GALAXY INTERNATIONAL INTERDISCIPLINARY RESEARCH JOURNAL (GIIRJ)
ISSN (E): 2347-6915
Vol. 12, Issue 4, April (2024)

A CLINICAL PHARMACOLOGICAL APPROACH TO THE USE OF CARDIAC GLYCOSIDES IN PREGNANT WOMEN

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ABSTRACT

Pregnancy, with its physiological neurohumoral and hemodynamic changes, can cause a first-time cardiac arrhythmia or lead to aggravation of an existing arrhythmia. It is important to highlight those rhythm disturbances in pregnant women that do not pose a danger to the mother and fetus and therefore are not a contraindication to natural childbirth, and sometimes do not even require drug treatment. On the other hand, arrhythmias that disrupt hemodynamics, as well as those related to the so-called potentially malignant and malignant cardiac arrhythmias, require specific pharmacotherapy, and in some cases, invasive treatment methods.

Keywords: pregnancy, supraventricular tachyarrhythmias, cardiac arrhythmias, antiarrhythmic drugs, ventricular tachyarrhythmias, electrical cardioversion, antiarrhythmic pharmacotherapy, radiofrequency catheter ablation.

INTRODUCTION

Digoxin is the most common cardiac glycoside in clinical practice, the antiarrhythmic effect of which is mainly associated with an increase in parasympathetic tone, the effect of which primarily affects conductivity in the AV and SA nodes. It is probably one of the safest drugs used for the treatment of supraventricular tachyarrhythmias in pregnant, fetal and lactating mothers [1]. In patients with AF/AFL, the prophylactic effect of digoxin is practically absent, but it improves their tolerability by slowing down the ventricular rate.

MATERIALS AND METHODS

Cardiac glycosides are contraindicated in case of supraventricular cardiac arrhythmias in patients with VPU syndrome due to a direct shortening of AP refractoriness and, therefore, a possible critical increase in the frequency of ventricular responses, leading to severe hemodynamic disturbances or even the development of VF. It is worth keeping in mind that the concentration of digoxin in the blood plasma increases significantly when verapamil, quinidine, propafenone, and amiodarone are prescribed. When using it, it is necessary to avoid hypokalemia, because it is accompanied by an increased risk of developing VVA and life-threatening VA.

RESULTS AND DISCUSSION

The effectiveness and safety of drug prevention (as well as relief) of arrhythmia paroxysms are ensured to a much greater extent by determining the specific type of SVT. If it is not identified, an empirical selection of the AP is carried out. Pregnant women with asymptomatic (low-symptomatic), rare, short-term paroxysms of BVT do not require treatment. For the

prevention of hemodynamically significant paroxysms of SVT, cardiac glycosides (contraindicated in VPU syndrome), beta blockers, antiarrhythmics IC (propafenone, flecainide) and III (sotalol) classes are recommended. Cardiac glycosides and beta blockers are effective only in preventing AVNRT and reduce heart rate during AT. Due to the fact that propafenone, flecainide and sotalol have a fairly high efficiency (50–70%) in the prevention of all types of NVT (AVNRT, AVRT, atrial RT, non-paroxysmal tachycardia from the AV junction), they, in our opinion, In our opinion, they can be the main drugs for preventing paroxysms of symptomatic tachycardias with narrow ventricular complexes of unknown origin.

Preventive antiarrhythmic therapy for AVNRT is prescribed in cases of poor tolerance to cardiac arrhythmias and in hemodynamically significant paroxysms. As a rule, the effect of drugs that have a fairly high efficiency with a small number of adverse reactions on the part of the mother and fetus is assessed first. These include cardiac glycosides (digoxin) and cardioselective beta blockers. Some APs of IC (propafenone, flecainide) and III (sotalol) classes, which can be prescribed to pregnant women who do not have LV systolic dysfunction, are highly effective in AVNRT.

As with most other arrhythmias, there are no objective clinical, ECG and other criteria on the basis of which it would be possible to select an effective antiarrhythmic drug to prevent relapses of AVRT, and in pregnant women these possibilities are limited due to the negative impact some AP on the fetus. When conducting preventive pharmacotherapy of AVRT in patients with VPU syndrome, it must be borne in mind that a number of antiarrhythmics, increasing the duration of only the anterograde, but not the retrograde, effective refractory period of the APP, facilitate the ability of atrial extrasystoles to induce tachycardia, leading to increased frequency of paroxysms of arrhythmia. Therefore, to prevent relapses of AVRT in case of VPU syndrome in pregnant women, it is probably safer and with sufficiently high efficiency to use APs that act simultaneously on the AV node and the accessory tract (IC class - flecainide, propafenone, III class - sotalol). Cardiac glycosides, verapamil, diltiazem are contraindicated for the prevention of AVRT attacks in VPU syndrome, because in some cases AF/AFL may develop in the future during treatment. Domestic class IC antiarrhythmics (allapinin, etatsizin) should also not be used to prevent paroxysms of ABRT, AVNRT, AVRT (their effect on the fetus has not been studied in clinical studies).

The tactics for stopping AF in pregnant women depends on the specific clinical situation. The important factors determining it are:

1) the effect of arrhythmia on hemodynamics;
2) duration of rhythm disturbance;
3) initial indicators of cardiac pumping function, myocardial hypertrophy;
4) the nature of the main and concomitant diseases;
5) state of sinus node function, AV and intraventricular conduction;
6) the presence of additional atrioventricular conduction pathways [2]. It is not advisable to stop:

- short-term, well-tolerated attacks of AF;
- paroxysms of AF, which spontaneously alternate with sinus rhythm for a short time;

• attacks of AF with a high risk of recurrence (in the absence of urgent indications): untreated hyperthyroidism, significant enlargement of the heart chambers, refractoriness to preventive antiarrhythmic therapy. In these pregnant women, the optimal treatment strategy may also be "rate control" (reducing heart rate and preventing thromboembolism).

Paroxysmal or persistent AF complicated by acute heart failure or symptomatic hypotension should be treated with EIT. Synchronized EIT with a monophasic pulse begins with a discharge with a power of 200 J. If the 1st discharge is ineffective, discharges of higher power are successively applied - 300, 360 J. In patients with implanted pacemakers and cardioverter-defibrillators (CDs), the electrodes should be removed from the site of the implanted device, and after the procedure it is necessary to check its functioning. If there are no indications for emergency ECV (stable hemodynamics), it is possible to perform PCI or planned EIT. Planned ECV or PCI of an AF attack lasting more than 48 hours (or of unknown duration) requires the use of anticoagulants.

The effectiveness of drug relief of AF is 40–80%. In this clinical situation (poor tolerability of AF, but without significant deterioration of the pregnant woman's condition), sometimes it is possible to limit oneself to a decrease in heart rate. In addition, AV node conduction block is necessary when high-frequency PCF AF/AFL (especially AFL) is treated with class IA and IC APs because they can significantly increase the ventricular rate. The main antiarrhythmics recommended by the ESC [1] for stopping AF in pregnant women without organic heart disease are ibutilide and flecainide, as well as propafenone (less studied).

CONCLUSION

The optimal method for preventing life-threatening VA (sustained VT/VF) is ICVD, which can be performed both before pregnancy and, if necessary, at any stage (class I, level of evidence C). ICD is not a contraindication for pregnancy. At the same time, the results of studies in patients with systolic CHF with malignant VAs showed that amiodarone and sotalol (primarily amiodarone), as well as the combination of amiodarone with beta blockers (taking into account its negative effect on fetal development) are more effective than other APs for secondary prevention of SCD. Class I antiarrhythmics should not be used in patients with VT and LV systolic dysfunction due to the high risk of proarrhythmic effects and worsening prognosis (exception: termination of VT with lidocaine).

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