



## The efficacy of HPLC for the diagnosis of 'illegal drug' intoxication

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**Results** During the ETC treatment period 102 patients with femur shaft fractures were identified, 27 of which met the inclusion criteria. During the DCO period 202 patients were identified, 38 of which met the inclusion criteria. The patient groups were comparable regarding age, gender, and injury severity score. There was no difference between the groups in terms of ARDS incidence, lung scores, MOF incidence, MOF score, ICU LOS, or hospital LOS. The DCO group had a significantly shorter OR time. **Conclusion** In our experience the method of fracture fixation (DCO vs ETC) did not appear to impact the incidence of systemic complications (ARDS and MOF) in the polytrauma patient with an associated femoral shaft fracture. However, we feel that multidisciplinary care is facilitated with DCO and that the decreased initial operative exposure appears to benefit specific subsets of patients. The debate over the optimal timing and method of femur fixation will continue until a treatment protocol can be validated based on a high-quality study with a large number of patients. This study provides the basis for a prospective, randomized, multicenter trial of DCO versus ETC for femur shaft fractures in multiply injured patients.

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##### The efficacy of HPLC for the diagnosis of 'illegal drug' intoxication

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Intoxicated patients are not uncommonly admitted to the emergency room (ER) due to unconsciousness. In Japan, 'illegal drug' abuse has increased recently among young people. Diagnosis of 'illegal drug' intoxication is often limited to information from patients or surroundings. The purpose of this study was to evaluate the efficacy of HPLC for the diagnosis of 'illegal drug' intoxication. The clinical records from six patients with 'illegal drug' intoxication who were admitted to our ER between 2000 and 2004 were reviewed. The HPLC system was performed and analyzed using the reversed-phase isolated method. Results are presented in Table 1. HPLC showed the spectrum of drugs from the patients' samples. The chemical component of Rush and Sex Hyper is the same, but they showed different peak retention times. Magic Mushrooms made the varied peaks. Pure White has two chemical components and the two peaks were recognized independently. Pinky made two different peaks in urine. HPLC could be useful in the diagnosis of 'illegal drug' intoxication. However, HPLC has limitations. First, a control drug or a control spectrum is necessary to compare with the spectrum of the patient's sample. Second, HPLC seems to be influenced by additional materials even if they have the same chemical component. Third, we should choose a suitable extract method and column. Because we used acetonitrile not alcohol to extract Magic Mushrooms, HPLC showed many peaks. Finally, urine is not adequate for 'illegal drug' analysis. 2C-I

**Table 1 (abstract P406)**

Case	Age (years)	Sex	Common name	Component	HPLC spectrum	Peak time (min)
1	26	Male	Rush	5-MEO-DIPT	Recognized	7.6
2	24	Female	Magic Mushrooms	Psilocin	Recognized	Many peaks
3	20	Male	Sex Hyper	5-MEO-DIPT	Recognized	11.1
4	24	Male	Pure White	2CT-2, 2CT-7	Recognized	11.3, 12.4
5	28	Male	Sex Hyper	5-MEO-DIPT	Recognized	11.1
6	17	Male	Pinky	2C-I	Recognized	10.6, 10.8

in urine showed different peaks. Serum or gastric juice, before the chemical component is metabolized, should be used.

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##### Lethal intoxication with hydrofluoric acid

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Intoxication with hydrofluoric acid is a very rare but mostly lethal clinical condition. It is mainly caused by dermal exposure, with ingestion extremely rare. Hydrofluoric acid is one of the strongest acids known that has a strong lipophilic ability. Ingestions of more than 20 mg/kg body weight are considered a lethal dose. Even after dermal exposure, the fatal prognosis is caused by severe electrolyte disturbances, especially hypocalcemia.

We report on a 50-year-old female with endogenous depression who swallowed approximately 30 ml hexafluorosilicate (hydrofluoric acid) during a night-time attempt to commit suicide. In the early morning, the woman was found somnolent in a condition of circulatory shock. She complained of severe abdominal pain. She had to be intubated by the emergency doctor and was admitted to the hospital. Physical examination of the mechanically ventilated patient only revealed conjunctival irritation. Laboratory investigations showed severe electrolyte disturbances (hypokalemia, hypocalcemia, hypophosphatemia decreased magnesium levels) as well as severe metabolic acidosis. Within the next few hours, disseminated intravascular coagulation and hyponatremia developed. Serum fluoride levels were 0.099 mmol/l or 1.98 mg/l (normal values 0.0005–0.02 mmol/l or 0.1–0.4 mg/l). Urine fluoride levels were 1.94 mg/l (normal values <1.0 mg/l). Gastroscopy showed necrotic gastric mucosa without signs of bleeding. Topical instillation of calcium was not performed due to the long time interval from burn to treatment but intravenous calcium gluconate was substituted immediately.

Despite fluid resuscitation, correction of the electrolyte abnormalities, stabilisation of coagulation and substitution of albumin, the clinical condition worsened. The patient had to be defibrillated due to ventricular fibrillation about 30 times. Later on, these episodes of ventricular fibrillation were becoming less responsive to defibrillation although the electrolyte threshold had already been corrected. After 12 hours, the patient died under cardiopulmonary resuscitation.

On autopsy, severe burns were found in the esophageal and gastric mucosa, hyperemic lesions were seen in the renal tubular system as well as necrotic lesions in the cardiac musculature.

Besides the poor prognosis of a fluoride intoxication in this dosis, the long time interval until treatment could be started seems to be the main reason for the fatal outcome of this case.

#### References

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