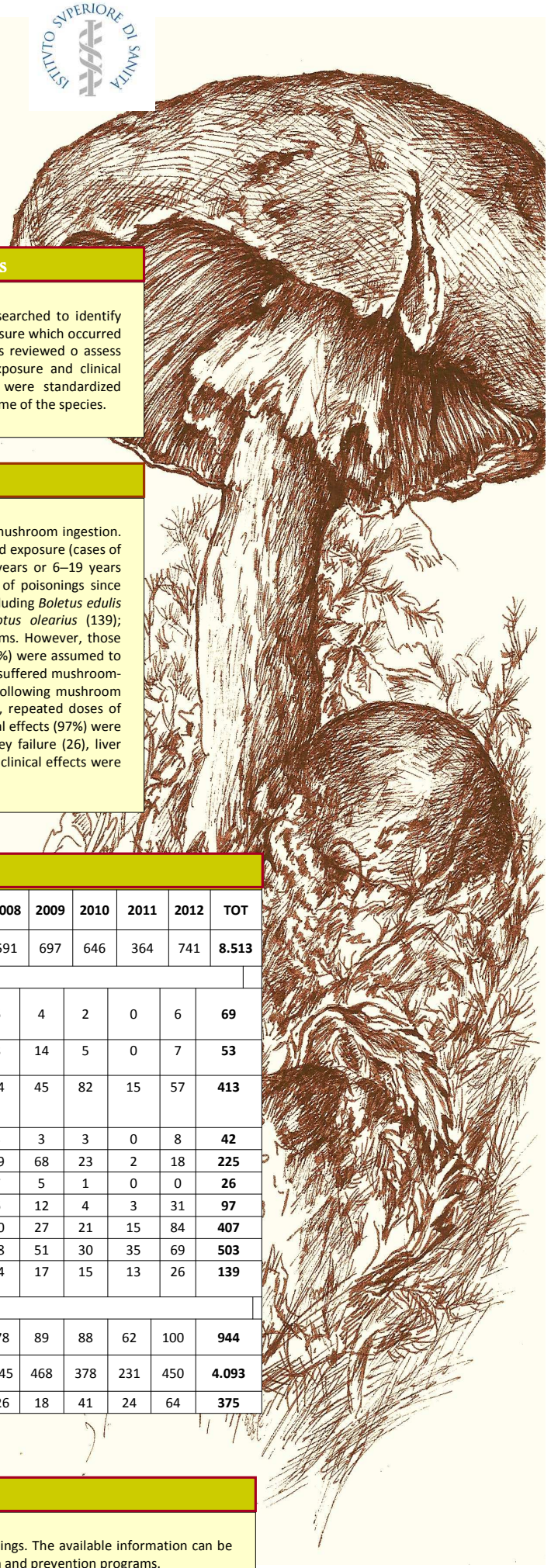
Surveillance of mushroom-related poisoning in Italy

F. Assisi[1], L. Settimi[2], M. Bissoli[1], R. Borghini[1], T. Della Puppa[1], V. Dimasi[1], M.Ferruzzi[1], P. A. Moro[1], J. Georgatos[1], Rebutti[1], A.R. Travaglia[1], P. Severgnini[3], F. M. Sesana[1], A. Celentano[1], F. Davanzo[1]

[1]National Poison Control Centre in Milan, Niguarda-Cà Granda Hospital, Milan, Italy; [2]National Institute of Health, Rome, Italy; [3]Department of Science and High Technology-University of Insubria, Varese, Italy



Introduction

The National Poison Control Centre of Milan (NPCCM) handles each year about 1,000 inquiries concerning suspected mushroom poisonings. The present contribution is aimed at providing a preliminary characterization of these cases.

Methods

The NPCCM database was searched to identify all cases of mushrooms exposure which occurred in 2000-2012. Each case was reviewed o assess the association between exposure and clinical effects. Mushroom names were standardized according to the scientific name of the species.

Results

In the period under study NPCCM handled 10,359 human cases of suspected poisoning due to mushroom ingestion. Most of cases (8,513, 82.2%) developed at least one sign/symptom possibly related to the reported exposure (cases of poisonings). Among these cases, 56% were aged 20 years or more, while subjects aged < 6 years or 6–19 years accounted for 4% and 7% of cases, respectively. Age information was missing for about 35% of poisonings since collective exposures were involved. Mushroom species were identified for 24% of poisonings, including *Boletus edulis* (503); *Amanita phalloides* (413); *Armillaria mellea* (403); *Inocybe/Clitocybe* (205); *Omphalotus olearius* (139); *Entoloma lividum* (97); and others (214). Some 66% of patients ingested unidentified mushrooms. However, those presenting with delayed gastrointestinal symptoms (i.e., 6 or more hours following ingestion, 20%) were assumed to be exposed to mushroom cytotoxins, e.g., amatoxins and orellanin. All together, 28% of patients suffered mushroom-related delayed effects, while 62% developed gastrointestinal signs/symptoms within 6 hours following mushroom ingestion. In all cases, the indication for treatment provided by NPCCT included gastric lavage, repeated doses of activated charcoal, and forced diuresis. The vast majority of cases showing delayed gastrointestinal effects (97%) were fully recovered within a week from exposure, while 3% developed severe effects chronic kidney failure (26), liver failure requiring liver including transplantation (13), and 27 died. All patients with rapid onset of clinical effects were fully recovered within 2–3 days.

Table 1.

Summary of results

MUSHROOM INTOXICATION	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	TOT
CLINICAL CASES	684	609	865	495	750	853	710	504	591	697	646	364	741	**8.513**
IDENTIFIED MUSHROOMS (N.PATIENTS)														
A. MUSCARIA/PSILOCYBE	7	7	24	1	4	3	4	1	6	4	2	0	6	**69**
AMANITA PANTERINA	2	0	1	0	5	4	1	6	8	14	5	0	7	**53**
A. PHALLOIDES/AMATOXIN	38	14	22	18	27	17	28	36	14	45	82	15	57	**413**
C. NEBULARIS	11	5	3	2	0	0	0	4	3	3	3	0	8	**42**
INOCYBE/CLITOCYBE	3	5	4	3	6	26	7	41	19	68	23	2	18	**225**
CORTINARIUS	0	0	0	0	2	0	4	7	7	5	1	0	0	**26**
ENTOLOMA LIVIDUM	14	3	10	1	1	4	6	2	6	12	4	3	31	**97**
ARMILLARIA MELLEA	23	25	36	11	16	26	12	51	60	27	21	15	84	**407**
BOLETUS EDULIS	36	49	54	12	24	41	40	34	28	51	30	35	69	**503**
OMPHALOTUS OLEARIUS	10	4	7	0	0	11	0	12	24	17	15	13	26	**139**
NON IDENTIFIED MUSHROOMS (N.CONSULTATIONS)														
CHECKED MUSHROOMS	-	-	-	99	125	93	112	98	78	89	88	62	100	**944**
NON- CHECKED MUSHROOMS	-	-	-	275	540	637	459	310	345	468	378	231	450	**4.093**
UNKNOWN	-	-	-	71	49	30	24	28	26	18	41	24	64	**375**

Table 1. Human cases of mushroom poisoning treated by MPCC. Years 2000-2012

Conclusions

Poison control centers are a relevant source of data for surveillance of mushroom-related poisonings. The available information can be compared at European level in order to define evidence based treatments and support information and prevention programs.