other clinics and district hospitals. The main reason for referral was for radiographs (and subsequent removal of any FBs if required). The remaining 74/146 (51%) patients were self-presentations to the TU.

The time intervals from ingestion of the FB to presentation at the TU were as follows: 118/146 (81%) < 24 h, 14/146

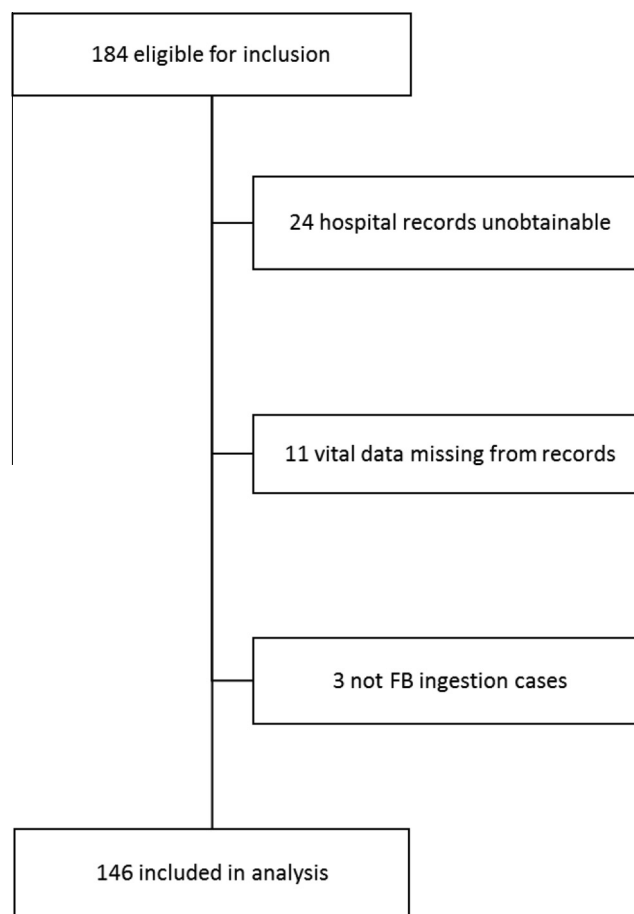


Figure 1 Patient enrolment schedule.

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