Challenges of a French Hospital Discharge Database algorithm to detect non-accidental paediatric burns

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Abstract

Introduction

Objectives

Methods

Results - Discussion

Discussion - conclusion

Highlights

- The performances of an algorithm to detect non-accidental paediatric burns (maltreatment) using the French hospital discharge database dropped when including neglect, difficult to diagnose clinically.
- Training for healthcare professionals and qualitative studies on obstacles to the judicial authority (RJA) or worrying information (WI) should be added to this diagnostic study.

Introductions

- Child maltreatment: o Acts of commission: physical, sexual, psychological abuse
  - Acts of omission: physical, emotional, medical, educational neglect; inadequate parental supervision; exposure to violence
- Burns: high morbi-mortality among non-accidental (maltreatment) paediatric injuries

Objectives

- Main: To assess the performance parameters of an algorithm to detect non-accidental paediatric burns (NAB) using the French Hospital Discharge Database (HDD) o Secondary: To describe the clinical cases of child maltreatment with no action taken during the analysed hospital stay

Methods

- Study population: Children aged 0 to 16 years old, with a coded burn (ICD-10) during 21 hospital stay at the Teaching hospital of Tours (France) from 2012 to 2017
  - NB: multidisciplinary definition: HDD cases: 2 definitions, "probable" / "possible" (Figure 1 and Table I):
    - Clinical cases: 3 definitions (levels); excluding child neglect, including neglect with restrictive definition, then with broad definition
- Performance parameters:
  - Validation study: medical chart review
    - All the HDD cases
    - HDD non-cases matched on sex and age classes, 1:2 ratio
  - Parameters estimated for each of the 3 levels of clinical definition: sensitivity, specificity, positive and negative likelihood ratios
- Clinical cases:
  - Report to the judicial authority (RJA) or worrying information (WI) notified in the medical charts
  - Description of cases with no RJA/WI (type and mode of burn, type of violence)

Results - Discussion

- 255 children included
  - 236 with sufficient clinical information to be included in the validation study: 83 > probable > HDD cases, 0 > possible > 153 HDD non-cases (Figure 2)

Discussion - conclusion

- Performances of the algorithm: tremendous variations, particularly of sensitivity, according to the inclusion or not of child neglect; difficult to assess clinically
  - Child neglect: no consensual definition, leading in practice to a considerable latitude for the subjective judgment of the physician who examines the child
  - This clinical difficulty could moreover explain the absence of actions, judicial or administrative, in the cases of isolated possible child neglect
- Perspectives:
  - Application of the algorithm in other French hospital centres, in order to improve the power of results and to discuss a potential + centre effect + in coding
  - Trainings for healthcare professionals, diffusion of detection tools and qualitative studies on obstacles to RJA/WI