

THE DANGER OF HALLUCINOGENIC MUSHROOMS

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Summary. *There has been a revival of interest amongst young people in the raw consumption of 'wild' Psilocybin mushrooms, because of their hallucinogenic properties. Seven cases of mushroom overdosage are described. Whilst the hallucinogenic mushrooms are relatively harmless, the dangers from inadvertent ingestion of commonly occurring poisonous varieties are emphasised.*

OVER the centuries many different plants containing active hallucinogenic substances have been used to advantage at religious ceremonies. Certain of these hallucinogens are now used for recreational purposes to enhance perception and stimulate exhilarated moods (Horne & McCluskie, 1963; Farnsworth, 1968). One such hallucinogen is the Psilocybin mushroom in which there has been a revival of interest following its recent rediscovery in Mexico. This mushroom is properly known as *Psilocybe semilanceata* but they are popularly called 'liberty caps' or 'magic mushrooms' and are plentiful in most temperate climates, including Scotland. Recent comment in the local press (*Glasgow Herald*, 1978) testifies to their frequent use by young people and hints at some of the dangers involved. We should like to present clinical data on patients who have presented to the Glasgow Western Infirmary Accident and Emergency Department with Psilocybin mushroom toxicity during 1978.

Case material

We have seen seven patients, all males with a mean age of 20 years (range 17-23 years), who attended during September and October 1978. All patients attended voluntarily because they had experienced unpleasant or toxic effects from Psilocybin mushrooms.

The mushrooms are eaten raw, between 20 and 100 at one time, the stimulatory effects coming on within one hour and lasting for 10 to 15 hours. There are usually no withdrawal effects or tachyphylaxis. The stimulatory effects are generally pleasant and accompanied by frequent visual, auditory and tactile hallucinations.

Our patients were all regular users of Psilocybin mushrooms, several having established the practice for two or more years. Only one patient was taking other drugs, which included cannabis, pethidine

and palfium. None of the patients had any training or special knowledge of botany. Six patients presented within four hours of taking the mushrooms, the remaining patient complaining of a numb feeling over the left side of his face and right forearm two days later. Four of the six patients had taken 100 mushrooms and the remaining two had taken between 20 and 30 mushrooms.

All six patients were fully alert, and five, although having vivid hallucinations at the time, were able to give a reasonable history. One patient was disorientated, unco-operative and succeeded in running about naked until given I.M. diazepam.

The presenting complaints were of nausea, cramping abdominal pain, a feeling of stiffness and the unpleasant sensation of swelling in the limbs. On enquiry, all had slight blurring of vision and a dry mouth, and some had experienced difficulty passing urine. All patients had a tachycardia (110-120 beats/min.) and dilated pupils. There were no other abnormal signs and in none was the bladder palpable.

Three patients were admitted to hospital overnight and sedated with diazepam, the remaining four being fit to return home. All seemed determined to continue the habit in the future.

Discussion

There are many species of Psilocybin mushroom having hallucinogenic properties, the common European variety being *Psilocybe semilanceata*. This is a small mushroom readily found at roadsides or rich grasslands during the months August to November. The wet autumn of 1978 had produced a bumper crop of mushrooms resulting in their widespread use in the Glasgow area. The active constituents of the mushroom are thought to be the 4-hydroxydimethyltryptamines, psilocybine and psilocine (Farnsworth, 1968). Apart from the psychedelic effects, all patients appeared clinically to show anti-cholinergic features.

The use of hallucinogenic mushrooms for recreational purposes would seem relatively harmless, as no physical dependence occurs and there is no hard evidence that

psychoses may be provoked (Pollock, 1975). 'Bad trips' are infrequent, usually being due to panic reactions, and the physical effects we describe were all mild. Occasionally irresponsible behaviour may lead to criminal acts but less commonly than among users of ethyl alcohol. The drug of choice in sedating these patients is diazepam as phenothiazine derivatives have been associated with adverse reactions (Pollock, 1975).

Our main concern is the risk that the casual mushroom picker may run when consuming unfamiliar fungi, especially if hallucinating at the time! Several poisonous species of *Amanita* mushrooms grow readily in the West of Scotland, alongside the *Psilocybe* varieties. In particular, *Amanita phalloides*, the 'death cap', is the same colour as *Psilocybe semilanceata* although larger and having a flat cap (Lange *et al.*, 1963). It is possible that eager and untrained beginners might mistakenly consume *Amanita phalloides*, the ingestion of even a small amount of which can prove fatal. The toxins present in this mushroom form two groups, the phallotoxins and amatoxins: the former being responsible for the initial vomiting, abdominal pain and diarrhoea, and the latter for the insidious hepato-renal failure causing death a few days later (Lancet, 1972; Passo *et al.*, 1975). Management consists of initial fluid and electrolyte replacement accompanied by an attempt to inhibit the main amatoxin, α -amanitin, from binding to intracellular RNA-polymerase and causing cell death. Animal work shows that binding of α -amanitin to albumin increases its toxicity and that displacement by penicillin facilitates its urinary excretion allowing

survival (Floersheim, 1972a). Cytochrome C has also been shown to be beneficial in experimentally-induced poisoning in animals, perhaps by preventing other toxins from interfering with energy-yielding processes in the respiratory chain (Floersheim, 1972b). Therefore, theoretical grounds exist for trying a combination of penicillin and cytochrome C in this often fatal illness.

In conclusion we would deprecate the current wave of interest in consuming raw 'wild' mushrooms without expert advice in view of the tragic consequences to a young person in the event of incorrect identification. The Western Infirmary diagnostic index fortunately contains no case of mushroom poisoning over the five-year period 1973-77, but this may change in the future.

REFERENCES

- Farnsworth, N. R. (1968). Hallucinogenic plants, *Science*, **162**, 1086
- Floersheim, G. L. (1972a). Antidotes to experimental alpha-amanitin poisoning. *Nature* (New Biol.), **236**, 115
- Floersheim G. L. (1972b). Curative potencies against alpha-amanitin by cytochrome-C. *Science*, **177**, 808
- Glasgow Herald (1978). September 8th, p. 7
- Horne, C. H. W., McCluskie, J. A. W. (1963). The food of the gods. *Scottish Medical Journal*, **8**, 489
- Lancet (1972). Editorial. Death-cap poisoning. *Lancet*, **1**, 1320
- Lange, M., Hora, F. B. (1963). *Collins guide to mushrooms and toadstools*. London: Collins
- Passo, B., Harrison, D. C. (1975). A new look at an old problem: mushroom poisoning. *The American Journal of Medicine*, **58**, 505
- Pollock, S. H. (1975). The psilocybin mushroom pandemic. *Journal of Psychedelic Drugs*, **7**, 73