

WHAT IS THE DEFINITION OF AN INTOXICATION FOR THE MEMBERS OF TIAFT?

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ABSTRACT: New insights in medicine and criminalistics, requires an adjustment of existing definition of a human poisoning: “An individual’s medical or social unacceptable condition as a result of being under influence of an exogenous substance in a too high dose for the person concerned”. For legal and medical purposes of this definition is important to know how the victim became poisoned. In general, there are three possibilities of causing a medical poisoning: the accidental poisonings, among with the iatrogenic poisonings, the experimental and the intentional poisonings. Nowadays, beside euthanasia, suicide and homicide, iatrogenic intoxications, poisonings caused by the Münchhausen’s syndrome (by proxy) and experimental poisoning (designer drugs) seems to get an evident place in contemporary toxicology. Although some toxicologists use the word “intoxication” only for an overdose with central effects, in this article “intoxication” and “poisoning” are considered to be synonyms.

KEY WORDS: Homicide; Intoxication; Iatrogenic; Pills.

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INTRODUCTION

Nowadays new insight in medical treatment, euthanasia, experiments with rave party drugs and lawsuits because of iatrogenic poisonings make it obvious to get a clear definition of a medical intoxication or poisoning.

“Poisoning” and “intoxication” are both used in the English language. Asking native English speaking TIAFT members from all over the world what the difference is between both words yielded different answers. For some ones both are synonyms, for others found an “intoxication” an overdose with particular central effects (stunings) and a “poisoning” with general (central and periferal) effects. In this contemplative paper I will use intoxication and poisoning as equal synonyms.

Poisonings are just as old as mankind. Since time immemorial death penalties have been performed with poisons.

Theophrakis Bombastus von Hohenheim (Paracelsus 1493–1541, Switzerland) postulated that everything is poisonous, and that just the dose could make something not a poison. The biological toxicologists Seinen (1989) defined “toxic” as being simply a

case of “too much”. Thus he explained that intoxication in all living organism is a consequence of having exceeded the maximum safe dose of a certain substance [6].

The clinical-medical toxicologist Sangster was a bit more specific [5]. Poisoning, he said, is a state of illness caused by an excessive concentration of an exogenous substance compared to the manufacturer’s intention, Sangster made an connection between dose and purpose. Toxicologists reserve the word intoxication or poisoning for cases of an excessive concentration of an exogenous substance.

In the case of Wilson’s disease, a hereditary accumulative disease, the body is damaged by excessive amounts of the endogenous (body own) trace element, copper. Strictly speaking, a patient with Wilson’s disease is not poisoned even though the effects of the surplus copper on the patient’s body may be identical to the symptoms of an intoxicated patient.

DEFINITION

New medical insights and changing public and legal norms demand that we review our clinical and forensic definition of “poisoning”.

All medication can have undesired but unavoidable side-effects. Doctors must weigh whether the cure is better than the ailment. When medication is deliberately or accidentally taken in such a dose which that a patient’s body cannot adequately digest and break down the drug, a poisoning may ensue. A patient with terminal cancer and unbearable pain must be administered strong painkillers, usually morphine in high dose.

The risk of such treatment is death of the patient, either directly or indirectly as a result of the treatment. Is this acceptable? Do reasonable alternatives exist? What would the patient’s perspectives be without treatment?

In view of prevailing knowledge and today’s medical practice I propose the following definition of clinical and forensic poisoning: “An individual’s medical or social un-accepted condition as a result of being under influence of an exogenous substance in a too high dose for the person concerned”.

Including “medical” is important as sometimes a doctor has to exceed the maximum safe dose of a certain substance, when the disease seems to be worse for the patient than the overdose. It is obvious that this required dose is depending amongst others on the qualities of the patient. Lack of therapeutic drug monitoring could even cause an iatrogenic poisoning, as in that case it is medically not acceptable.

By adding the clause “social and/or legal” to the definition of “poisoning”, we emphasize that the concept of intoxication depends on the victim’s normal state and on prevailing cultural standards, laws and condonation. These factors differ strongly from one country to the next (e.g. euthanasia, chemical abortion, THC).

The following case is an example of the differences between medical and social: a male nurse (39 years old) was married to a 94 year old lady on her request. A year after their marriage, it was discovered that she had been administered the sedative midazolam

(15 mg, twice a day for a week) in what was possibly too high a dose for a geriatric patient. Her doctor claimed that he had prescribed this dose on purpose, to alleviate the patient's suffering at the end of her life. He accepted the risk that the drug might accelerate her death and was convinced of the medical and ethical soundness of his decision in view of his patient's condition. Considering it as medical acceptable, in the new definition it is not an poisoning.

In the court of law, however, the male nurse was charged with giving his wife an overdose. Had he done so without a doctor's permission, his act would have been socially unacceptable and in fact criminal. His former ex-wife believed he had acted independently and testified that he had given the old lady seven tablets at a time rather than the usual one or two. She later retracted her testimony. If his ex-wife had spoken the truth, it would have been a clear case of deliberate, lethal poisoning unsubstantiated by medical motives.

Generally, lawyers and toxicologists do not speak the same language. In this case, a witness suggested – though this claim was not proven – that seven tablets of Dormicum® each containing 15 mg of midazolam had been administered. Normally, this is not a lethal dose, but given to a 94 year old it may be a very effective murder weapon indeed [4, 7]!

Unfortunately, this woman was cremated after a “natural death” (advanced age), so no post-mortem and toxicological analysis were performed.

The Dutch Supreme Court (1947) certified: “An attempted poisoning with a substance that has an accepted intended use but which was not applied for that intended use, is a criminal offence”. However, I wonder how legal eagles interpret the concept “accepted intended use”. After all, a substance is either toxic or it isn't, and this can depend on [8]:

1. intrinsic toxic qualities (e.g. NaCl, NaCN);
2. dose and bioavailability (pharmacokinetics);
3. route of administration (e.g. oral, intravenous, sniffing);
4. concentration (e.g. gas, acid);
5. duration and frequency (accumulation);
6. co-medication (alcohol – drugs);
7. physical condition of the user (e.g. age, illness).

POISONING OR NOT?

Case: come years ago, on a cold, damp autumn evening a sixty-year-old nun entered the tiny dwelling of a long-time widower. She made regular visits to this man in a charitable effort to relieve his loneliness through conversation and prayer. On this particular evening, she was shown to an unusually dimly lit sitting room. The widower explained that he had taken the bulb out of the ceiling lamp to replace a broken bulb in the bathroom. He offered her a cup of coffee and seemed put out when she said that she

would rather have tea. Nevertheless, he went to the kitchen and after a considerable time he returned with a steaming cup of tea.

Hours later, the nun awoke feeling groggy and found the man tying the laces of her brown boots. Shocked, the sixty-year-old woman fled the house and zigzagged along the street in her new car. She did not get far in that state; the car crashed against a tree. Later in hospital, we found 7 ng lormethazepam per litre in her blood [9].

By the next day, the woman had made a good recovery and she was determined to go to the police to press charges against the widower.

This case is an other example of an intoxication. Medical speaking it is not a poisoning. The woman got a sleeping tablet and fell asleep. However, this is socially not acceptable that the man gave her involuntary pills, so following our new definition it is a poisoning indeed.

It is not always clear whether a person is poisoned or not. In some situations there could be different meanings about “medical or social unacceptable conditions”. It is obvious that lawyers are used to interpret this definition on their own way, and would change the situation on purpose.

The following three simple cases could be examples of these ambiguous interpretations.

1. Is a man poisoned who has been smoking twenty cigarettes daily for 20 years, without any unwanted clinical symptoms? Then he suddenly died for unknown reasons. Was he intoxicated by cotinine at the moment he died?
2. A man was admitted into the hospital several times for an alcohol intoxication. One day he was found dead at home. During the post-mortem his alcohol blood level was zero, and no drugs or toxic compounds were found. Cause of death: “alcohol withdrawal symptoms”. Question: did he die on an intoxication?
3. A young healthy man took a not lethal overdose of cocaine. He was arrested by several policemen. He suddenly died by massive catecholamine release, evoked by stress. Did he die by cocaine [1, p. 368]?

HOW DOES A PERSON BECAME POISONED?

As we consider a poisoning as a medical or social unaccepted overdose of an exogenous compound it is important to know how somebody could be poisoned.

In general, there are three possibilities of causing a medical poisoning [5]:

1. Accidental poisoning. The result of an accident, error, carelessness, or an unexpected situation in the working environment. Legislation on working conditions is aimed at preventing most of these situations. Intoxications due to medical or paramedical treatment, so-called iatrogenic intoxications, also belong in this category.
2. Experimental poisoning. For example, self-medication or experimentation with designer drugs sold as “party pills” such as ecstasy (MDMA). Most juvenile po-

isonings fall in this category. Toddlers and babies explore their surroundings by putting things in their mouths. Teenagers experiment with highly hazardous poisons: nicotine, alcohol, marihuana and nowadays “pills” as well.

3. Intentional poisoning. Some one is intoxicated on purpose. It could be the person’s own doing or own request, as in attempted suicide or euthanasia. But some one can also be the unwitting victim of intoxication, as in murder (homicide), Münchhausen’s syndrome (himself or by proxy) [7].

Iatrogenic intoxications

Nowadays, medical science can stretch a patient’s life endlessly. Weak patients are subjected to complex multiple drug therapies, thus increasing the chance that their condition may deteriorate or that the patient may die because of human error, drug interactions or as a consequence of the disease itself. Therapeutic drug monitoring, in which doses are adjusted to individual patients on the basis of drug serum analysis, can reduce these risks [8, 10]. In the past, iatrogenic intoxications were accepted as a calculated risk. These days, patients are “clients” and thus less likely to accept this risk, even resorting to civil or criminal proceedings to get compensation. Expert toxicologists play a crucial role in such matters, weighing the interests of the patient and the physician or nurse objectively and honestly.

At this time, few iatrogenic intoxications in the Netherlands lead to an actual criminal or civil trial, despite the fact that in 1998 the number of acute or fatal avoidable accidents in Dutch hospitals seems to be three to five times as high as the number of serious traffic accidents [11]. Isn’t it odd, then, that politicians and the media pay so much more attention to traffic accidents than to those in hospitals?

Last year my expertise was requested when the wrong medication had been given to a nineteen-year-old girl who had paid to have fat removed from her thighs by liposuction, without her father’s knowledge since he was fiercely opposed to such an operation. She was mistakenly the beta-blocker metoprolol via intrathecal injection instead of the local anaesthetic bupivacaine. Admittedly, the drugs come in similar boxes. The next morning, she had an acute cardiac arrest on the toilet. Luckily, she could be reanimated easily. The girl was more concerned about her father finding out about her operation than about the medical consequences of the nearly fatal error. Fast withdrawal of metoprolol might cause seizures. Fear for the father not to be at Christmas at home, nervous doctors ruined the bed and seizures caused a fata vagomimetic excitation. She seemed literally scared to be death.

Such intoxications are usually one-time occurrences and as such are not described in textbooks. This means that a human toxicologist can only fall back on his knowledge, experience and ability to think creatively.

Experimental intoxications

People do experiment with drugs; sometimes prompted by superstition, tales, or fear of going to the doctor. I have seen three similar intoxications, each concerning a blue,

cyanotic farmer's wife. How had they become cyanotic? Well, the women concerned all had serious blemishes under their breasts. Their thriftiness prevented them from going to the doctor. They knew that dapsone is used to cure mastitis in cows and reasoned, "what's good for a cow must be good for me", and took a spoonful of dapsone.

The media rave about the phenomenon "techno parties", and the unfettered experimentation with all kinds of party pills there, usually sold as ecstasy. But also the so-called ecodrugs (herbs, mushrooms) can contain dangerous substances [10]. However, the debate on what is dangerous and what isn't seems to be based on political and emotional arguments more than objective scientific facts. Because "pills" are so popular with youths, the absolute number of acute medical problems caused by designer drugs is high, although as a percentage of total intake the number of problems is relatively low. In my view, the rave party phenomenon and the lifestyle that goes with it harbour more risks – such as heat and physical exhaustion, hearing impairment, loss of concentration and depression – than the pills themselves. A girl (21 years old) went to a house party. There she took one or two pills, sold as ecstasy (MDMA). She was dancing the whole night till late in the morning, for about 12 hours. At home she felt exhausted and extremely thirsty. She drank many glasses of water. In the afternoon she lost consciousness. That night she died from brain oedema. Serum, taken just before her death contained 15 g MDMA per liter. MDMA (often in combination with extreme exercise) can cause hyponatraemia. In that circumstances the girl died from a water intoxication provoked by MDMA.

Intentional intoxications

Most people think that cases of deliberate poisoning are always examined by forensic toxicologists. In theory, this is true, but clinical toxicologists cannot avoid intentional intoxications altogether. Thus patients with Münchhausen's syndrome, also called hospital addiction syndrome, poison or mutilate themselves to gain the attention of their doctor or their family and relatives [1, pp. 326–327]. The results can be gruesome and unexpected. There are cases of patients being hospitalized for months before the cause of their ailment is discovered.

In Münchhausen's syndrome by proxy, someone deliberately poisons a person entrusted in his or her care to draw attention. A child which displays persistent symptoms but does not die [2]. General practitioners and specialists must be very alert to this possibility because these parents are deceptive in the most subtle and cunning ways. We've all heard of mothers who pathologically administer laxatives to a young child, causing chronic diarrhea. Once a child (13 months old) was admitted to our hospital in a critical condition. We found to have a high concentration of methadone in his blood. Only then did physicians realize that the death of his twin brother nine months earlier might not have been a case of cot death after all.

CONCLUSION

For medical and legal purposes it is important to have an actual and clear definition of "poisoning". Our new definition seems to be useful in clinical and forensic toxicology. For using this definition, it is clearly to know what the cause of the overdose could have been.

However, if a doctor is charged with mal practice it is important to know whether it might be a case of poisoning or just an unavoidable outcome.

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