

Article

The structure of arrhythmias in patients after septoplasty

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Abstract: In the present study, an attempt was made to study and evaluate the structure of cardiac arrhythmias in men and women using septoplasty under general anesthesia. Among all types of cardiac arrhythmias, premature atrial complexes and premature ventricular complexes extrasystoles (PAC and PVC) were most often found and were detected in all patients. Atrial tachycardias (AT) in men were significantly more likely to occur in the periods before surgery, during and after it, than in women. PACs at night was significantly more common in women. Ventricular arrhythmias (VA) were significantly more common in women than in men. Moreover, PVCs in women were detected significantly more often in all periods of observation. ATs and VAs in men were significantly more common after surgery. VAs in women were significantly more likely to occur before surgery than after it. Thus, the results of the study showed that of the considered cardiac arrhythmias during septoplasty under general anaesthesia much more frequently in men and women at all stages of the survey found PVCs, and the women of their significantly higher than in men. Cardiac arrhythmias (PAC and PVC) predominated mainly in the postoperative period with the exception of PVCs in women, which was higher in the preoperative period. Reducing the number of arrhythmias observed during operation, possibly due to the impact of drugs for general anaesthesia.

Keywords: septoplasty, arrhythmia, stress, general anaesthesia.

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1. Introduction

Septoplasty is a powerful surgical stressor [1-3]. After surgical interventions in the nasal cavity in animals, stress reactions occur due to an increase in predominantly nociceptive impulses that occur at the site of injury [4, 5]. As a rule, patients experience various types of cardiac arrhythmias and chronic hypoxia [6]. During surgical correction of deviated of nasal septum (septoplasty), which are a powerful stress factor, can cause arrhythmias [3, 5].

In the present study, an attempt was made to study and evaluate the structure of cardiac arrhythmias in men and women using septoplasty under general anesthesia.

2. Patients and Methods

For the period from June to October 2019, septoplasty was performed for 38 patients (20 men and 18 women, 18-55 years old) about the deviated of the nasal septum. Surgery was performed under general anesthesia using sol. Phentonyli (30 mkg / ml), sol. Midozolami (5 mg / ml), sol. Propofoli (150 mg), sol. Nimbexi (6 mg), sol. Traneksami (1000 mg), sol. Atropini (0.5 mg), sol. Ketonali (100 mg), sol. Cerucali (10 mg). Patients underwent holter ECG monitoring using a MT-101 Shiller (Switzerland) Halter, which began two hours before surgery and lasted for 24 hours. According to the results of the study, an analysis of the types of rhythm disturbances in each patient was carried out.

3. Results

Among all types of cardiac arrhythmias, premature atrial complexes and premature ventricular complexes extrasystoles (PAC and PVC) were most often found and were detected in all patients. Atrial tachycardias (AT) in men were significantly more likely to occur in the periods before surgery, during and after it, than in women. PACs at night was significantly more common in

women. Ventricular arrhythmias (VA) were significantly more common in women than in men. Moreover, PVCs in women were detected significantly more often in all periods of observation. ATs and VAs in men were significantly more common after surgery. VAs in women were significantly more likely to occur before surgery than after it (tabl. 1).

Tables 1. Type of arrhythmia in men and women during septoplasty. * - more than other sex ($p < 0.01$); † - more than before septoplasty ($p < 0.01$); ‡ - less than before septoplasty ($p < 0.01$).

		men				women			
		before surgery	surgery	after surgery	night	before surgery	surgery	after surgery	night
Atrial tachycardias	PAC	8,25±2,4*	2.9±1.3‡	29.7±8.1†	11.6±4.1	4.6±1.4	3.1±1.4†	23.4±4.9†	19±5.6*†
	Couplet	0,4±0,13	2.1±1.2*†	3.6±1.7†	1.7±0.6†	1.4±0.6*	0.5±0.4†	2±0.6	3.4±2
	Triplet	0	0.1±0.1	2.9±1.7*†	0.6±0.2†	0	0.1±0.13	1.1±0.8†	2.9±2.4†
	SVTach	0,25±0,16*	0.3±0.2*	0.6±0.41	0.1±0.1	0	0	1.4±1†	0
	Bigem	0,06±0,05*	0	0.1±0.07	0.1	0	0.25±0.26	0.5±0.5	0
Ventricular ar-	PVC	16.9±3,6	21.6±5.7	35.25±11†	18.75±7.8	90.4±10.6*	46.9±5.6*‡	72.5±12.4*†	38.9±10.9*‡
	Couplet	1.25±0,5	2.4±1.34	3.06±1.7†	0.9±0.6	8.6±3.5*	3±1.14‡	4.25±1.8‡	1.5±0.8‡
	Triplet	0.06±0,05	0.4±0.25†	0.56±0.3†	0.25±0.1†	2.4±0.9*	1±0.45*‡	0.75±0.5‡	0.25±0.26‡
	VTach	0.25±0.12	0.13±0.1†	0.19±0.15	0.06±0.05†	1.6±0.75*	0.5±0.28*‡	0.13±0.13‡	0‡
	Bigem	0.13±0.07	0.06±0.07	0.06±0.05†	0.06±0.05†	0.25±0.17	0.25±0.17*	0.5±0.3*	0.5±0.4

4. Discussion

The nasal cavity contains the afferent section of many reflex arcs, which, passing through the autonomic nervous system, end in the heart [2-4]. Thus, manipulations in the nasal cavity can lead to dysregulation of cardiac activity and cause various kinds of arrhythmias [7, 8]. In experimental studies on the septoplasty simulation, it was shown that the application of trauma to the nasal septum mucous membrane entails an imbalance in the autonomic nervous system [9, 10], which is provoked by surgical damage in the maxillofacial region [10, 11]. The involvement of the central nervous system during stress reactions in the regulation of cardiac activity after septoplasty is also confirmed by morphological and physiological studies of the hippocampus formation [12-14]. To prevent the development of such complications of cardiac activity as arrhythmias, it is necessary to carefully assess the intraoperative risks, comorbidities of patients with deviated nasal septum, especially from the cardiovascular system [2, 3, 15], and also clearly determine the presence of predictors of the development of postoperative pain syndrome [15].

5. Conclusions

Thus, the results of the study showed that of the considered cardiac arrhythmias during septoplasty under general anaesthesia much more frequently in men and women at all stages of the survey found PVCs, and the women of their significantly higher than in men. Cardiac arrhythmias (PAC and PVC) predominated mainly in the postoperative period with the exception of PVCs in women, which was higher in the preoperative period. Reducing the number of arrhythmias observed during operation, possibly due to the impact of drugs for general anaesthesia.

Conflicts of Interest: The authors declare no conflict of interest.

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