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ACUTE AORTIC DISSECTION - FORENSIC MEDICINE ASPECTS

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ABSTRACT

We investigated some forensic-edical aspects and medico-biological aspects of aortic aneurisms. We examined 2574 forensic autopsies from 1998 to 2004 years. There were studied the following data - sex, age, reasons for the development of the aneurysms, the localization of the intimal lesions, complications and chronobiological pecularities. The level of alcohol were established by Widmark method. We found 20 cases with acute aortic dissection aneurysms (0,78%). The most often place of death is home (45%) and work (20%). The men were more than twice (70% men and 30% women). The average age of the men (55,71) was considerably lower than women's (68,67). The most affected age group (50-79) occupied 75% from all cases. The main etiologic factor was hypertonia and atherosclerosis (70%), in 20% - only hypertonia. We observed intimal lesions 1 sm and 2 sm above aortic valve. The wall of the left ventricle with hypertonia and atherosclerosis showed 21,86 mm. In 85% of the cases we found cardiac tamponada. There were chronobiological peculiarities in sudden death from aortic aneurysms

Keywords: Aortic dissection, frequency, etiology, age, complications

INTRODUCTION

Acute aortic dissection (AAD) is one of the reasons for sudden death (8). Their frequency is about 4,3 /100 000 (9) and cover 4,4% from sudden death cases (7). In most investigations, the observed cases are in hospital. The investigators haven't paid enough attention of the cases without medical aid and the problem with the AAD has usually explain one-sided. This made us to begin the following examination.

Purpose: To investigate some forensic-medical and medicobiological aspects of AAD as a reason of sudden death.

MATERIAL AND METHODS

We examined 2574 forensic autopsies in the period 1998-2004. There were studied the following data - sex, age, reasons for development, place of the intimal lesions, complications and chronobiological peculiarities.The content of alcohol in blood and urine were established by Widmark method.

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RESULTS AND DISCUSSION

In the investigated material we have found AAD in 20 cases (0,78% from all forensic autopsies). This is lower than in pathological autopsies -1% (1).

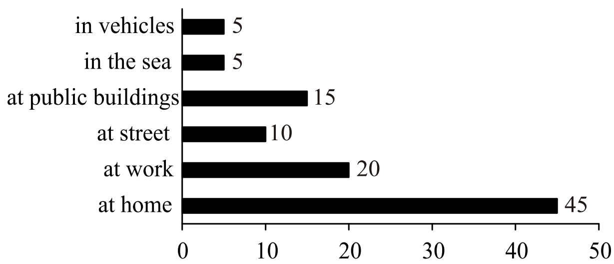

Fig.1. The relative part of the cases according to the place of death

The results of the crime scene poited out that the death often occur at home (45%) and at work (20%). It's worthy of note the death cases in the sea (5%) and in the car (5%) because of the necessity to distinguish sudden death from drowning and vehicle accident (Fig.1)

The male sex is affected more than twice (70%) than the female sex (30%). The average age of the men (55,71) is considerable lower than women's (68,67) (Fig.2). The correlation is 2,33: 1 (male:female) and this isn't correspond to Penev's data, concerning deceased in hospital (1:1).

According Penev's examinations in hospital, the most affected age is 60-69. Our observations show almost equally affected age group 50-79 and their number is 75% from all investigated cases (Fig.3).

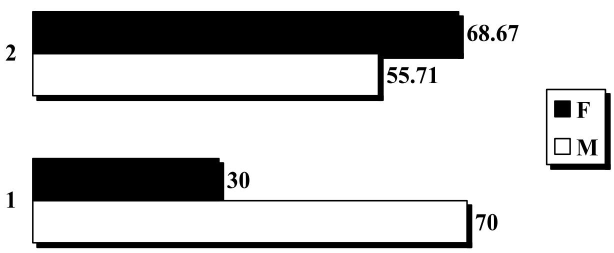

Fig.2. Distribution of cases by sex and average age

There are several cases of aortic aneurysms in young people (2,3,4). According Basso (2) in 3,85% of deceased young people (< 35 years) from heart diseases, the reason is AAD. According our investigations in 10% from the cases with AAD the age of the deceased is under 35 years. Penev's data is like ours.

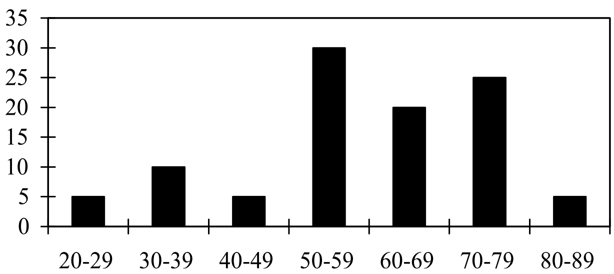

Fig.3. The age distribution in decades

The main reasons for aortic aneurysms is a combination between high blood pressure and atherosclerosis - 70%, following by hypertonia - 20%. We have found only atherosclerosis in 5% and Marfan's disease - in 5% (Fig.4). As a reason Marfan's disease is found in 1,5% (9), some authors have emphasized the role of high blood pressure, long and short time stress, previous heart diseases, smoking (7).

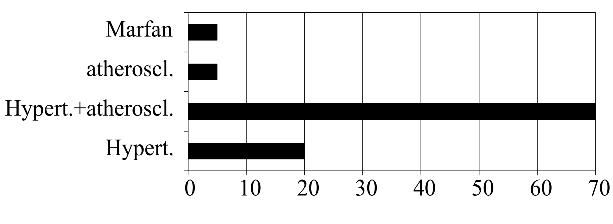

Fig.4. The distribution of the etiologic factors among the investigated material

The most often laceration of the intima is 1 sm (45%) and 2 sm (25%) above aortic valve (Fig.5)
The wall of the left ventricle pointed out the most high values in cases with hypertonia and atherosclerosis - 21,86 mm. (Fig.6)

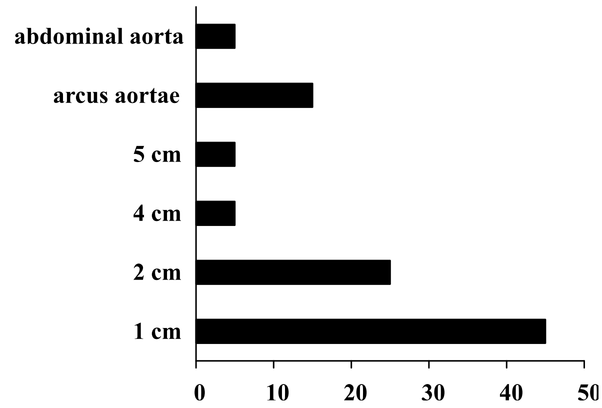

Fig.5. The localization of the intimal damage

The most often registered complications is tamponada cordis - 85%, following of the blood haemorrhage in the chest cavity - 10% and in abdomen - 5% (Fig.7). In forensic autopsies the cardiac tamponade in AAD observed in 60% (8) - 87% (6). Our results correspond to these data.

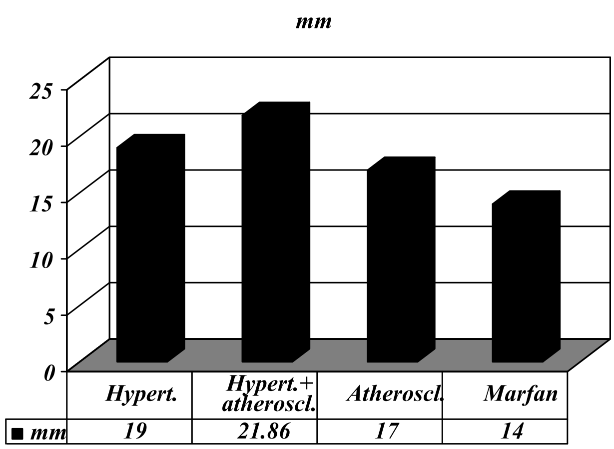

Fig.6. The thickness of the left chamber according to the etiologic factors

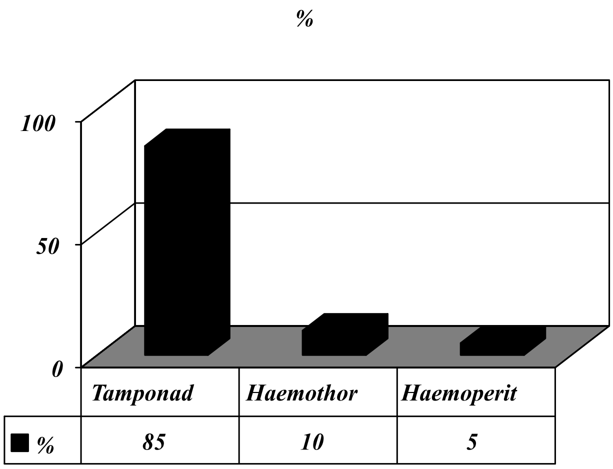

Fig. 7. Complications of aortic aneurysms in the examined material

There are scanty data for several chronobiological peculiarities in AAD (4). In the investigated period we have established irregular distribution of the cases from 0,28% to 1,42% (Fig.8) and the maximal values is 5 times higher than minimal.

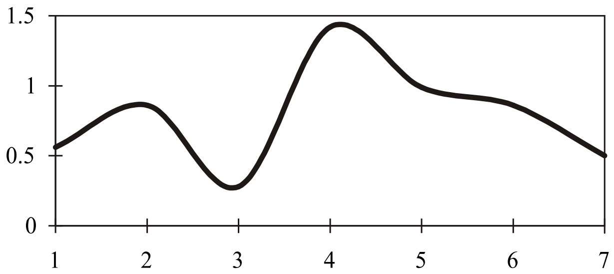

Fig. 8. An annual distribution of the cases with AAD in the whole 7-years period

The results by monthly distribution of the cases showed the most cases in January-25%, October -20% and December - 15% (Fig.9). Similar peak in autumn-winter period was established by other authors (4).

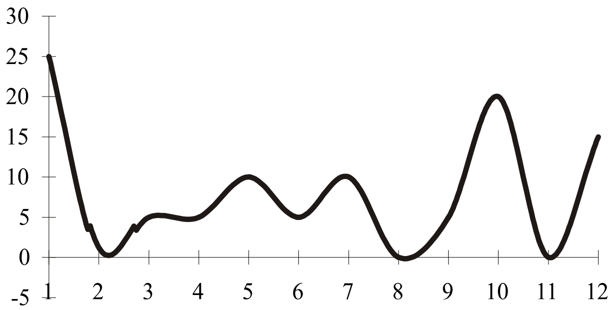

Fig.9. Monthly distribution of the cases with AAD in the investigated 7-years period

We have found the alcohol blood level 0,22%o and 0,28%o only in 2 from all 20 cases. These values are extremely low and could be arteficial.

CONCLUSIONS

1. We have revealed AAD in 0,78% from all forensic autopsies.
2. The most often place of death is home (45%) and work (20%).
3. We have established an equal affected age groups between 50 and 79 years. This is different from other data, concerning the deceased in hospital.
4. According our study the most affected place of the intima is 1 sm above aortic valve (45%) and 2 sm above aortic valve (25%).
5. The most often registered from us complication is cardiac tamponada - 85%.
6. There are some chronobiological peculiarities in sudden death from AAD.

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