

POISONING

Roy Meadow

A three year old child presented with recurrent bouts of drowsiness. At first the mother denied giving drugs inappropriately but subsequently displayed them together with the container in which she kept them



Accidental poisoning is very common; non-accidental poisoning is uncommon but more serious. Accidental poisoning commonly occurs in toddlers aged 2 to 4 who explore the world with their mouth and try out any medicines, tablets, or other liquids that they find. The parent finds the 3 year old with an empty bottle in the bathroom or kitchen and is unsure how much the child has ingested. Usually the child has swallowed little or nothing and it is a poisoning scare rather than a true poisoning event. Less than 15% of the thousands of children presenting to hospital because of accidental poisoning develop symptoms from the drug; death is extremely rare. Death from non-accidental poisoning is more common.

It is important to be aware that sometimes the parent will have poisoned the child. Therefore the story must always be checked to make sure that it makes sense—could that young a child have had access to those particular tablets? (2 year old children probably cannot reach the top shelf of the kitchen cupboard, neither can they easily unwrap individually foil packed tablets or open a child resistant container. Child resistant containers are not childproof, but they do delay the child's access to the contents).

Detecting non-accidental poisoning

Deliberate poisoning mainly occurs in children below the age of 2½ years. Children who have been poisoned by a parent are likely to present in four main ways.

(1) The child presents as a poisoning scare in which the parent rushes the child to hospital claiming that the child has ingested the drug accidentally.

(2) The child presents with inexplicable symptoms and signs, usually of acute onset. These are summarised in the table together with some of the drugs that have been given intentionally by parents to children.

(3) The child presents with recurrent unexplained illnesses that have the features in the table—for example, recurrent episodes of drowsiness or hyperventilation. These sorts of patients overlap with those for whom parents create false illness (Munchausen syndrome by proxy) by other means.

(4) The child may be moribund or dead when first seen by the doctor.

In all cases check for other forms of abuse and for sudden unexplained deaths in other members of the family.

Motive

The motive for poisoning varies from parents who are vindictive and seeking to teach their child a lesson to parents who are themselves addicted to drugs such as methadone or cannabis and involve the child from an early age, to others who seek to make a healthy child seem to have a chronic illness.

Establishing poisoning

Identifying poisoning can be very difficult even when the doctor is alert to the possibility. Most hospitals have a limited biochemical screen confined to major common drugs for both blood and urine samples, but there is no fully comprehensive toxicology screen available. Therefore the doctor's job is, firstly, to think of possible drugs responsible for the child's symptoms, secondly, to try and identify from the

One of the commonest poisons given by parents is table salt, sodium chloride. Usually a child will excrete excess salt speedily in the urine but if deprived of water will be unable to do so. Then hypernatraemia develops causing initial thirst and irritation followed by drowsiness and seizures. Death occurs in extreme cases. The high serum sodium concentration will be associated with an extremely high sodium concentration in the urine.

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The ABC of Clinical Genetics will continue next week. The seventh article in this series will appear on 10 June.

Symptoms and signs	Drug
Seizures and apnoeic spells	Salt (sodium chloride) Phenothiazines Tricyclic antidepressants Hydrocarbons
Hyperventilation	Salicylates Acids
Drowsiness and stupor	Hypnotics Insulin Aspirin Paracetamol Tricyclic antidepressants Anticonvulsants Phenothiazines Methadone Cannabis
Hallucinations	Atropine-like agents
Bizarre motor movements (myoclonic jerks, tremors, extrapyramidal signs)	Phenothiazines Metoclopramide Antihistamines
Vomiting	Emetics and many other drugs
Diarrhoea	Laxatives, including magnesium hydroxide (Milk of Magnesia) and phenolphthalein Salt
Haematemesis	Salicylates Iron
Ulcerated mouth	Corrosives
Thirst	Salt (with or without water deprivation)
Bizarre biochemical blood profile	Salt Insulin Salicylates Sodium bicarbonate

general practitioner or hospital records any drugs that might be present in that household or to which the mother has access, and then, thirdly, to ask the laboratory to look specifically for that drug in the child's blood. It is worth finding out if the parents' jobs give them access to particular drugs—for example, if a parent is a nurse or works in a hospital. Until such information is available samples of blood, urine, and vomit, if available, should be kept safely in the refrigerator. A few drugs are radio-opaque so that a straight abdominal radiograph may be helpful if taken within a few hours of ingestion.

It is particularly important to preserve samples of blood, urine, and tissues when a child is brought in moribund with apparent encephalopathy, liver failure, bleeding disorder, or bizarre biochemical results. When such children die it is mandatory to inform the coroner. Whenever there is a strong suspicion of poisoning the police should be informed; their regional forensic laboratories can be extremely helpful in analysing samples for they have one of the more detailed screening systems, but even these regional laboratories cannot screen for everything and they do their job best if they are given some idea of the type of drug to look for.

It is more important in the first place to try and

identify the drug than the method by which the parent has given the drug to the child. Sometimes the methods are so bizarre that they defy the commonsense reasoning of a normal person. You just have to accept that parents do incredible things and that a determined parent can find ways of poisoning a child, even when under the closest supervision. Mothers have injected insulin into intravenous lines, poured medicine into a gastrostomy tube, put nasogastric tubes down into the child's stomach to administer particularly noxious solutions that the child would otherwise not take, secreted tablets in their mouth that they have passed on to the child with a kiss, and secreted drugs behind the glass eyeball of the teddy bear they have given to the child. The essential first step is to identify the poison and only then to start puzzling about how the child was given it.

If poisoning is suspected every chance should be given to the parent to explain how the child came to be given the poison. Many parents give drugs, tonics, and folk remedies to their child without telling doctors. Some are fearful of discussing it because they think the doctor would disapprove; others are embarrassed by trying a rather naïve remedy for their child. Therefore the doctor should sympathetically explore with the parent the ways in which a child might have ingested a particular poison. This is particularly important for people from unconventional backgrounds or from different ethnic cultures, who may use many different sources of health advice apart from the NHS.

Poison centres

Poison centres provide good advice about the constituents of many proprietary and household products and also about treatment. They may also be helpful when you are faced with a child who has possibly been poisoned by suggesting ways of identifying the drug.

Poison centres

London, New Cross Hospital, 01 635 9191
Leeds, General Infirmary, 0532 430715
Newcastle, Royal Victoria Infirmary,
091 232 5131
Edinburgh, Royal Infirmary, 031 229 2477
Cardiff, Poisons Information Centre,
0222 709901
Belfast, Royal Victoria Hospital,
0232 240503
Dublin, Beaumont Hospital, 0001 734455

There are six regional forensic laboratories in England and Wales, each of which serves six or more police forces, and the London Metropolitan Police has its own laboratory. In general their work comes directly from the police, though some will accept work from doctors through the local Home Office pathologist. (The name and address of the Home Office pathologist can be obtained from the local coroner's office.)