

the emergency department of a nearby hospital where he arrived in 10 min time. He was asymptomatic at the time he arrived to the Hospital. A gastric lavage was performed obtaining some white material. After the lavage an Rx control showed some remaining opaque material adherent on the gastric wall. He was admitted in the ICU and presented vomits and severe diarrhea (2L/24h.) during the first 48h, lethargy, and mild metabolic acidosis. Besides rehydration and support intensive measures, treatment with BAL was employed during 9 days at standard IM doses. The clinical evolution was uniformly good except for an episode of pericarditis the 5th day, recovered in 24h. Arsenic concentration in blood and urine was 130 µg/mL and > 5000 µg/g creatinine at admission. An analytical follow-up was performed showing an excellent As excretion and a uniform decrease on As serum concentration down to 21 µg/mL in the last sample just before discharge. He could leave the Hospital without sequels 10 days after admission.

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Diagnostic efficacy of urinary amanitin analysis in mushroom poisoning

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Background: Urinary amanitin analysis (AMA-u) may be a valuable tool in the early diagnosis of mushroom poisonings: a cut-off of 5 ng/ml showed high sensitivity and specificity in patients sampled within 36 h after mushroom ingestion. **Purpose:** To determine sensitivity, specificity, positive and negative predictive values, and diagnostic efficacy of AMA-u in a cohort of patients with suspected mushroom poisoning prospectively studied. **Methods:** All cases of wild mushroom ingestion with gastrointestinal symptoms presenting in the emergency departments in the period September–December 2002 were analyzed. Definitive diagnosis was considered the gold standard. Urine samples were collected between 3.8 and 69.5 h (mean 18.1 ± 14.1) after mushroom ingestion. AMA-u were performed with Amanitin ELISA Kit (Bühlmann-Laboratories, CH). **Results:** One hundred and sixty-two patients were included in the study.

Definitive diagnosis of amatoxin-containing mushroom poisoning was made in 38 cases (23.5%). Diagnostic performance of initial clinical assessment (ICA) made by a trained toxicologist and AMA-u were compared. AMA-u result disagreed with ICA in 21.1–24.1% of cases (according to the cut-off chosen, from ≥ 1.5 to ≥ 10.0 ng/ml), and modified the diagnosis in 13.6% of cases. **Conclusions:** The disagreement observed in a significant proportion of cases between ICA and AMA-u documents the diagnostic efficacy of this analytical investigation. In patients in whom the ingestion of amatoxin-containing mushrooms is suspected or cannot be excluded, AMA-u may be helpful to identify patients with benign illnesses: this would avoid unnecessary treatments, or allow discontinuing them. In this regard, the timely availability of the analysis is crucial.

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Poison Centre involvement in the diagnosis and treatment of foodborne botulism

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Foodborne botulism (FBo) is a rare poisoning that can represent a medical and public health emergency: 276 cases (12 fatal) of FBo have been laboratory confirmed in Italy (years 1984–2006) by the National Reference Centre for Botulism (NRCB). **Purpose:** to evaluate the incidence and the clinical characteristic of FBo-cases registered in 2005 by the Pavia Poison Centre (PPC). **Methods:** Retrospective analysis of FBo-cases referred to PPC and evaluation of incidence, presence of the typical syndrome, and efficacy/safety of the antidotic treatment. **Results:** Among the 2005 PPC cases, 2195 (9.45%) were related to a suspected food poisoning. In 37 cases a possible contaminated food was ingested, and 12 of these (age: 9 month–65 years) presented a clinical diagnosis of probable FBo: in six patients NRCB analysis confirmed the clinical diagnosis. In nine cases the contaminated food was identified by epidemiological criteria or laboratory analysis. Time of hospital presentation, clinical course and severity differed among

patients. Dry mouth, diplopia, ptosis, dysarthria were the most common presentation symptoms. Seven (7/12) cases evolved with a typical descendent paralysis and needed prolonged mechanical ventilation; in nine (9/12) cases trivalent-antitoxin-ABE was administered, without adverse reactions. Ten cases recovered completely in 1–8-month period, and two patients died. *Conclusions:* FBo clinical diagnosis can be difficult and may require a toxicological consultation. The optimal antitoxin dose needs to be established in the single case. The Poison Centre represents a clinical and epidemiological point of reference for prompt diagnosis and management of poisoned patients, such as in the surveillance of possible outbreaks.

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Antidotes stockpiles and toxicological procedures in chemical industries: A unique operating system for specific antidote availability and proper intervention in chemical emergencies

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Acute occupational poisonings usually involve several victims, with subsequent need of large amount of antidotes; however, hospitals have, generally, insufficient antidotes stockpiles. *Purpose:* to create an operating system to ensure prompt antidote availability for toxicological emergencies in industrial setting, through the constitution of antidotes stockpiles in chemical plants combined with the toxicologic-guided intervention guaranteed by a specifically structured Poison Centre (PC). *Methods:* The study included 44 petrochemical, pharmaceutical/chemical plants. Working processes were analyzed in order to identify chemicals potentially involved and risks of acute poisoning. Accidental non-occupational poisoning occurring at workplace was also considered. Potential antidote use was assessed, according to factory size and workers number. Operating procedures to ensure the proper use of antidotes were prepared. *Results:* Each plant received non-specific antidotes (e.g. activated charcoal, simethicone, liquid-paraffin), antidotes for fire victims management (amyl-nitrite, oxygen, hydroxocobalamin), and other antidotes (folic acid, ethanol, methylene blue,

calcium-salts, calcium-disodium-edetate, *N*-acetylcysteine, polyethyleneglycol-400, penicillamine, sodium thiosulfate) supplied according to plant's specific risks. Antidote stocking and replacement is a PC responsibility, and in order to avoid misuse, antidotes have to be used under the PC physician advice and supplied to the hospital emergency departments along the poisoned patients. During the first 10 years of activity, the recourse to industrial antidotes stockpiles occurred several times. *Conclusions:* insufficient antidotes hospital stocking is a worldwide problem. This unique procedure for the management of antidotes stockpiles in industrial plants under the PC responsibility, together with clinical advice from PC physicians, should allow a timely and proper management of cases of acute occupational poisoning.

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Measurement of stable strontium in whole blood of chronic dialyzed patients by use of graphite furnace atomic absorption spectrometry

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Background: Sr has recently been proposed as a potential therapeutic agent in the prevention and treatment of osteopenic bone lesion but his essential role in bone metabolism is not yet fully understood.

Methods: We develop one method for determination of the element in whole blood by using graphite furnace atomic absorption spectrometry for biological monitoring of Sr in chronic renal failure patients. Samples were diluted 1:10 with an Antifoam-A and 1.6M HNO₃ mixture whereas dialyzed fluid where diluted 1:10 with HNO₃. For both type of samples we used new rational calibration curve in three points (0, 20 and 50 µg/L). Detection limit were 1.6 µg/L (whole blood) and 3.02 µg/L (dialyzed liquid).

Results: Mean Sr concentration assessed in blood of 15 subjects with normal renal function were 25.2 ± 9.03 µg/L. This corresponds well with the concentration range of the data reported in the literature. Mean blood Sr concentration in 37 dialyzed patients were 58.5 ± 9.7 µg/L at begin and 37.4 ± 4.2 µg/L at the

Poison Centre Involvement in the Diagnosis and Treatment of FoodBorne Botulism

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Background: Food-borne botulism (FBo) is a potentially fatal neuroparalytic illness caused by ingestion of food that contains preformed botulinum neurotoxin (BoNT). The vast majority of severe botulism cases involve BoNTs of the types A, B and E. From 1984 through 2006, a total of 276 cases of FBo were identified at the Istituto Superiore di Sanità-NRCB, based on laboratory diagnosis. Twelve cases were fatal.

Results: An analysis of patients referred to Pavia-PCC (year 2005) included 37 ingestions of possibly contaminated food. Diagnosis of suspected FBo was made in 12 patients (age: 9 month-65 years) **Figure 1**. In 9 cases, the contaminated food was identified. Laboratory assays at NRCB confirmed clinical diagnosis of FBo in six cases. They included 2 cases of type F botulism (reported for the first time in Italy) **Figure 2**. Seven cases evolved with a typical descendent paralysis that required prolonged mechanical ventilation. Nine patients received trivalent antitoxin (anti-BoNT/A, BoNT/B, and BoNT/E). No hypersensitivity reactions were observed. The antidote produced little or no effects on existing neurological deficits. Both the F-type patients received early antitoxin administration but were unresponsive to treatment. Complete recovery occurred in 10 patients over a period from 1 to 8 months. Two cases were fatal.

Objective: To analyse all cases of Bo referred to Pavia Poison Centre (Pavia-PCC).

Methods: A retrospective analysis of patients referring to Pavia-PCC in the year 2005 was performed to evaluate: (1) incidence of Bo; (2) concordance between symptoms and typical syndrome; (3) indication, use, efficacy and safety of antitoxic treatment.

Results

12 patients		Clinical findings	n. of cases	%
age: 9 month – 65 years		vomiting/diarrhea	5	42
5 single cases – 3 outbreaks		stypsis (late onset)	4	33
PSS (worst)	n. of cases	vertigo/fatigue	2	17
• mild	2	dry mouth	4	33
• moderate	3	mydriasis	4	33
• severe + fatal	5 + 2 = 7	diplopia	7	58
total cases	12	dysponia/dysarthria	7	58
		ptosis	8	67
toxin type identified:		dysphagia	9	75
✓ B	4 cases	mech. ventilation	7	58
✓ A	2 cases			
✓ F	2 cases			

Figure 1 - PSS: poisoning severity score

Discussion: FBo is a rare disease in which early correct diagnosis is difficult and may require a toxicological consultation. To ameliorate the diagnosis of Bo a rapid test should be necessary. The optimal antitoxin dose needs to be established in every single case **Figure 3**. As a clinical and epidemiological point of reference, Poison Centres are essential for the diagnosis and the management of exposed patients (e.g. specific laboratory tests, antitoxic treatment), and for the identification and surveillance of possible outbreaks.

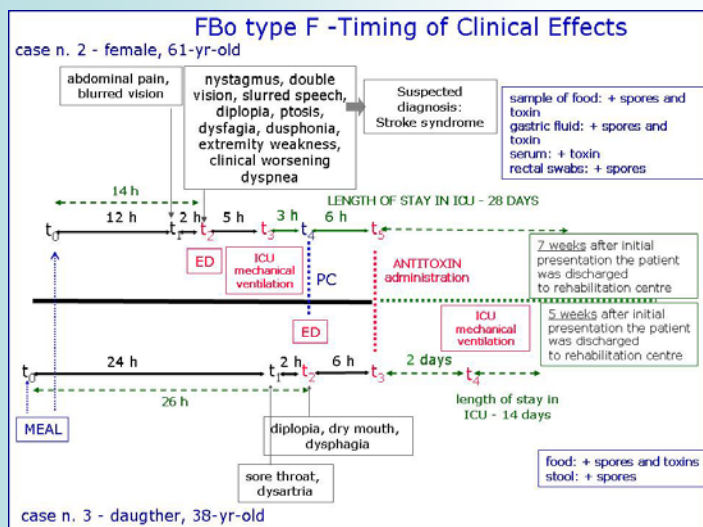


Figure 2 - Foodborne botulism caused by toxin type F – clinical course

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antitoxin	Serum Chiron-Behring bottle 250 ml		US (CDC) vial 10 ml		Serum Biomed vial 10 ml	
	antitoxin (IU) total	antitoxin (IU)/ml	antitoxin (IU) total	antitoxin (IU)/ml	antitoxin (IU) total	antitoxin (IU)/ml
A	187.500	750	7.500	750	5.000	500
B	125.000	500	5.500	550	5.000	500
E	12.500	50	8.500	850	1.000	100
recommended dose	2 bottles slow i.v. + 250 ml i.v. 4-6 h later in severe cases		1 vial slow i.v.		1 vial slow i.v. 1-5 vials slow i.v. in severe cases	

Serum Behring vs Serum US-CDC

antitoxin	antitoxins (IU) administered as first dose (500 ml)	antitoxins (IU) administered as first dose (10 ml)	(IU) antitoxins Serum Behring / (IU) antitoxins CDC
A	375.000	7.500	50
B	250.000	5.500	45
E	25.000	8.500	3
total	650.000	21.500	30

Figure 3 - Antitoxin therapy - different dosage