SUDDEN CARDIAC DEATH IN THE CASUISTRY OF SIBIU COUNTY FORENSIC SERVICE

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Abstract: *Purpose: Heart disease pathology has a high incidence in the etiology of sudden deaths encountered in forensic medicine casuistry. Materials and methods: We performed a retrospective longitudinal study over a period of 10 years, on 675 cases of the casuistry of Sibiu County Forensic Service. We aimed at the epidemiological distribution by age, gender, area of origin, seasonality, distribution of cases according to the place of death, the presence/absence of alcoholic intoxication and at correlating the data obtained with that in the literature. Results: The study showed that over half of the sudden deaths were of cardiac etiology, occurring more frequently in males in urban areas, with a maximum incidence in the age group of 50-59 years. In over two thirds of cases, myocardial infarction was the cause of sudden death. The peak incidence of sudden cardiac death was recorded in the winter months. The article has been elaborated as part of doctoral research.*

INTRODUCTION

Sudden death is considered an abrupt, unexpected and unexplained decease of an individual with an apparently normal health status, presenting short or no premonitory symptomatology whatsoever (Sudden Unexpected Unexplained Death).(1,2,3)

The definition of sudden heart-related death includes the death that occurred in less than one hour of the onset of symptoms (ICD-10 code I46.1).(4) However, there are some authors who consider the sudden death as the death occurring instantly, immediately after the appearance of symptoms.(5)

At all ages, sudden death occurs most commonly secondary to cardiac pathologies. Although cardiac pathology can vary, this type of pathology is responsible for a considerable number of deaths in the United States, ranking 6th in children aged 10-14 years old, 5th in adolescents and young adults aged 15 -34 years old, 3rd in adults aged 35-44 years old and 2nd in people in the age group of 45-74 years old.(7) Heart diseases are the leading cause of death in people over 75 years old.(6,7,8)

The causes of sudden cardiovascular death include: myocardial infarction, cardiomyopathy, hypertension; valvular diseases; bacterial endocarditis; cardiac toxicity induced by dgs (cocaine, anthracyclines).(9,10)

PURPOSE

The paper proposes a retrospective clinical and statistical analysis of sudden cardiac deaths in the casuistry of Sibiu County Clinical Service with clinical and epidemiological correlations of the phenomenon.

MATERIALS AND METHODS

It is a retrospective study of 675 cases of sudden cardiac deaths recorded in the Sibiu County Forensic Medicine Service for a period of 10 years (2006-2015). There were studied autopsy reports, toxicological analysis reports and clinical observational sheets for the studied period.

RESULTS AND DISCUSSIONS

Of the 946 sudden deaths of non-violent etiology, sudden cardiac deaths accounted for 71.35% of cases.

The share of sudden heart-related deaths was about 4 times higher in males, approximately 80% (538 cases) than in females (137 cases, 20.29%). This is explained by the risk factors associated with masculinity.

Table no. 1. Repartition of sudden heart-related death according to gender

Gender	No.	%
Male	538	79.70
Female	137	20.29
Total	**675**	**100**

Following the distribution of sudden cardiac deaths by area of origin, we noticed a preponderance of cases in the urban environment, with a share of 64.29% (434 cases), compared to rural areas, of 35.70% (241 cases) given the increased number of people in this area.

Table no. 2. Repartition of sudden cardiac deaths according to origin environment of the deceased

Origin environment	No.	%
Urban	434	64.29
Rural	241	35.70
Total	**675**	**100**

Most sudden cardiac deaths occurred in the age group of 50-59 years old (189 cases, 28%), followed in terms of frequency by the age range of 60-69 years (162 cases, 24%). In 18.37% of cases (124 deaths) sudden death occurred in people aged between 40-49 years. In about 6% of cases, cardiac pathology was responsible for the sudden death of people aged between 10 and 39 years. Although the incidence of sudden death increases with age, more and more cases of sudden death occur in younger ages, through the combination of several factors, including the psychosocial ones (e.g. stress).

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Table no. 4. Distribution of sudden cardiac deaths according to age of the victim

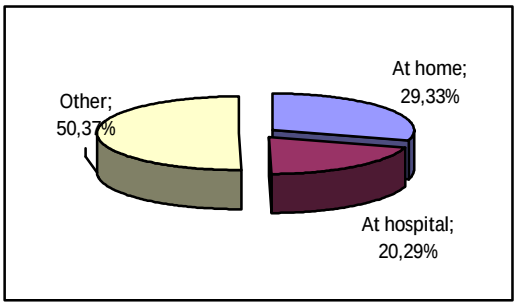
Age	No.	%
10-19 years old	1	0.14
20-29 years old	1	0.14
30-39 years old	39	5.77
40-49 years old	124	18.37
50-59 years old	189	28
60-69 years old	162	24
70-79 years old	109	16.14
Over 80 years old	50	7.40
Total	**675**	**100.00**

We followed the distribution of heart-related deaths in terms of the place where death occurred. Thus, the maximum weight (340 cases, 50.37%) was recorded outside the victim's house or a hospital unit. In about a third of cases, death occurred in the victim's house (198 cases, 29.33%). These data confirm the term of "sudden death", which may occur at any time and in any place.

Table no. 5. Distribution of sudden cardiac deaths depending on where death occurred

Place of death	No.	%
At home	198	29.33
At hospital	137	20.29
Other	340	50.37
Total	**675**	**100**

Figure no. 1. Distribution of sudden cardiac deaths according to place of death



Most sudden cardiac deaths occurred in the winter season (246 cases, 36.44%) and the fewest cases were recorded in spring (114 cases, 16.88%). Approximately equal shares were obtained in summer (166 cases, 24.59%) and autumn (149 cases, 22.07%).

Cold weather is associated with an increased number of sudden deaths, as a result of the action of the cold over the other risk factors.

Table no. 6. Distribution of sudden cardiac deaths according to the season in which the death occurred

Season	No.	%
Winter	246	36.44
Spring	114	16.88
Summer	166	24.59
Autumn	149	22.07
Total	**675**	**100**

Figure no. 2. Distribution of sudden cardiac deaths according to the season in which the death occurred

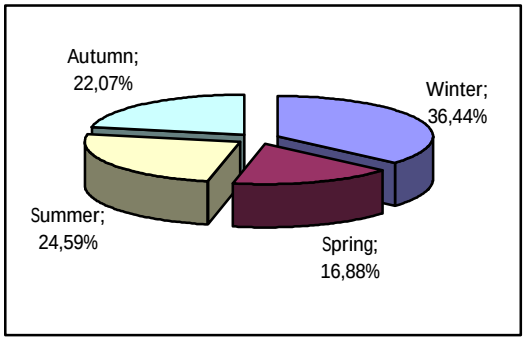
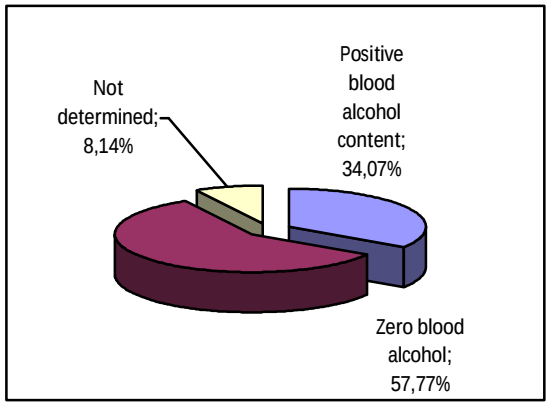


Table no. 7. Distribution of sudden cardiac deaths according to the presence/absence of ethanol intoxication

Blood alcohol content	No.	%
Positive	230	34.07
Zero	390	57.77
Not determined	55	8.14
Total	**675**	**100**

Figure no. 3. Distribution of sudden cardiac deaths according to the presence/absence of ethanol intoxication

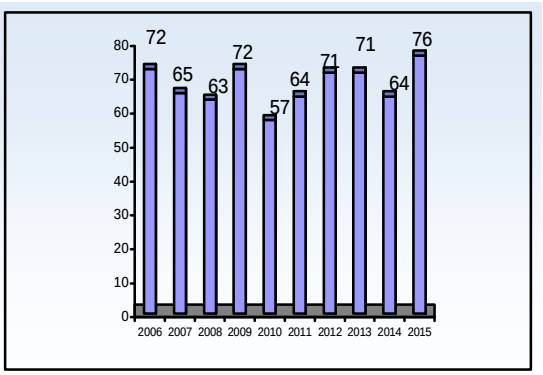


The weights of sudden cardiac deaths in the period under study were between 8 and 11%. The peak incidence (11.25%) was registered in 2015. The fewest cases (8.44%) occurred in 2010. Between 2006 and 2010, sudden cardiac deaths followed a gradual downward trend, while in following period, 2010-2015, they registered a progressively upward trend. Approximately equal weights of cardiac deaths were obtained in 2006, 2009, 2012, 2013 and 2015.

Table no. 8. The distribution of sudden cardiac deaths by years in the studied cases in the period 2006-2015

Year	No.	%
2006	72	10.66
2007	65	9.62
2008	63	9.33
2009	72	10.66
2010	57	8.44
2011	64	9.48
2012	71	10.51
2013	71	10.51
2014	64	9.48
2015	76	11.25
Total	675	100.00

Figure no. 4. The distribution by years of sudden cardiac deaths in the studied cases in the period 2006-2015

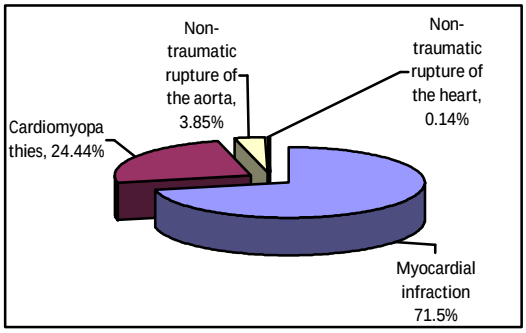


Cardiac deaths by heart attacks had the largest share (483 cases, 71.55%). In about a quarter of all deaths, death was due to cardiomyopathies (165 cases, 24.44%). There has been encountered one case of sudden death through non-traumatic rupture of the aorta. The data are consistent with those in the literature.

Table no. 9. Distribution of sudden cardiac deaths according to the cause of death regarding the cases analyzed in the period 2006-2015

Cause of death	No.	%
Myocardial infraction	483	71.55
Cardiomyopathies	165	24.44
Non-traumatic rupture of the aorta	26	3.85
Traumatic rupture of the heart	1	0.14
Total	675	100.00

Figure no. 5. Distribution of sudden cardiac deaths according to the cause of death regarding the studied cases analyzed in the period 2006-2015



CONCLUSIONS

- Of all sudden deaths of the casuistry of Sibiu County Forensic Service in the period 2006-2015, more than half had a heart-related etiology.
- Sudden cardiac deaths have a maximum incidence among men.
- Cardiac deaths had a higher share in urban than in rural area.
- Most sudden cardiac deaths occurred in the age range 50-59 years. In 20% of cases, the deceased were aged between 40-49 years old. An important percentage, about 6% of cases, was recorded in young people in the age range 10-39 years.
- In about a third of cases, death occurred at the victim's house, and the maximum incidence, more than half of cases, was registered by the deaths occurring in a different location than the home or hospital.
- In the winter season, there was a maximum incidence of sudden cardiac deaths. Approximately equal weights were recorded in summer and autumn seasons.
- In more than a third of sudden death cases, positive blood alcohol was detected.
- Distribution of studied cases per years showed a fluctuating evolution, with approximately equal shares in half of the years under study (2006, 2009, 2012, 2013 and 2015).
- In 70% of cases, sudden death was caused by acute myocardial infarction, being followed in terms of weight by cardiomyopathies, in about a quarter of cases.

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