



ACUTE POISONING WITH BENZODIAZEPINES AND OTHER HYPNOTICS: ETIOLOGIC CAUSE, SEX/AGE DISTRIBUTION AND CLINICAL OUTCOME

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ABSTRACT

Purpose: Poisoning with drugs occupies a leading position among the causes of acute intoxications. Etiological distribution of medicated poisoning in different countries, even if they are adjacent, is different. In the most studies, it was reported that the highest incidence of poisoning is with benzodiazepines or other psychoactive drugs. A retrospective analysis of acute poisoning with benzodiazepines and other hypnotic drugs in the Varna region for 25 years period – from 1991 to 2015 was carried out.

Material and Methods: The number of patients who received hospital treatment after poisoning with benzodiazepines is 1741, and those with other hypnotics is 293, representing respectively 26.37% and 4.44% of all drug intoxications.

Results: The share of poisoning with benzodiazepines and hypnotics compared to all acute intoxications is 11.66%. They are more common in women – 1566 (77%). Men are 468 (23%), the ratio of men to women was 3.34:1. The largest number of intoxications is in the age group up to 24 years - 1123 (55.2%), and only 4.1% of patients over 60 years. Intentional suicide attempts are 1896 (93.2%). Death is registered in 8 (0.4%) patients.

Key words: benzodiazepines, hypnotics, drug poisoning

INTRODUCTION

Acute poisonings are a serious social and health problem throughout the world and are a major cause of hospitalization in emergency and intensive care [1]. The drugs are the most common etiological factor for hospitalization due to poisoning [2, 3]. The incidence of drug intoxication varies widely between countries – from 13.8% [4] to 88.2% [5]. A number of studies have shown that the highest frequencies are the poisonings with psychoactive drugs [6 - 10] or benzodiazepines [11 - 16].

In this regard, we aim to investigate poisoning with benzodiazepines and hypnotic drugs in the Varna region for 25 years (1991-2015 years), defining their frequency dynamics during the period, the etiological structure, mortality, and demographic characteristics – breakdown by gender and age.

MATERIALS AND METHODS

Patients

The objects of the study were 2034 patients with acute poisonings with benzodiazepines and hypnotics, who received treatment in the Clinic of Toxicology of Military Medical Academy Varna/Bulgaria for the period 1991-2015. The study was retrospective. It has analyzed the stories of illness, personal outpatient cards, and the accepted treatment of poisoned patients and medico-legal reports autopsies of the deceased patients. The hypnotics are divided into barbiturates and non-barbituric compounds. The diagnosis was based on history, clinical symptoms and was confirmed by demonstration of the medication and/or their metabolites in blood and urine of patients.

Statistical Analysis

A descriptive analysis was used for assessment of the results of the study.

RESULTS AND DISCUSSION

During the period 1991-2015, in the Clinic of Toxicology were hospitalized 6601 patients with acute drug poisonings. Acute intoxication with benzodiazepines and other hypnotic medications were 2034 (30.8%). Their share compared to all poisoning is 11.66%. Poisonings with benzodiazepines were 1741 (26.37%). Barbiturate intoxications were 120 (1.98%), poisonings with non-barbituric hypnotic compounds were 173 (2.62%). The drugs are the most common etiological cause of hospital admissions due to poisoning [3, 5, 6, 11, 17, 18, 19]. We find a significant difference in the absolute number of poisonings with

benzodiazepines and hypnotic pills and their share in all acute intoxications during the studied period (Tabl. 1).

Tabl. 1. Absolute and relative share of poisonings with benzodiazepines and other hypnotics

Year	Total count of poisonings	Poisonings with benzodiazepines		Poisonings with other hypnotics	
		Count	Percent	Count	Percent
1991	906	174	19.2	30	3.3
1992	892	133	14.9	23	2.6
1993	884	146	16.5	26	2.9
1994	885	145	16.4	32	3.6
1995	879	144	16.4	27	3.1
1996	797	113	14.2	18	2.2
1997	773	91	11.8	29	3.7
1998	883	100	11.3	21	2.4
1999	801	96	12.0	17	2.1
2000	617	65	10.5	11	1.8
2001	508	41	8.1	5	1.0
2002	593	29	4.9	5	0.8
2003	506	26	5.1	5	1.0
2004	633	26	4.1	5	0.8
2005	525	21	4.0	4	0.8
2006	674	33	4.9	5	0.7
2007	708	46	6.5	1	0.1
2008	829	56	6.7	2	0.2
2009	798	59	7.4	2	0.25
2010	656	37	5.6	0	0.0
2011	553	43	8.0	5	0.9
2012	590	31	5.2	7	1.2
2013	529	30	5.7	5	0.9
2014	484	33	6.8	5	1.0
2015	546	23	4.2	4	0.7
Total	17438	1741	9.98	293	1.68

Poisoning with benzodiazepines occupies the first position as frequency among medicated intoxication while poisoning with hypnotic drugs is considerably rarer. Following the dynamics of intoxication with benzodiazepines and other hypnotics, it has established a tendency to reduce their absolute numbers in the second half of the period. Their share is the highest during the first 5 years and then it declines. The absolute number of intoxications with benzodiazepines has decreased 7.5 times in 2015 compared to those in 1991. Similar results were observed with hypnotic drugs.

In our study medication poisonings occurred significantly more often in women – 1566 (77%) than in men – 468 (23%). The ratio female:male were 3.34:1. We established the greater frequency of drug intoxication in women, also confirmed by studies in other countries, including Bulgaria neighbors [8, 12, 17, 18, 20]. The analysis of the distribution of drug intoxication by age shows that the most

affected age group is up to 24 years – 1123 cases (55.2%) (Tabl. 2).

Tabl. 2. Frequency distribution of poisonings with benzodiazepines and other hypnotic drugs by age

Age	Patients	Percent
up to 24	1123	55.2
25 - 44	694	34.1
45 - 60	134	6.6
over 60	83	4.1

The majority of poisonings with drugs - 89.3% were in patients up to 44 years and only 4.1% are in people beyond working age. Extremely high frequency of poisoning with benzodiazepines and hypnotic drugs at the young age implies a slight leakage of such intoxication and a

more favorable outcome from them. In a number of studies was reported that the greater the incidence of poisoning is in the age up to 30 years [2, 3, 9, 11, 12, 17, 19]. Young women are the highest risk group for poisonings with medications [5, 6, 18].

Poisonings with benzodiazepines and hypnotic drugs were a mostly result of suicide attempts - 1896 (93.2%). Fatalities were registered in 8 (0.4%) patients of mean age 73.5 years. In two patients the cause of death is intoxication with phenobarbital. In the remaining 6 patients benzodiazepines are poisoning the cause of death. All 8 patients were elderly. Slower metabolism of drugs and their highly elongated plasma half-life leads to more prolonged suppression of consciousness and the protraction of intoxi-

cation. All these combined with the availability and severe comorbidities lead to more severe course of poisoning and adverse outcome.

CONCLUSIONS

Poisonings with benzodiazepines and hypnotic drugs are 30.8% compared to all medication poisonings and 11.66% of all acute intoxications. The most of them (93.2%) are a result of suicide attempts. Benzodiazepines occupy the leading position as a reason for hospitalization due to drug poisoning. Poisonings with benzodiazepines and hypnotics are more common in females and in younger age. Lethality in intoxications with benzodiazepines and hypnotic drugs were 0.4%.

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