

COMMENTARY

Acute Toxicology in the Very Young

“Give us a talk on pediatric toxicology”—a not infrequent request for a session at a general emergency medicine continuing professional development conference. The message conveyed is that there are profound differences between pediatric and adult toxicology cases in the emergency department. There are 2 distinct pediatric toxicology populations, those younger than 6 years and teenagers. Because teenagers are not different from adults, at least from the perspective of emergency department clinical toxicology, that leaves us with the younger than 6 years age group to discuss. Potential differences in this group include unique poisons or increased sensitivity to specific toxins.

So what are the unique poisons? Younger children are prone to ingest nonpharmaceuticals, with the consumer products as the most common. Chief categories within this group are cleaning substances, cosmetics, and personal care products. Other than a few exceptions, these products have negligible toxicity, and the hazardous ones, for example, hydrocarbons and caustics, have a child-resistant closure, a proven preventive intervention [1].

Other common young child ingestants include plants, caustics, and petroleum distillates. Plant ingestion is an issue for infants and toddlers. Preschoolers lose their interest for chomping upon the philodendron that Aunt Daisy gave as a housewarming gift. These children are significantly underendowed from a dental perspective. Because they are molar deficient, they are unable to ingest other than tiny amounts of that enticing plant. This coupled with the inherent low toxicity of houseplants make plant ingestions an exceedingly benign event. Suffice it to say, significant morbidity from the ingestion of a houseplant by a young child is worthy of publication as a case report.

Caustic ingestion is a classic young child clinical toxicology ingestion. Three to 4 decades ago (I am not allowed to say “when I was a resident”) there was always at least one young child in our hospital who was a victim of caustic alkali ingestion. Because of their esophageal injuries, they were long-stay patients requiring multiple surgical procedures and nutritional support. For the past quarter of a century, I have not seen one such patient in the same academic tertiary care hospital.

The reason for this is the legislated requirement for child-resistant closures for these products. The chief clinical controversy, whether to administer glucocorticoids, was largely put to rest decades ago [2]. With caustic ingestion being an infrequent event and because its chief controversy has become a nonissue, there is very little fodder for discussion.

Hydrocarbon ingestion is another classic young child clinical toxicology problem. Its zenith was approximately one half of a century ago, and it was “fueled” by the relatively high penetrance of kerosene in the environment of young children. Indeed, a major multicenter study on hydrocarbon ingestion found mostly kerosene patients, and it came to be known as the “Cooperative Kerosene Poisoning Study” [3]. Although kerosene is rarely used, there are many other hydrocarbon consumer products. These, like caustics, have a mandatory requirement for child-resistant closures. Significant hydrocarbon ingestion has been an infrequent occurrence for the past few decades with reports typically limited to a unique hydrocarbon in a select population [4].

Because the unique poisonings in young children are not of great clinical significance, we must turn to the concept of increased sensitivity of young children to particular toxins. “Give us a talk on—One pill can kill.” Indeed one pill does not kill because pharmaceuticals with that narrow of a therapeutic index would not gain regulatory approval. Examples of highly hazardous medication include chloroquines, sulfonyleureas, opiates, calcium-channel blockers, β -blockers, and tricyclics. For all of these, one pill does not kill.

Epidemiologic sources support the low morbidity of young child poisonings. Each year, the American Association of Poison Control Centers produces an annual report. In 2004, there were 1.25 million poisoning cases younger than age of 6, and there were only 12 deaths, most of which were prehospital [5]. In this database, the incidence of poisoning deaths is 2 orders of magnitude lower in young children compared to adults. Historically, one of the most common causes of young child poisoning death was iron poisoning. For the past decade, this had become extremely uncommon coincident with iron supplements being packaged in blister packs [6].

Because the unique poisonings in young children have become uncommon or are of low acuity and because mortality or even significant morbidity are infrequent events, a “Seinfeldian” observation can be invoked. A talk about pediatric toxicology is “a talk about nothing.” So what do we pediatric toxicologists do? I can assure you that as for so many other issues in life, the teenagers keep us very busy.

References

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