

Child abuse and non-accidental injury in Hong Kong

The Editorial by Dr Chow¹ gives a timely reminder about the reality, but also the potential challenges and pitfalls of diagnosing child abuse. Fractures are similar to burns in being unequivocal evidence of injury, but it is in the mechanism and circumstances of the injury that abuse may or may not play a part.

In medicine, the following definition based on Hobb's recommendations² is commonly used:

- (a) Abuse is a willful and deliberate act by a caregiver resulting in physical injury of the child.
- (b) Neglect is the failure of the caregiver to take minimal precautions for the proper supervision of the child's health, thus failing to protect the child from injury.
- (c) Accident is a lapse in the usual protection provided to the child due to circumstances beyond the reasonable control of the caregiver.

One provocative letter³ in *Burns* suggested that any adult carer of a child younger than 1 year who has sustained a burn injury should be charged with neglect. My published response at that time was, and persists, that accidents do happen and an injury per se cannot provide evidence of non-accidental causation.⁴ In the same response I raised concerns, derived from my experience as an expert witness in cases of suspected child abuse by burning, that whilst the missed diagnosis of child abuse is a tragedy, so too, is mis-diagnosis.

I have now been in Hong Kong for 6 years and have been involved in the investigation of seven cases of actual or alleged child abuse by burning. In one case, a child sustained 60% partial-thickness burns, having been left in a hot bath by her mother. The mother, however, was diagnosed with psychotic depression and was admitted for psychiatric care and not charged. Three more children were involved in another incident, but the perpetrator, the father, was not charged with

child abuse as he was convicted on two counts of murder and three of attempted murder in the notorious 'Black Magic' killings [HKSAR v Duong Vinh Cuong (HCCC 176 of 2003)]. A fifth case which came to court involved an extensive burn that led to near fatal complications for a young child.⁵ In this case, the accused pleaded guilty to negligence. In two further cases, parents accused maids of causing non-accidental burns, but whilst the allegations were investigated, no charges were brought.

During the past 6 years, we have admitted 250 children to the Prince of Wales Hospital with burns, so our incidence of child abuse by burning is 2.8% of admissions. Is this a 'gross underestimate' of the actual problem in Hong Kong, or do local child abusers avoid burning their children? For those of us in burn care in Hong Kong this is a very important question to explore, and Dr Chow's article¹ reminds us that we cannot be confident we have the answer yet.

A Burd, MD, FHKAM (Surgery)
(e-mail: andrewburd@surgery.cuhk.edu.hk)
Division of Plastic and Reconstructive Surgery
Department of Surgery
Prince of Wales Hospital
Shatin, Hong Kong

References

1. Chow CB. Underreported, underacknowledged: child abuse can no longer be ignored. *Hong Kong Med J* 2005;11:429-30.
2. Hobbs CJ. ABC of child abuse. *Burns and scalds*. *BMJ* 1989;298:1302-5.
3. George A, Ebrahim MK. Infant scald burns: a case of negligence? *Burns* 2003; 29:95.
4. Burd A. Paediatric burn prevention. *Burns* 2003;29:596-8.
5. Burd A, Zeng A. Changing perspectives in paediatric burns care. *Hong Kong J Paediatr (new series)* 2003;8:272-82.

Antidotes for tetramine poisoning

To the Editor—I read with interest the article by Poon et al¹ about a case of tetramine poisoning in Hong Kong, and agree with the authors that the mainstay of treatment includes early gastro-intestinal tract decontamination, seizure control, and various supportive measures.

I have two comments. First, sodium dimercaptopropane sulphate (Na-DMPS) has been used as an empirical antidote for tetramine poisoning with favourable results in animal studies, case series, and controlled trials in China. Although it is not registered in Hong Kong and was previously unavailable for use, it has been a stocked antidote in a number of acute hospitals since mid-2005.

Another empirical antidote is pyridoxine: multiple case series have demonstrated its effectiveness in seizure control and in reducing mortality.²⁻⁴ The best results are observed when using pyridoxine together with Na-DMPS.³ The exact mechanism of the antidotal effect of pyridoxine in tetramine poisoning is unknown, but its efficacy in terminating refractory seizure is well-known in patients with isoniazid overdose. Pyridoxine acts by increasing the availability of its active form, pyridoxal phosphate, which is a cofactor in the conversion of glutamic acid to gamma-aminobutyric acid (GABA).⁵ Since tetramine is a non-competitive and irreversible GABA antagonist, it seems reasonable that pyridoxine would be effective in tetramine poisoning. The empirical dose of pyridoxine used in tetramine poisoning is 5 g intravenously in adults or 50 mg/kg intravenously in

children. This dose is considered safe in light of previous experience with pyridoxine usage in isoniazid poisoning.⁵

CK Chan, FHKCEM, FHKAM (Emergency Medicine)
(e-mail: ck7477@yahoo.com)

YC Chan, FHKCEM, FHKAM (Emergency Medicine)
Hong Kong Poison Information Centre
United Christian Hospital
Kwun Tong
Hong Kong

References

1. Poon WT, Chan K, Lo MH, Yip KK, Lee T, Chan AY. A case of tetramine poisoning: a lethal rodenticide. *Hong Kong Med J* 2005;11:507-9.
2. Whitlow KS, Belson M, Barreto F, Nelson L, Henderson AK. Tetramethylenedisulfotetramine: old agent and new terror. *Ann Emerg Med* 2005; 45:609-13.
3. Qiu Z, Lan H, Zhang S, Xia Y, Huang S. Antidotal effects of vitamin B(6) and sodium dimercaptopropane sulfonate on acute poisoning with tetramethylene disulphotetramine in animals [in Chinese]. *Zhonghua Nei Ke Za Zhi* 2002;41: 186-8.
4. Chiu PY. Benzodiazepines, vitamin B6, and naloxone in the treatment of tetramine poisoning, an analysis of 348 cases [in Chinese]. *Chin J Crit Care Med* 2003;23:592.
5. Lheureux P, Penaloza A, Gris M. Pyridoxine in clinical toxicology: a review. *Eur J Emerg Med* 2005;12:78-85.