

Medico-legal and Social Aspects of Mechanic Asphyxias

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Background: In the last years, in Mureș county there was ascertained a significant growth of deaths due to anoxias caused by violence.

Aim: This study is an assessment concerning the prevalence and incidence of mechanical asphyxia in Mures county over three years, from 2005 to 2007.

Methods: The study took place at the Forensic Medicine Institute, Tg. Mures, including the analysis of 1926 medico-legal necropsies, 434 cases being violent deaths caused by mechanical asphyxias like: hanging, drowning in water and asphyxia with food bolus.

Results: In the analyzed casuistry was found that there were prevalent the deaths caused by hanging (343 cases), these being followed by the drowning ones (84 cases) and then the mechanical asphyxias caused by food bolus (7 cases). Distribution by sex showed a predominance of deaths in males (352 cases) compared to females (82 cases). Depending on location, deaths in rural location were prevalent to the ones from the urban location.

Conclusions: Concerning mechanical asphyxias predominates the mechanical asphyxia by hanging, which also represents suicide method, the other 2 types of asphyxias (drowning in water and mechanical asphyxia caused by food bolus) being seldom. Death by drowning in water represents a rarer method of suicide and the accidental form is met more during the warm season. Asphyxia with food bolus is produced totally accidental in persons under alcohol influence or total edentate.

Keywords: autopsy, suicide, hanging

Introduction

In the last years, in Mureș county there was ascertained a significant growth of deaths due to anoxias caused by violence, which implies the existence of an obstacle along the airways. This category includes both mechanical asphyxias caused by the compression of the airways, like hanging, strangulation and mechanical asphyxias caused by the obstruction of the orifices and airways (drowning and suffocation). These deaths are considered violent deaths and according to art. 114, Criminal Procedure Code: “in case of violent death or death of which cause is unknown or suspicious, or in case it is necessary the corporal examination of the accused or injured person in order to ascertain on their bodies the presence of transgression’s traces, the penal prosecution organ disposes a medico-legal ascertainment performed by the medico-legal organ, which, according to the law is competent to do it.” [1] Thus, in case of all deaths in the above mentioned conditions it is compulsory disposed by the penal prosecution organ the performing of the medico-legal ascertainment and the medico-legal necropsy.

Material and methods

The study took place at the Forensic Medicine Institute, Tg. Mureș, Forensic Medicine Discipline of U.M.F. Tg. Mureș, over a period of three years (2005–2007) and we analyzed all the autopsies which were ordered by the investigation organs, from where we extracted the medico-legal necropsies’ reports of the persons who died by hanging, drowning in water and asphyxia with food bolus; the aim of these is to establish retrospectively the circumstances and

the way was produced the persons’ deaths. The medico-legal autopsies were performed in the terms of ordinance or justified resolutions issued by the penal prosecution organ. With that end in view we issued work cards drawing up charts with the analyzed parameters, like: personal data, sex, age, origin. Based on the collected data, we calculated the annual rate of asphyxias, the distribution of the cases depending on the origin, age groups and months. The data were processed with the help of the programmes: Microsoft Office, Excel.

Results

The obtained data were analyzed from numerical and percentage point of view. In our study we noticed that in the analyzed period of time (2005–2007) in Mureș County with 601,552 inhabitants the judicial organs disposed 1926 medico-legal necropsies with an annual average of 642 cases. There were 434 cases (22.53%) of autopsies for suspicious mechanical asphyxias (violent deaths) with an annual average of 144.67 cases, so, one suspected mechanical asphyxia autopsy to 4,44 registered general autopsies. From the total number of asphyxias we registered the followings: 343 cases (17.81%) by hanging, 84 cases (4.36%) by drowning in water and 7 cases (0.36%) asphyxias with food bolus. Taking into account the year the analyzes were done we have the following statistics: in 2005 were disposed 655 necropsies from which 162 (24.73%) cases were asphyxias, in 2006 were disposed 625 necropsies from which 138 (22.08%) cases were asphyxias and in 2007 there were 646 necropsies from which 134 (20.74%) cases were asphyxias. (Table I).

Table I. The distribution of asphyxias' cases

The year of study	Total no. of cases	No. of asphyxias' cases	Percentage
2005	655	162	24.73%
2006	625	138	22.08%
2007	646	134	20.74%
Total	1929	434	22.53%

Table II. Number of hanged cases

The year of study	No. of hanged	Percentage
2006	110	32.07%
2005	130	37.90%
2007	103	30.03%
Total	343	100%

Table III. The cases' frequency by age groups

No. crt.	Age group	Number of cases	Percentage
1.	0–10	2	0.58%
2.	11–20	16	4.67%
3.	21–30	29	8.41%
4.	31–40	51	14.95%
5.	41–50	77	22.42%
6.	51–60	74	21.49%
7.	61–70	55	15.88%
8.	71–80	29	8.41%
9.	81–90	10	2.80%

In the study, the cases' frequency was analyzed depending on the age, sex, origin and the months when the event happened. Because of the fact that the deaths caused by drowning in water (84 cases – 4.36%) and by food bolus (7 cases – 0.36%) were just a few, without a significant value from statistical point of view, the whole study concerned the persons that died by hanging. Thus, we ascertained that during the three years there were registered 343 cases (17.81%) with an annual average of 114.33 cases, this representing one hanging case in three days, [2005 – 130 (37.90%) cases, 2006 – 110 (32.07%) cases, 2007 – 103 (30.03%) cases] (Table II).

Analyzing the number of deaths caused by hanging and depending on the persons' age and also age groups we noticed the frequency we drafted/wrote in the table (Table III).

The cases' distribution depending on the persons' sex evidenced 291 (84.84%) deaths in males in comparison with 52 (15.16%) cases in females, the proportion M/F being of 5.6. (Table IV).

The cases' distribution depending on life conditions evidenced 239 (69.68%) cases in rural area and 104 (30.32%) cases in the urban area (Table V).

Table IV. Distribution by sex

The year of study	Males	Females	Total
2005	112 (32.65%)	18 (5.25%)	130 (37.90%)
2006	89 (25.95%)	21 (6.12%)	110 (32.07%)
2007	90 (26.24%)	13 (3.79%)	103 (30.03%)
Total	291 (84.84%)	52 (15.16%)	343 (100%)

Table V. Distribution by location

The year of study	Urban	Rural	Total
2005	52 (15.16%)	78 (22.74%)	130 (37.90%)
2006	9 (2.62%)	101 (29.45%)	110 (32.07%)
2007	43 (12.34%)	60 (17.49%)	103 (30.03%)
Total	104 (30.32%)	239 (69.68%)	343 (100%)

Table VII. The result of the toxicological test

The year of study	Positive test	Negative test	Total
2005	89 (25.95%)	41 (11.95%)	130 (37.90%)
2006	90 (26.24%)	20 (5.83%)	110 (32.07%)
2007	78 (22.74%)	25 (7.29%)	103 (30.03%)
Total	257 (74.93%)	86 (25.07%)	343 (100%)

Concerning the cases' distribution depending on months we noticed a uniform distribution in the twelve months of the year, but nevertheless we found a higher prevalence during the spring months in comparison with the winter months (Table VI).

Both complementary and toxicology examinations evidenced that 257 (74.93%) cases were under the influence of alcohol and 86 (25.07%) cases had a negative alcoholicity (Table VII).

Discussions

From the presented data in our study, we ascertain that over the three analyzed years, from 2005 to 2007, in Mureș County there were registered 343 cases of mechanical asphyxias caused by hanging; this, in most of the cases and according to the medico-legal practice and concept and also from juridical point of view is considered suicide [2,3]. The number of cases in males was higher than in women, the ratio being 5.6. The analysis by age evidenced a predominance of suicides in the age group 41–50 and 51–60, where there were registered a number of 77 and 74 cases and the lowest level of suicides was registered in the age group under 10 and over 80 where we registered 2 and 10 cases. The results obtained by us are comparable with the results of other studies from USA, where the suicide rate was registered in age groups between 55–70 [4,5].

Table V. Distribution by months

The months of the year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2005	9	5	11	19	15	15	11	10	13	13	7	2	130
2006	4	7	8	12	15	11	11	7	8	11	10	6	110
2007	11	3	3	12	11	9	12	13	6	6	12	5	103
Total	24	15	22	43	41	35	34	30	27	30	29	13	343

Other international studies, affirm that over 90% from the self-murderers have psychical disorders with nervous breakdowns, in combination or not with chronic alcoholism [6]. In our study, this fact, is maintained by the toxicological tests that were done in all the suicide cases and proved that 74.93% from the persons, before suicide drank alcoholic drinks and this represents a proportion of 3 to 1 for the ones that consumed alcohol [4]. The rates of suicides are certainly higher in men even though nervous breakdowns cases are more frequent in females [4,7]. The cases' analyze depending on location evidenced that most of suicides by hanging happened in rural locations where there were registered 239 cases, representing a percentage of 2.3 to 1. There were no significant differences between the months of the year, no matter the age or the sex of the persons. The total rates were higher during the spring months, in April, May and June when there were registered 43, 41 and 35 cases in comparison with the winter months – February and December – when there were registered 15 and 13 cases. These dates are similar with the ones from HONG KONG, where the method of hanging was predominant compared with other mechanical asphyxias [4,5,6].

Conclusions

The existing transition period, the political and social incertitude as well as the loss of jobs, don't allow us to

draw up simple conclusions concerning the causes that lead to this suicide form. In our opinion, one of the most frequent causes of suicide was determined by the loss of jobs in population from rural locations, where there were registered the most cases of suicides. Another cause of suicide is the increasing of the unemployment rate, the low incomes, alcohol consumption as well as problems between families' members. Our conclusions are relied on the fact that most of suicides were registered in persons with ages between 41–50 and 51–60 unemployed, neither with re-qualification possibilities nor with the possibility of finding a new job.

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