MEDICAL HAZARDS OF DRUG ABUSE

Chao Tzee Cheng

INTRODUCTION

The drug scene is never stable. It shifts from one drug to another depending on the availability of the drugs, effective control and preventive measures and the abuse of therapeutic psychoactive and analgesic drugs. The trend in drug abuse is multiple drug use in the same person. When a drug addict finds that one drug is not available, he shifts to another. And also the tendency is to use multiple drugs simultaneously or in sequence to achieve the desire effect. Effective control on one drug in the absence of similar control on others will lead to increased non-medical use of other drugs with fewer or more problems than the controlled drug.[1] Medical Practitioners should be aware of the potential addictive qualities of the drugs they use and be prudent in their prescribing habits.

Singapore is experiencing such a shifting drug scene. In the discussion on Medical Hazards of Drug Abuse, I would relate with the analysis of the chronology of principal drug of abuse in Singapore (Table I) and examine the effect of Governmental action and medical influence on the changing habits of drug abuse, in order to realise the role the medical profession plays in the curbing of the drug menace.

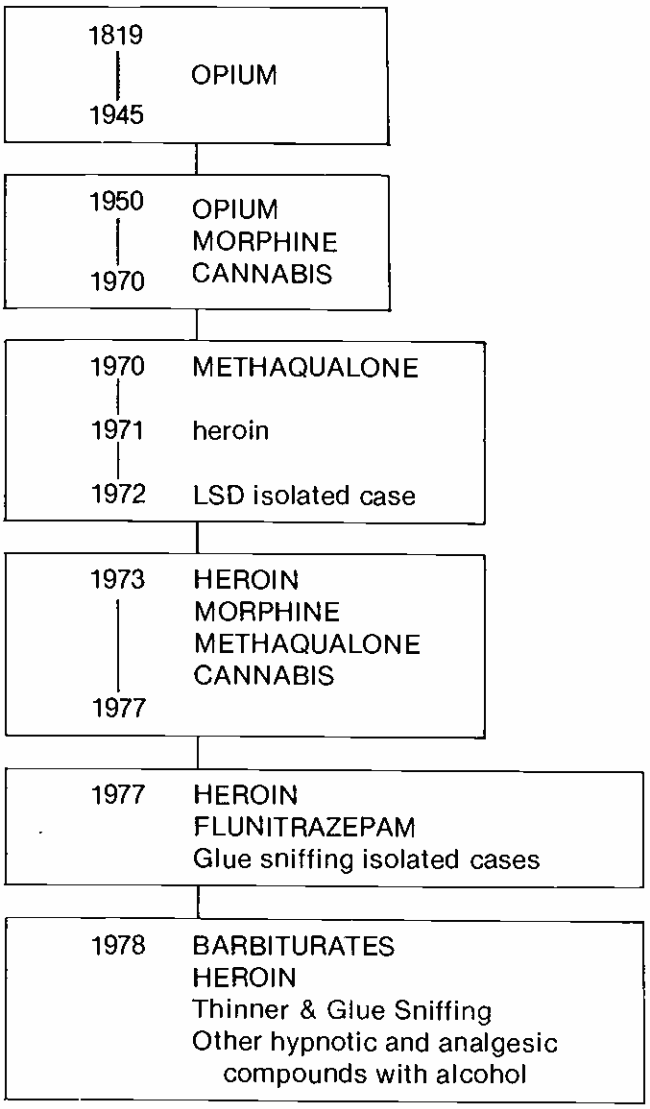
IN THE BEGINNING

The first drug of abuse that appeared in Singapore was opium. After the signing of Singapore's foundation treaty between Temenggong Abdul Rahman and Sir Stamford Raffles in February 1819, among the gifts exchanged was opium.[2] In the early history of Singapore, immigrant Chinese and Indian labourers were made to work 10-12 hours a day and housed 8 to 10 people in a room devoid of family life, recreational, social or medical amenities. In such circumstances, opium smoking became the panacea for all their ills and to aggravate matters it was actively encouraged by the contractors who were agents for opium farmers in most cases. The Government took over the sale of opium by establishing the Monopolies Department in 1910 and right up to the start of the Second World War opium could be brought at the Government shops.

Department of Pathology
Singapore General Hospital
Outram Road, Singapore 3.

Chao Tzee Cheng, MBBS, DCP, D. Path, DMJ, FCLM, FRCPA, FCAP, MRC Path. AM, PPA
Senior Forensic Pathologist

TABLE I
CHRONOLOGY OF PRINCIPAL DRUGS OF ABUSE IN SINGAPORE



OPIUM was smoked through a pipe by burning it in a bowl at the end of the pipe over a lamp. Besides being an effective pain killer, opium also suppressed the drives that motivated the individual to appease hunger, seek sexual gratification and response to provocation with anger.[3] The well known signs of the opium smoker were apathy, lethargy, respiratory depression, orthostatic hypertension, vasodilation, constriction of the pupils and a decreased mobility of the digestive tract with constipation. Tolerance and physical dependance developed after regular use. A characteristic abstinance syndrome occurs when the drug was withdrawn. The subject suffered from severe abdominal cramps, diarrhoea, sweating, tearing, salivating, muscle aches and pain and mental agitation.

Chronic Opium Smoking could also lead to development of chronic obstructive lung disease terminating in respiratory failure and Cor Pulmonale,[4] The lungs showed severe anthracotic pigmentation, destructive emphysema, chronic bronchitis and obliterative broncholitis[5]

POST-WAR PERIOD

After the second World War the British Military Administration by Proclamation No. 45 entitled The Opium and Chandu Proclamation made the possession of prepared and raw opium and smoking utensils an offence in 1946. There was then an estimated 30,000 addicts requiring about 3,000 to 4,000 lbs of opium, and this was the time that traffickers formed big syndicates to smuggle opium into Singapore.

MORPHINE started to appear as a drug of addiction in the 1950s, when morphine dens started sprouting up in China town, with clientele of seamen and opium addicts who switched to morphine for reasons of time, fear of detection and economy.[6]

Administration of Morphine was by way of subcutaneous injection. The unsterilized techniques of the addicts left numerous scars on the skin over buttock, thigh and the deltoid region. The physiological effect and physical dependance were similar to the other opiates — opium and heroin, but the injection technique and the communal use of the common needle brought further complications of skin abscesses, hepatitis, malaria, tetanus and endocarditis.

The third major drug of abuse in this period was ganja or cannabis. CANNABIS was smoked in form of reefers or taken orally. Although there have been heated debates on the effect of cannabis on man, it was conclusively stated that cannabis significantly impairs cognitive function, the impairment increasing with the size of the dose, the complexity of the task or both.[7] At high dose levels a state of acute intoxication was usually seen, the major manifestations of which often include paranoid ideas, illusions, hallucinations, depersonalization, delusion, confusion, restlessness and excitement. Occasionally, a state of toxic psychosis was seen with delusion, disorientation and marked clouding of consciousness.

THE CHANGING SCENE

For a long period, the main drugs of abuse remained at these three, opium, morphine and cannabis. The authorities were satisfied that the drug problem was under control and it was thought to be a dying one as social conditions improved. There were official estimates of numbers of addicts in each group and the majority

of the addicts were above 40-50 years old and chiefly opium and morphine addicts.

However, because of the availability and low price of the drugs; cannabis cost $1 a 'kartoo' which could be made into 4 reefers; and morphine at 40c a jab, quite a number of young people were hooked on to these drugs in the late 1960s, as revealed in the history of addicts arrested later on. In the meantime a new hypnotic drug was on the market — METHAQUALONE, a synthetic hypnotic without analgesic property. It was quick in action without hangover effects and was said to be a better hypnotic than barbiturate. The action of methaqualone was selective, on the ascending reticular activating systems blocking the arousal mechanism thereby inducing sleep. Other centres and the cerebral cortex were relatively unaffected. The barbiturates depressed unselectively all levels of the central nervous system.

There were five proprietory preparations available in Singapore then. They were Mandrax, Methadramine, Melsedin, Hyminal and Nobedorm. Mandrax with Mx and Melsedin with M scored on the tablets were the more popularly prescribed drugs then and later on became well known by these characteristics. Youngsters began to consume them in the mistaken belief that the letter M stood for Morphine.

Then came the explosive revelation that school children were involved in drug taking in late 1970, when 3 school girls were found unconscious inside the school toilet under the influence of methaqualone.

Subsequent police investigations uncovered an increasing numbers of youths indulging in abuse of cannabis and methaqualone. These included school drop-outs from poor homes as well as youths from middle class and affluent families. The numbers kept on escalating and drug syndicate set up Mx factories in nearby countries to keep up supplies. The number of petty crimes and thefts connected with drug abuse increased and there were more reports of girls being sexually molested or raped under the influence of methaqualone.

Methaqualone abuse produced a dreamy state in the abuser, tremor, numbness, a 'floating on air' feeling, stammering, and loss of will power. In such a state, a person was liable to meet with accidents and a girl liable to fall victim to her companions. Adverse reactions such as blood dyscrasia, circulatory collapse, convulsions and neuropathy were also reported.

The Government acted swiftly to bring the situation under control by introducing the Misuse of Drugs Act in 1973. Stiff penalties were imposed on the trafficking, unauthorised manufacture, import and export of controlled drugs.

GETTING HIGHER

All this while, the abused drugs remained at "soft" drugs. "Hard" narcotics like heroin, and hallucinogens like LSD were only occasionally seized from passing tourists. Although heroin had been the prevalent drug of abuse in Hong Kong for sometime, it did not catch on in Singapore before 1973. But since 1973, there was indication that local youths were indulging in the abuse of heroin. Several factors contributed to this change. The closeness to the Golden Triangle — the tri-border area of Thailand, Burma and Laos, which was the main source of opium, heroin and other opiates; the withdrawal of American troops from Vietnam causing a diversion in market for heroin; the change in trafficking routes; the increased tourist trade; the disco fever and the importation of foreign music groups with bad habits; the more affluent society; all these had undue influence on our restless youths seeking excitement. There was a dramatic and almost unbelievable jump in arrests relating to heroin offences from 1973 to 1976 (Table II). The Government acted to curb this rise by imposing the death penalty on the trafficking of over a certain amount of controlled drugs and mounted an "Operation Ferret" in April 1977 to arrest the pushers and to send the abusers for rehabilitation.

Table II

Arrests for suspected Heroin offence			
1973	:	:	3
1974	:	:	110
1975	:	:	2,263
1976	:	:	5,682
1977	:	:	19,888

HEROIN posed a much greater danger to the life of addicts and a greater disruption to the society than other drugs. The heroin available locally was No. 3 Heroin, a brownish powder that contained about 30-35% heroin and other impuritives for smoking as compared to the pure white powder of No. 4 heroin available in US and Europe containing about 3% heroin for injections. Heroin here was smoked through a "spiked" cigarette, or placed on tin foil paper and heated, then sucking the smoke from a straw termed 'chasing the dragon' or through an empty match box cover termed 'playing the mouth organ'.[8]

Like all opiates, heroin abuse led to psychiatric and physical dependence, tolerance and strong withdrawal symptoms. Further, intravenous

injections could bring accompanying hazards, like transmission of communicable diseases e.g. malaria and viral hepatitis, infection and thrombophlebitis leading to sclerosis of veins. Singapore addicts had a more recent history of intravenous injection thus the thrombosed veins were of a lesser severity than addicts in the West. The other complication with injection was the formation of skin abscesses in subcutaneous injection and foreign body granlomata in lung, spleen and kidney due to the impurities in the drug. One of the most dreaded adverse reaction of heroin injection was Acute Drug Reaction. This could happen to new comers as well as hardened addicts. There was acute pulmonary oedema, causing foams in the mouth and death occured so quickly that sometimes the needle was still in the vein.[9] Also addicts in a drugged state were liable to accidents. A number of traffic, industrial, domestic and other accidental deaths were associated with heroin abuse. In their periods of depression, addicts often were in a state of frustration and hopelessness, having the feeling of being a failure and unable to achieve great things in life that they commited suicide. There were many cases of suicides among ex-addicts either freely or in custody.

SIDE-STEPPING

The success of Operation Ferret and the death penalty for drug trafficking had suppressed the abuse of heroin. Addicts now turned to other drugs for their needs. FLUNITRAZEPAM in the commercial preparation Rohypnol was one such drug.

It was a mild hypnotic sometime used in the therapy of drug addiction. However, because of its property and effects it had become a drug of addiction itself, usually used in combination with alcohol. This was brought under control of the Misuse of Drugs Act in January 1978.

Then the attention turned to Barbiturates. Though barbiturates appeared for a short time in the drug abuse market when drug syndicates substituted barbiturates for methaqualone in fake Mx pills, it did not catch on as addicts switched on to the more potent heroin. Now that the heroin source was drying up and the punishment became so severe that addicts naturally turned to drugs that were easier to get at. Short and medium acting BARBITURATES such as secobarbital, amylobarbitol and pentobarbital were used in addicition rather than the long acting phenebarbital. Tolerance, psychic and physical dependance develop with prolonged usage and abstinence symptoms appeared when the drug was withdrawn.

Barbiturates have some stimulant effects but their sedative properties are more prominent. The development of tolerance is uneven. In some individuals, tolerance to the stimulating effects may develop less rapidly than tolerance to depressant effects. Thus with a constant dosage, the drug user may find that he needs to take more in order to achieve the desired sedative effect. On the other hand only a moderate tolerance is ever developed to certain depressant effects and thus to the amount necessary to cause death.

Toxic effects of barbiturates include ataxia, decreased muscle coordination rendering the individual accident prone. There is also an impairment of mental ability, confusion, loss of emotional control, poor judgement and a risk of sudden overdosage due to the delayed onset, a drug distorted conception of time and the relatively lmited tolerance to the lethal dose. Occasionally a toxic psychosis may develop. Abstinence symptoms include anxiety, tremor and twitching of muscles, dizziness, distortion of visual perception, nausea, vomiting, insomnia, loss of weight, hypotension, convulsions of the grand mal type and a delirium resembling delirium tremens or a major psychotic episode. Paranoid reactions, reactions resembling schizophrenia with delusion and hallucination, a withdrawn smi-stupurous state and panic have been observed.[19]

There was a definite increase in the amount of illegal barbiturates seized and biological samples sent to the Department of Scientific Services for analysis last year. That was sufficient proof that barbiturates abuse was on the increase unless we curb it. There were also reports of break-ins to clinics in search of barbiturates.

NEW TREND

Another disturbing new trend is addicts are turning to thinner and glue sniffing. These VOLATILE SOLVENTS such as acetone and toluence are used mainly by adolescents. They are central nervous system depressants, inhalation may initially produce mild euphoria and exhilaration, this is followed by confusion, disorientation and ataxia. The subjects may behave as though they are drunk.[11] In their intoxicated state, they exhibit recklessness and loss of self-control leading to accident. There are cases of youths dropping into the sea while fishing and drowned, sleeping on the railway track and be run over by train after a thinner sniffing session and suffocated while sniffing glue.

Other analgesic and muscle relaxants such as compound soma (Carisoprodol) are being abused with alcohol. Indeed, the addicts are desparate enough to try anything that has psychoactive properties with or without alcohol, as the controlled drugs are becoming unobtainable due to strict enforcement of the Law.

POST-MORTEM CASES

It is estimated that a drug addict has twenty times more chance to die from drug toxicity, overdose, complications and accidents than an ordinary person. From the records of the Department of Pathology, Singapore, there is a slow but steady increase of deaths due to or associated with drug abuse. Routine toxicological examination on accidental deaths revealed that many victims had various drugs in their systems.

In the analysis of deaths associated with morphine (Table III, A, B, C) it is noted that most of the victims are over 50 years old and most died of natural causes like Cor Pulmonale, Respiratory failure and Bronchopneumonia. Since all opiates are metabolished and excreted as morphine it is not possible to tell whether the victims abused opium, morphine or heroin during life. But from the post-mortem appearance and mode of death, it can be surmised that elderly victims are remnants of the opium era whereas the younger victims are subjects of heroin abuse dying from accidents or acute drug reaction with acute pulmonary oedema.

Barbiturate abuse presents a different picture (Table IV, A, B, C). Most of the victims are young. Whereas those that died of barbiturates overdose before 1976 are all suicide cases, more and more barbiturate deaths in later years are due to accidents, overdose and drug reaction. That included tourists that died in their hotel room and who were pleasure seekers.

Table III A Morphine (Opium, Heroin) Associated Deaths

Year	No. of Deaths	Male	Female
1976	3	3	—
1977	18	17	1
1978	21	20	1
Total	42	40	2

Table III B Age Distribution

18 — 20 years	:	5
21 — 30 years	:	7
31 — 40 years	:	3
41 — 50 years	:	3
51 — 60 years	:	5
>61 years		16
Age unknown	:	3
Total		42

TABLE III C Circumstances of Death

Year	Suicide	Natural Causes	Accident	Found Dead	Acute Drug Reaction	Murder
1976	1	—	—	—	2	—
1977	—	7	2	2	7	—
1978	4	8	5	3	—	1

Table VI A Deaths due to Barbiturates

Year	No. of Deaths	Male	Female
1976	9	3	6
1977	8	4	4
1978	13	9	4
Total	30	16	14

Table IV B Age Distribution

17 — 20 years	:	4
21 — 30 years	:	16
31 — 40 years	:	4
41 — 50 years	:	4
>50 years	:	2
Total	:	30

Table IV C Circumstances of Death

Year	Suicide	Found Dead	Accidents
1976	9	—	—
1977	4	1	3
1978	4	7	2
Total	17	8	5

MEDICAL PRACTITIONERS' ROLE

Having understood the fluidity of the drug scene and the ability of drug addicts to seek new drugs to satisfy their need, we as medical practitioners should exercise care and control in therapy with psychotropic substances. Collective effort is needed to fight the drug manace. While the authorities are actively putting out the blaze by enforcing the prevention, control and rehabilitation of drug addiction, we must not add new fuel to the fire. There are two treaties that govern the drug laws of the international community — the Single Convention on Narcotic Drugs of 1961 and the Convention on Psychotropic Substances of 1971. The aim of these treaties is to make narcotic and psychotropic substances available for therapy, while, at the same time, preventing their abuse. In evaluating the risk benefit of barbiturate use, the US National Institute on Drug Abuse (NIDA) analysed the situation and collected the opinions from experts and produced a document entitled "Sedative Hypnotic Drugs: Risks and Benefits" for information to the medical profession. In the U.K. there is the Campaign on the Use and Restriction of Barbiturates (CURB) which discourages doctors from prescribing barbiturates as hypnotics and sedatives and also to discourage patients from pressing the doctors for such prescriptions.[12]

The Singapore Medical Association is performing similar duties here cooperating with the Government by informing the members on the use and misuse of Barbiturates. It should further collect information on other drugs that may lead to addiction and disseminate the knowledge among members. But above all, it is the duty of each medical practitioner to exercise care and control in the prescription of sedatives and hypnotics for therapy without yielding to the pressure and demand of patients. With the concerted efforts of the medical profession and Government, we hope to see a true decline and demise of the drug menace.

REFERENCES

1. WHO Expert Committee on Drug Dependance Twentieth Report — Technical Rport Series 551, World Health Organisation, Geneva p. 30-31 1974.
2. New Nation, p. 7 July 31, 1973.
3. The Pharmacological Basis of Therapeutics, Goodman L S & Gilman A, New York, MacMillan 1970
4. Da Costa J L, Tock E P C and Boey H K : Chronic Obstructive Lung Disease in Singapore. American Review of Respiratory Diseases, 106: 246-259, 1972.
5. Da Costa J L and Tock E P C : The Lungs in Opium Smokers with Chronic Obstructive Lung Disease. Proceedings of 4th Singapore-Malaysian Congress of Medicine, 4: 210-216, 1969.
6. Drug Misuse in Singapore: Edited by Lee S K and Chao T C, Fifth National Medical Convention Singapore Medical Association, p. 3, 1973.
7. The Use of Cannabis, World Health Organisation: WHO Chronicle 26: 25 1972.
8. Chao Tzee Cheng: Drug Abuse Among Youths in Singapore, Annals of Academy of Medicine 4: 146-155, 1975.
9. Sad End to Drug Trips: Chao Tzee Cheng, "Conquer Drug Abuse Now", Singapore Anti-Narcotics Association Publication p. 24-27, 1976.
10. A Manual on Drug Dependance: Edited by Kramer, J F and Carmen D C World Health Organisation p. 32-35. 1975.
11. idid p. 45-46.
12. International Drug Control Treaties: The Role of Medical Professionals Khan, I. WHO Chronicle I: 16-17 1979.