

PSYHOTROPIC IMPACT MEDICATION USE ON THE RISK OF SUDDEN

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Abstract

It has been acknowledged, for a long time now, that the use of some psychotropic drugs, such as neuroleptics, antipsychotics, antidepressants or anxiolytics is associated with the risk of cardiac arrhythmia and sudden death.

In addition, antiepileptics and drugs used for kinetic disorders can also cause cardiotoxic effects in some patients (e.g. pimozide).

Sudden cardiac death is generally defined as an unexplainable cardiorespiratory arrest, which usually occurs as the result of a cardiac arrhythmia that can occur within an hour of the onset of symptoms.

Keywords: : psychotropic drugs, cardiac arrhythmias, cardiotoxic effects, sudden death, anti-epileptic drugs, risk cardiac.

INTRODUCTION

The main side effects of psychotropic medication on the cardiovascular system consist of the proarrhythmic risk by the prolongation of the QT interval, the potentiation of certain risk factors for cardiovascular diseases, such as favoring obesity and other metabolic disorders and the adverse effects on the heart rate and blood pressure (Ebert et al 1998, Mangani et al 2003, De Bruyere et al 1999).

In regards to the link between the cardiotoxic effects of the antipsychotic agents and the prolongation of the QT interval, it is important to know the pathophysiological mechanism underlying this effect (Hanci et al 2013, Hanci et al 2011).

The QT interval represents the duration of the ventricular action potential. (McLaughlin et al 1996, Tran et al 2001) Thus, the prolongation of the QT interval directly reflects on the ionic channels involved in the ventricular action potential generation (Alici et al 2013, Maia et al 2004).

Since the QT interval is also dependent on the heart rate, the current clinical practice uses the value of the QT interval, corrected depending on the frequency (Gazalle et al 2004, Day et al 1992).

Therefore, it is considered that a QT interval of over 450 ms for men and over 460 ms for women favors the occurrence of malignant ventricular arrhythmias (especially reentry ventricular tachycardia) and the onset of sudden death (Murray et al 1997, Murray et al 1994).

Psychological stress can have serious negative effects on the welfare of individuals and plays a role in the development and the unfavorable development of several diseases, such as diabetes, cancer, immunological disorders (Campbell et al 1985, Antzelevich et al 2002).

Cardiovascular disease is another medical condition in which stress could have a negative effect. In this context, a significant amount of information was provided by the INTERHEART study, which followed that psychosocial stress - office can be considered as a risk factor associated with acute myocardial infarction (Highman et al 1994, Timmerman et al 2006, Curtis et al 2004).

MATERIALS AND METHODS

Our study is a prospective one, which analyzed the population committed via the emergency department, between January 2009 and January 2013. Of all the patients admitted in the institution, 203 met the initial eligibility criteria for the study.

After a careful evaluation, 33 patients were excluded from the final sample group, which included 170 patients.

All patients included in the study signed the informed consent form.

An inclusion criterion was the existence of a 12-lead electrocardiogram performed in emergency and urgent conducting laboratory tests in complementary base (glucose, potassium and magnesium). QT dispersion was monitored when used concomitantly administered drugs that influence the QT interval. Thus, they excluded patients on continuous use of other drugs that prolong the QT interval, especially domperidone, and metoclopramide bromopride.

RESULTS AND DISCUSSIONS

From a total of 203 initially selected patients, 170 met the inclusion criteria and constituted the sample population of this study.

The most common exclusion causes were the presence of atrial fibrillation on the EKG (n=11), followed by cardiostimulators (n=7), the lack of serum calcium levels on admission (n=5), extrasystole ventricular arrhythmia

(n=4), EKG analysis incapacity due to technical issues (n=3) and documented hypercalcemia (n=3).

Subsequently, the 170 patients were divided into two groups, depending on the use of psychotropic medication or lack thereof: the NP group consisting of patients who did not use psychotropic drugs (n = 90 patients) and the P group, consisting of psychotropic drugs users (n = 80 patients).

In the NP group, one can note the predominance of males (n = 66, 73,33% compared to 25, 31,25% p<0,05), whilst in the P group the women were much better represented than males (n = 55, 68,75% compared to n= 24).

Table 1

Gender-based distribution of patients in the 2 groups

	sex	NP group	P group	total
Number of patients (n)	male	66	25	91
% of the number of patients in the group		73,33%	31,25%	
% of the total number of patients		38,82%	14,71%	53,53%
Number of patients (n)	female	24	55	79
% of the number of patients in the group		26,67%	68,75%	
% of the total number of patients		14,12%	32,35%	46,47%
Number of patients	total	90	80	170
Total percentage		52,94%	47,06%	

The average age of patients in the 2 groups, depending on the sex of the patients, is shown in Table no. 2.

Table 2

The average age of the male and female patients in the 2 groups

	Average male age	Male standard deviation	Average female age	Female standard deviation	p
Age	P GROUP 62,00	10,90	65,32	6,72	0,09
	NP GROUP 59,12	9,12	58,91	6,86	0,92

As can be seen, there were no significant differences between the two groups regarding the age of the male and female patients.

Fig.no.1 The relationship between age and the use of antiarrhythmic therapy with $p=0,05$

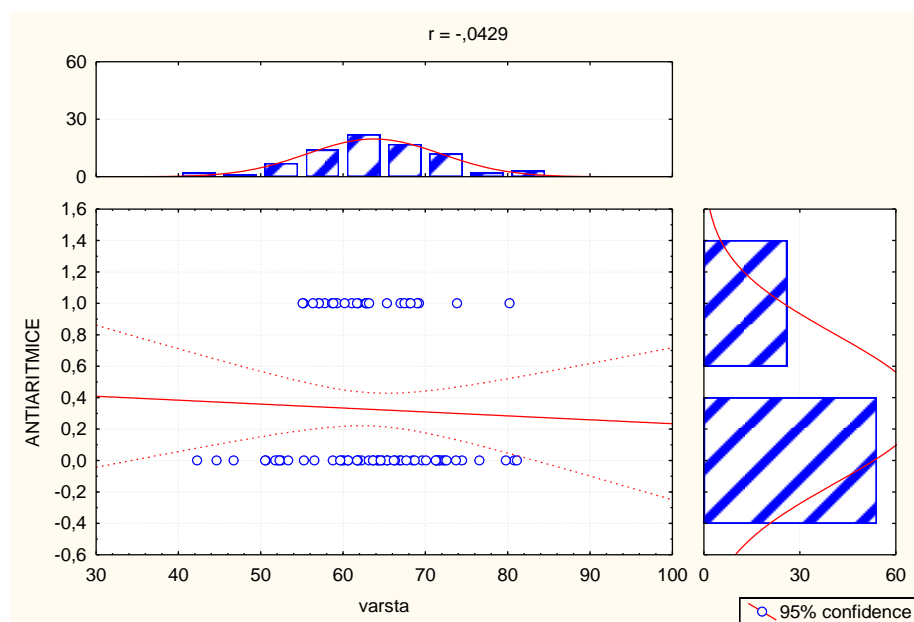


Fig. 1. The relationship between age and the use of antiarrhythmic therapy

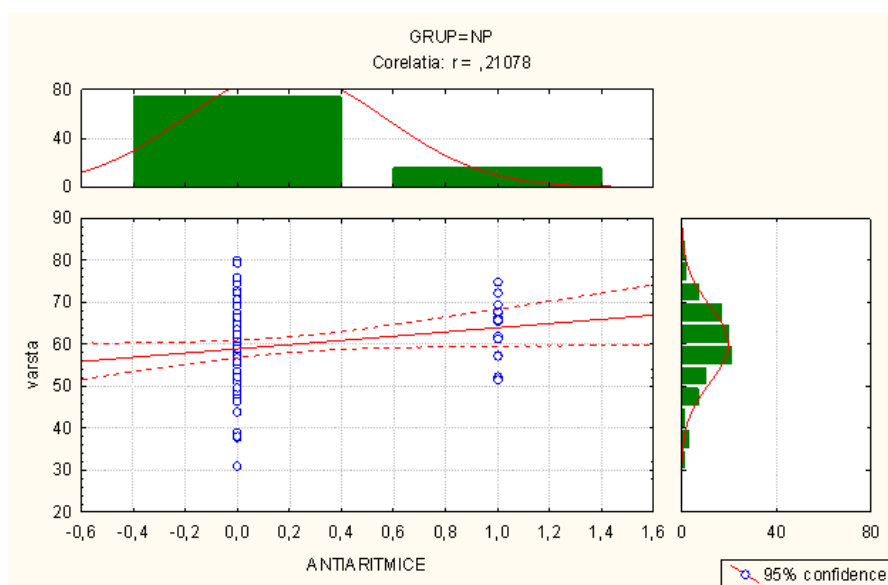


Fig. 1. The relationship between age and the use of antiarrhythmic therapy

There were no significant differences between groups in terms of age and those hypertensive patients without hypertension

CONCLUSIONS

In the past 25 years, the QTD has been studied by several authors, in different clinical scenarios, in normal subjects and patients with cardiovascular diseases. In a study that evaluated the influence of age and sex on the QTD, Tran and others 15 concluded that the estrogen does not alter the QT interval, but still significantly reduces its dispersion. In a healthy population, (Alici et al, 2003)

16 has also confirmed these observations. In the population evaluated in this study, the results were similar. The use of psychotropic drugs was more common in older women.

Based on these observations, a more numerous representation of older women, in group P, was expected; based on this, the QTD was analyzed separately for the 2 sexes, in the group of psychotropic drug users.

The QTD was higher in males ($71,15 \pm 26,91$ ms) than in women (68.26 ± 24.96 ms), with no statistical significance. It is known that, in the female population segment, over 50 years old, the estrogenic protection no longer applies. Thus, other mechanisms have been studied in order to understand this phenomenon.

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