

Two instances of chinese herbal medicine poisoning in Singapore

Phua D H, Cham G, Seow E

ABSTRACT

Datura metel L. (Yangjinhua, 洋金花) is a toxic herb that contains anticholinergic compounds. Inappropriate consumption of this herb could result in anticholinergic poisoning. Clinical features of such poisoning have not been previously described. We report two such cases. Both patients had taken brews of *Datura metel L.*; and developed poisoning soon afterwards. Prominent clinical features included confusion, dilated pupils, absence of sweating, and the absence of sluggish bowel sounds. No flushing of the face or skin was detected in either case. Both patients recovered fully within 12 hours with supportive measures, and no gastric elimination or antidote was used. The different names ascribed to *Datura metel L.* in chinese medicine can be confusing; this confusion resulted in the poisoning of one of our patients. The clinical features of *Datura metel L.* poisoning and concerns over inappropriate uses of herbal medicine are discussed.

Keywords: complementary and alternative medicine, *Datura metel L.*, herbs, poisoning, traditional chinese medicine

Singapore Med J 2008;49(5):e131-e133

INTRODUCTION

Datura metel L. (Yangjinhua, 洋金花) is a common Chinese herb often used in traditional Chinese medicine (TCM) for indications like asthma, chronic bronchitis, chronic pain, anaesthesia, seizures and coma.⁽¹⁾ The flowers and seeds of this herb contain anticholinergic substances; viz, hyoscyne (0.10%–0.45%) and hyoscyamine (0.01%–0.37%).⁽¹⁾ Consumption of this herb has resulted in anticholinergic poisoning of patients in Hong Kong and Taiwan.^(2,3) Before this, there had been no previous case reports of the clinical features for *Datura metel L.* poisoning. There had also been no previous report of accidental herbal poisoning in Singapore. We report two cases of such poisoning in Singapore.

CASE REPORTS

Case 1

A 42-year-old Chinese woman had suffered from schizophrenia since her early 20s. Although she had not been treated, her condition had remained stable. She and her family had moved from Jilin province, China,



Fig. 1 Photograph shows the remnant sample of *Datura metel L.*



Fig. 2 Close-up photograph of the remnant sample of *Datura metel L.*

to Singapore six years ago. Her mother believed that *Rhododendron molle* (Naoyanghua, 闹羊花) could cure schizophrenia. She visited various Chinese medicinal halls in Singapore looking for this herb. *Datura metel L.* (Yangjinhua, 洋金花) in certain TCM circles is also known as “Naoyanghua” and the patient’s mother was sold 20 g of *Datura metel L.* She was told by the medicinal hall which sold her the herb, that it was “Naoyanghua”. The patient’s mother boiled half the amount of herbs she had bought and asked the patient to drink the brew. Within 30 minutes, the patient experienced giddiness. The mother noticed that she looked dazed. The patient’s eyes then rolled upwards and both her upper limbs stiffened. Two hours later, the patient’s family decided to seek medical help.

The patient’s initial vital signs on arrival at the emergency department were: heart rate 144/min; respiratory rate 19/min; blood pressure 142/85; temperature of 36.8°C and oxygen saturation of 100%. The patient appeared disorientated with empty stares. She

Emergency Department,
Tan Tock Seng Hospital,
11 Jalan Tan Tock Seng,
Singapore 308433

Phua DH, MRCS, FAMS, FCEM
Associate Consultant

Cham G, FRCS, FAMS
Consultant

Seow E, FRCS, FAMS
Senior Consultant

Correspondence to:
Dr Phua Dong Haur
Tel: (65) 6357 8777
Fax: (65) 6254 3772
Email: phuadh@yahoo.com

Table I. Signs and symptoms of anticholinergic poisoning

Central effects
Delirium
Drowsiness
Agitation
Visual hallucination
Ataxia
Myoclonus jerking
Convulsion
Coma
Peripheral effects
Dilated pupils
Dry mouth
Flushing of skin
Dry skin
Hyperthermia
Sinus tachycardia
Cardiac conduction abnormalities
Dysrhythmia
Urinary retention
Paralytic ileus

had non-purposeful movements of all four limbs. There was absence of sweating. No flushing of her face or skin was noted. Her eyes were open spontaneously, and there was no verbal response from her, but she was able to localise the pain. Her pupils were 6 mm in diameter with sluggish response to light. Heart and lung examinations were normal. Her abdomen was soft but bowel sounds were absent.

Full blood count showed a white cell count of 9,700/mm³, neutrophil percent at 72.8%, haemoglobin of 11.2 g/dL and platelet count of 368,000/mm³. Urea, electrolyte studies and arterial blood gas analysis were normal. Electrocardiogram (ECG) showed sinus tachycardia. Computed tomography (CT) of the head was normal. She recovered four hours after being warded but was kept under observation and discharged the following day. We obtained the remnant portion of the herb from the patient's mother (Figs. 1 & 2). We had difficulty identifying the herb initially, but after approaching several TCM practitioners, one finally managed to identify it as *Datura metel L.* We confirmed the identity of the herb from another independent source.⁽⁴⁾

Case 2

A 59-year-old Chinese Singaporean man had gone to Harbin, China, five months prior to his presentation. He had bought some herb during that trip. On the day of presentation, he had brewed the herb and drank it. He felt unwell 30 minutes later. It is not known how much of the brew he had consumed. He developed blurring of his vision and weakness in his lower limbs. He apparently crawled out of his bedroom to his living room, where his family found him. They also noticed that he was confused. He arrived in the emergency department two hours after drinking the brew.

His initial vital signs on arrival to the emergency department were: heart rate 81/min; respiratory rate

18/min; blood pressure 147/64; temperature of 36.8°C and oxygen saturation of 97%. He was observed to be disorientated with non-purposeful movements of his upper limbs. There was an absence of sweating. There was no flushing over his face or skin. His eyes were spontaneously open and he had no verbal response. His pupils were both 5 mm in diameter with a sluggish response to light. Heart and lung examinations were normal. His abdomen was soft and his bowel sounds were sluggish.

Full blood count, urea and electrolyte studies, arterial blood gas analysis were found to be within normal limits. ECG was normal. CT of the head did not detect any abnormality but magnetic resonance imaging was reported to show leptomeningeal enhancement. However, a lumbar puncture performed subsequently did not reveal any abnormality. He was warded but recovered after eight hours, although he was unable to recall the events that had brought him to the hospital. He was discharged two days later. His son later told the author that the herb the patient had consumed was *Datura metel L.*

DISCUSSION

Datura metel L. is a useful herb when used appropriately. With its anticholinergic properties, it makes pharmacological sense that TCM practitioners have been using it to treat asthma and chronic bronchitis. However, its recommended oral dosage in TCM practice is only about 0.3–0.5 g;⁽⁵⁾ because the dose used for therapy is so small, the risk of an overdose, and the occurrence toxicity, is low. Although *Datura metel L.* is usually known as Yangjinghua, it is also called Naoyanghua in certain parts of China, despite the latter term being the common name for *Rhododendron molle*. As a consequence, one of these herbs is sometimes mistaken for the other.^(3,4) This explains why the Chinese medicinal hall sold the wrong herb to the mother of the Case 1 patient.

Patients with toxicity from *Datura metel L.* present with anticholinergic toxidrome,⁽¹⁾ more specifically, they suffer antimuscarinic effects (Table I). Both our patients displayed features of anticholinergic toxidrome shortly after consuming brews made from the herb. No antidote was given in both cases. In both, the onset of symptoms was about 30 minutes after ingestion and these symptoms resolved after a few hours. Their presentations are in keeping with the known pharmacokinetic properties of the active anticholinergic ingredients found in the herb – hyoscine (onset 30 minutes, half-life three hours) and hyoscyamine (onset 30 minutes, half-life 3–5 hours).⁽⁶⁾ There were no previous reports of death from *Datura metel L.* poisoning, but fatalities from another related anticholinergic herb, *Datura stramonium* (Jimson weed) poisoning have been reported.^(7,8) We suspect that if our patients had ingested larger doses of the herb, the outcome could have been different.

Complementary and alternative medicine (CAM) is widely used by our local population. CAM includes

complete medical systems like TCM, ayurvedic medicine (biological products like health supplements), manipulative or body-based systems like chiropractic, and energy-based systems like reiki. A survey among patients with chronic illnesses showed that about 30% of these patients would have used some form of CAM within the last one year of the survey.^(9,10) However, community studies of healthy individuals showed that up to 76% of people surveyed actually used CAM within the last one year of the survey, and the Chinese were the most frequent users of CAM, with TCM being the most frequent form of CAM used.⁽¹¹⁾ Healthcare workers should be cognisant of the possibility of our patients using CAM. These CAM products can interact with our prescribed treatment and produce undesirable side effects, such as, delaying or modifying orthodox treatment or even resulting in adverse herb-drug interactions. It would be useful to enquire if patients are using CAM, as their answers may provide important clues to strange illnesses or unusual disease manifestations.

The two cases illustrate the danger of wrongful TCM herbal use. There have been similar experiences reported in Hong Kong and Taiwan.^(2,3) It is our opinion that further cases of TCM herb poisoning can be prevented by education and more effective regulation. Many people perceive herbal medicine, proprietary medicine and supplements to be safe since they are natural. The public needs to be educated that this is not always true, as all substances when consumed in sufficiently large amounts can result in toxicity. Instead of self medicating with herbal medicine, the public should be encouraged to seek the advice of licensed TCM practitioners when using herbal medicine to treat illnesses. We recommend that efforts should be put in place to educate the public about the uses of CAM. There are about 10,000 types of herbs listed in Chinese materia medica, and about 1,000 of them can have toxic effects if used inappropriately or in the wrong dosage.^(1,12) Although Chinese proprietary products have been regulated locally since September 1999, there is minimal control over TCM herbs.^(13,14)

Currently, only herbs that contain ingredients found in the Poisons Act are regulated. *Datura metel L.* contains both hyoscyamine and hyoscyamines, both of which are controlled under the Poisons Act; hence *Datura metel L.* should be regulated, yet the mother of the Case 1 patient was able to obtain it easily. Herbs that may be highly toxic but do not have ingredients listed in the Poisons Act are not regulated. An example is *Rhododendron molle*, which is more toxic than *Datura metel L.* It can cause death via hypotension, bradycardia and coma.⁽¹⁾ It is not regulated as its ingredients are not listed in the Poisons Act. It was, in some ways, fortuitous that Case 1's mother was sold *Datura metel L.* rather than *Rhododendron molle*.

Wrong herbs may be obtained when the lay public purchases herbs without consulting trained herbalists or

TCM practitioners. This may be due to TCM herbs being wrongly identified due to the confusion over their names or the similarities of appearance of different herbs. It could also be due to the erroneous substitution of one herb for another or the contamination of a batch of herbs by other herbs. In our opinion, TCM herbs are best dispensed by licensed TCM practitioners, or trained and certified herbalists, just as western medicine are dispensed by qualified physicians or pharmacists. The dispensing of western medicine is regulated because the potential danger that can arise from the medicinal and toxicological properties of western medicine is recognised. As more people turn to TCM and other forms of CAM for their illnesses and well being, we should also be cognisant of the potential danger that can arise from the medicinal and toxicological properties of TCM herbs. Similar stringent requirements in dispensing TCM herbs should be applied to protect the public.

ACKNOWLEDGEMENTS

We thank Ms Khoo CG of Kweilin Acupuncture Clinic and Medical Hall, Ms Dora Ng and Mr Chew CF of Complementary and Integrative Medicine Clinic, TTSH and the staff of Zhong Hua Hospital for their help in identifying the herbs. We also thank Ms Chu SS of Health Sciences Authority, Singapore, for her help in our queries with regard to the various herbs and the Poisons Act.

REFERENCES

1. Yang CL. Toxic Drugs Herbal. 1st ed. Beijing: Chinese Medicine and Materia Medica Press, 1993.
2. But PP. Herbal poisoning caused by adulterants or erroneous substitutes. *J Trop Med Hyg* 1994; 97:371-4.
3. Chan TY. Anticholinergic poisoning due to Chinese herbal medicines. *Vet Hum Toxicol* 1995; 37:156-7.
4. Hong Kong Chinese Medicine Merchant Association. Hong Kong Commonly Confused Chinese Medicine. Hong Kong: Hong Kong Chinese Medicine Merchant Association Ltd, 2005.
5. Li Shizhen. [The Chinese Herbal Medicine Materia Medica]. Beijing: Huaxia Publishing, 2004. Chinese.
6. Olson KR, ed. Poisoning & Drug Overdose. 4th ed. New York: McGraw-Hill, 2004.
7. Boumba VA, Mitselou A, Vougiouklakis T. Fatal poisoning from ingestion of *Datura stramonium* seeds. *Vet Hum Toxicol* 2004; 46:81-2.
8. Urich RW, Bowerman DL, Levisky JA, Pflug JL. *Datura stramonium*: a fatal poisoning. *J Forensic Sci* 1982; 27:948-54.
9. Ng TP, Tan CH, Kua EH. The use of Chinese herbal medicines and their correlates in Chinese older adults: the Singapore Chinese Longitudinal Aging Study. *Age Ageing* 2004; 33:135-42.
10. Ng TP, Wong ML, Hong CY, Koh KT, Goh LG. The use of complementary and alternative medicine by asthma patients. *QJM* 2003; 96:747-54.
11. Lim MK, Sadarangani P, Chan HL, Heng JY. Complementary and alternative medicine use in multiracial Singapore. *Complement Ther Med* 2005; 13:16-24.
12. Leung AY. Traditional toxicity documentation of Chinese Materia Medica—an overview. *Toxicol Pathol* 2006; 34:319-26.
13. Koh HL, Woo SO. Chinese proprietary medicine in Singapore: regulatory control of toxic heavy metals and undeclared drugs. *Drug Saf* 2000; 23:351-62.
14. Yee SK, Chu SS, Xu YM, Choo PL. Regulatory control of Chinese Proprietary Medicines in Singapore. *Health Policy* 2005; 71:133-49.