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Research Article

Dynamics of Blood Pressure During the Development of Neuroleptic Cardiomyopathy

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Summary

The study of various clinic aspects of Neuroleptic Cardiomyopathy (NCMP) associated with the side cardiotoxic effect of Antipsychotics (AP) is actual. With the purpose to track dynamics of the Blood Pressure (BP) in the process of development of NCMP data about 78 died patients with schizophrenia (men - 53, women - 25) in whom NCMP is found on autopsy were retrospectively analyzed. At the age of 50 years were 43 persons, 44 died in the first stage of the disease, 12 - in the second one, 22 - in the third one. The conducted research allows to draw the following conclusions:

a) Frequency of this or that option the AP in all stages of NCMP doesn't depend on the age of patients.

b) In a latent stage significantly prevail hypo and a normotony.

c) In the developed stage steadily normal and labile BP with a tendency to moderate Arterial Hypertension (AH) are equally common.

d) In the terminal stage of NCMP at ¼ patients is observed moderate AH and at 13,6% of patients the expressed stable AH.

e) As a whole, according to own data, in the case of NCMP the frequency of AH is 37.2%.

f) Fluctuations of frequency of occurrence of this or level of BP are connected with various side effects of the AP used in the treatment of schizophrenia.

Keywords: Neuroleptic Cardiomyopathy; Clinical current; Blood pressure

Abbreviations: AH: Arterial Hypertension; NCMP: Neuroleptic cardiomyopathy; AP: Antipsychotics BP: Blood Pressure

Introduction

Neuroleptic cardiomyopathy (NCMP) is one of the most serious vitally dangerous complications of antipsychotic therapy [1-7], due to the side cardiotoxic effect of Antipsychotics (AP) [1,2,4,6-9]. The disease belongs to the secondary specific toxic (metabolic) dilated cardiomyopathies [1,3,10,11]. Is characterized by diffuse myocardial lesions, a sharp decrease in its contractile function and, as a consequence, development of chronic heart failure [3-6,12]. In its development NCMP passes three clinical stages: I - latent, II - deployed (manifesting) and III - terminal [3,13]. Many aspects of the pathogenesis, morphology, clinic and diagnosis of NCMP are still almost completely unexplored. Among others, it is of practical interest to trace the dynamics of blood pressure (BP) during the development of NCMP. This issue is still without due attention. However, to date, BP is quite informative marker of the functional state of the cardiovascular system, its measurement is usually not difficult, it is a routine method of examination of patients. In order to fill the existing gap at least partially, the present study has been undertaken.

Material and Methods

The history and protocols of autopsies of the dead 78 schizophrenic patients (53 men, 25 women), whose autopsy discovered NCMP, are studied. At the age of 50 years were 43

persons, 44 died in the first stage of the disease, 12 - in the second one, 22 - in the third one. The lethal outcome in the first two stages either came from intercurrent diseases or there was sudden cardiac death of arrhythmogenic origin. In the terminal stage, the immediate cause of death was usually progressive chronic heart failure [3,14]. The dynamics of changes in depending of BP on the age of patients and stage NCMP was traced. The results of the study were processed statistically (computer program "Statistica 6,0") with the level of significance of differences of 95% and more ($p \leq 0,05$).

Result

The generalized results on the dynamics of BP in patients with schizophrenia in combination with NCMP are given in the Table 1. It reflects the frequency of occurrence of a level of BP in percentage to the number of deaths in each stage of the disease. Analysis of the table data shows that the frequency of a particular variant of BP in all stages of NCMP doesn't depend on the age of patients. The difference in rates in patients younger and older than 50 years is random. In the latent stage of NCMP normal BP and hypotension are dominated statistically significantly and substantially (by almost half). Insignificant Arterial Hypertension (AH) is observed only approximately in ⅓ cases. In the developed stage of disease is equally common as a stable normal (and even slightly reduced) BP, and labile with a tendency to moderate AH (the difference in the corresponding indicators is statistically insignificant). Finally, in the terminal stage almost 60% of patients have normal BP and hypotension, slightly more than ¼ - moderate AH, and BP is constantly more than 150/100 mm Hg in 13.6% of patients. There are no significant differences between the frequency of normal BP and of AH one.

Table 1: Dynamics of BP in NCMP.

Age	The stage of NCMP						
	Latent I		II Deployed		III Terminal		
	BP [mm Hg]						
	120/80and <	130–140/80–90	Stable 120/80 and<	Labile 120/80–160/100	120/80 and<	130–150/80–90	>150/100
	years						
< 50 years	36,4	18,2	33,3	25,0	31,8	13,6	9,1
> 50 years	29,5	15,9	25,0	16,7	27,4	13,6	4,5
In total	65,9	34,1	58,3	41,7	59,2	27,2	13,6

Discussion

The acquired data provide the basis for some arguments and generalizations. It is known that one of the problems that often arise in the appointment of most AP is a marked decrease in BP [2]. The greatest practical interest is the orthostatic hypotension. This action of AP is associated with their side effect on the autonomic system regulating BP - inhibition of a significant part of the postsynaptic α1-adrenergic receptors of blood vessels, leading to vasodilatation. At the same time, BP decreases not only at rest, but also remains low under load. However, in the course of antipsychotic therapy in a number of mental patients with the development of NCMP can be observed directly opposite process - expressed in varying degrees of AH. In my opinion, this is due to cardiac remodeling and compensatory hypertrophy of some part of cardiomyocytes [14]. As a result, BP returns to normal values, remaining either stable at this level, or fluctuating sometimes to the values of 160/100 mm Hg. To the final of the diseases in some observations BP figures reaches 130-150/80-90 mm Hg and remaining stable, and sometimes exceeds 150/100 mm Hg. In general, according to own data, in the case of NCMP the frequency of AH is 37.2 %.

A similar combination of idiopathic dilated cardiomyopathy and systemic AH was shown by MS Kushakovskij [15], and earlier YuV Tirkel'taub [16] observed labile BP in patients with schizophrenia, receiving APT. It is also impossible to exclude the effect on the increase in BP with long-term use of AP, that is, in the terminal stage of the NCMP, the side effects of these drugs on the neuroendocrine and metabolic functions of the body [17]. These are the elements of the metabolic syndrome, one of which is AH [18-20]. Thus, according to own data, there is a strong correlation of the frequency of elevated BP with the degree of fatness of dead patients ($\rho=0.84$). At the same time, 70.6% of BP changes are associated with an increase in body weight, which is one of the cardinal signs of the metabolic syndrome [18-20].

Conclusion

Thus, the study of the dynamics of BP in case of development in the patients with schizophrenia NCMP allows us to draw the following conclusions:

a) The frequency of this or that option of BP in all stages of NCH doesn't depend on the age of patients.

b) In the latent stage is essentially dominated by hypo - and normotony;

c) In the developed stage of NMMC stable normal and labile BP with a tendency to moderate AH are equally common.

d) In the terminal stage, slightly more than ¼ of patients have moderate AH, and 13.6% of patients have BP consistently exceeding 150/100 mm Hg.

e) In general, according to own data, in the case of NCMP the frequency of AH is 37.2 %.

f) Fluctuations in the frequency of this or that level of BP, revealed in the development of NCMP, associated with various side effects of AP used in the treatment of schizophrenia.

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