

DRUGS AND DIVERS - CASE REPORT AND COMMENTS

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We here at Ann Arbor, Michigan, are particularly suited to comment on this matter as our fair city has been dubbed the "Dope Capital of the Midwest: at least since the decriminalisation of marijuana and the institution of a \$5 mail-in fine for possession. I will not address the moral or ethical issues but will describe diving and drugs from the physician's point of view, the treatment and prevention of scuba accidents.

CASE

A 21 year old uncertified diver was brought to the Emergency Department at 7.15 pm with the following history. He was in prior good health until 3 pm when he had approximately 2-4 ozs of alcohol and "snorted" an unknown amount of "THC" (tetrahydrocannabinol, the active ingredient in marijuana). He put on a scuba tank and dived alone in a 30 foot maximum depth lake for an unknown period of time. His entry and exit points were on opposite sides of the lake. He climbed from the water, then fell backwards off the dock into the water again. He was recovered and brought to the Hospital.

On admission he was combative, inappropriate and disoriented, with widely dilated unresponsive pupils. He had a blood pressure of 150/90, pulse rate 80, respirations of 24. His skin colour was normal and the skin felt warm. He had marked coarse nystagmus to the left. There was marked hyperreflexia throughout. Sensory testing was inaccurate.

An attempt was made to pressurize in the University of Michigan Sea Grant (NOAA) chamber to 165 fsw utilising US Navy table 5A. This was accomplished with incredible difficulty due to a rage reaction and marked disorientation. With the aid of his fiancée, a certified scuba diver, he was persuaded with "verbal anaesthesia" to cooperate and consent to closing the pressure seals, although he could not be persuaded to wear a pressurized O2 mask at the prescribed 60 foot level. At depth he gradually resumed his normal behaviour pattern and became oriented to time, place, and person. The neurologic abnormalities resolved to normal at this time and the pressurisation was terminated after 2 hours.

Subsequent investigation revealed the drug inhaled was actually "PCP", a horse tranquilliser (phencyclidine) and popular street drug-hallucinogen. The patient was returned to the neuropsychiatric Institute, where it was felt he had a mild residual organic brain syndrome probably secondary to drug intake. He removed himself from the hospital one hour later, against medical advice. Our final impression was Organic Brain Syndrome, secondary to PCP usage, with a secondary diagnosis of possible air embolism secondary to scuba diving. Research into the effects of PCP indicates that hyperreflexia, nystagmus and reflex asymmetry are common signs of intoxication. One factor leading to suspicion of the initial history was that THC is usually ingested or inhaled rather than "snorted". We believe that this is a unique case of response to the drug-intoxicated diver simulating air embolism.

DISCUSSION

A diver may seek to heighten the positive aspects of diving by utilising drugs. I include alcohol since this is the commonest agent abused and studied in this instance. The level of consciousness is depressed and measurements in our laboratory have confirmed the additive, and even synergistic, effects of alcohol intake with that of nitrogen narcosis. Forty six subjects were tested for eye-hand co-ordination with

a maze test before and during a simulated bounce air dive. Depths ranged from 132 to 228 fsw. In paired divers (one alcohol impaired, the other not) the decrement in performance increased with depth, with the greatest change in an extreme risk in the sea, especially if impairment of judgement is synergised by the effects of narcosis.

hallucinogens have been widely denounced in the diving medicine literature. The disorientation, the long latency of onset and peak action, and the depersonalization of some (as noted in this case) make this point quite clearly. The underwater environment with its impaired visual stimuli, unknown animal risks and subtle dangers, intensifies hallucinogenic effects. A reaction as occurred in our hyperbaric chamber could lead to a fatal lack of judgement in a hostile sea environment.

A recent article in The Physician and Sports Medicine (Groner-Strauss and Michael Strauss; Aug 1976) lists pharmacological agents and contraindications to diving. I agree with their list:

<u>ABSOLUTE</u>	<u>RELATIVE</u>	<u>NONE</u>
Alcohol	Analgesics	Antacids
Antiasthmatics	Antibiotics	Birth control pills
Anticonvulsants	Antidiarrhoeal agents	External agents (eg. lotions, oils, salves)
Cardiovascular medications	Antiemetics	Laxatives
Depressants (eg. barbiturates)	Antihistamines	Mouthwashes
LSD	Antitussives	Vitamins
Marijuana	Cigarette smoking	Wheat germ
Narcotics	Aspirin	
Steroids	Relaxants	
Stimulants	Thyroid medication	
	Vasoconstrictors	
	Insulin	

As physicians we are asked to certify the health of divers prior to diving in the USA. I believe we are the first line of defence to a sport that is endangered because of its unique hazards. To certify a diver taking anticonvulsants or using insulin has to be done without any concrete statistical background of safety. My own analysis of the last 45 consecutive near-drowning cases I have treated reveals 7 had a history of seizure disorders, all supposedly under control. I seriously question the advisability of certification of a diver with a history of chronic usage of drugs listed in the first two groups above.

A Fin way to ensure cleared water!

Terry Hendrickson of the La Jolla Scripps School of Oceanography has been credited with a novel way of clearing others away from where he wants to dive. He is said to have constructed a large dorsel fin and wired it for remote control. When solitude is required he comes ashore and suddenly the fin appears weaving in a sinister fashion along the top of the water. It is to be hoped that he also leaves the water is the fin fails to respond to the control instructions

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