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The effect of a continuous positive airways pressure in patients with obstructive sleep apnea with critical disorders of sinoatrial and atrioventricular conduction: is a pacemaker necessary?

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Background: Obstructive sleep apnea (OSA) is one of most common sleep disorders. OSA can often be associated with abnormalities in AV-conduction in the form of varying degrees of heart block (in up to 10% of patients). This is due to consequence of the autonomic effects of recurrent apnea with subsequent oxygen desaturation, cyclic fluctuations in sympathovagal balance and cardiac hemodynamic changes. However, the existing guidelines for the management of patients with bradyarrhythmias do not leave us room for maneuver in the treatment of such patients outside the implantation of brady-devices. In our clinical observation we tried to evaluate alternative treatment options for such patients.

Methods: For the period of 2017-2018 in our clinic 4 patients with severe OSA (apnea / hypopnea index >44/hour) and clinically significant sinoatrial (SA) and atrioventricular (AV) disorders were observed: 2 patients had symptomatic SA-blockade of III degree, 3 - AV blockade of II degree, Mobitz 2 with rhythm intervals from 3.7 to 7.5 sec. The average number of all pauses was 36-57 episodes/day. All patients had class IIA-IIIB indications for pacemaker implantation: 2 of them were implanted for DR pacemakers, 2 patients refused to implant the devices. All patients after the diagnosis of OSA (computer pulse-oxymetry, multifunctional ECG Holter monitoring with cardio-respiratory indicators compliant with American Standard for Verification of OSA) were tested with a continuous positive airway pressure therapy (CPAP)-therapy (Auto-CPAP mode) with an assessment of the effectiveness of therapy, using the redo polyfunctional ECG Holter monitoring method.

Results: After 3-5 days of testing CPAP-therapy with selected optimal parameters of base pressure, all patients showed positive dynamics (according to computer pulse oximetry) in the form of a decrease in episodes of hypoventilation and sleep apnea with a decrease of the apnea / hypopnea index to 14-18/hour (on average 16.4/hour). At the same time, during the redo polyfunctional ECG holter monitoring after 5-7 days and 1 month after the activation of CPAP therapy, no symptomatic conduction disturbances were also registered in all patients. With a monthly FU of 2 pacemaker’s patients the percentage of stimulation was minimal and averaged 2.8% with right atrial and 1.8% with right ventricular stimulation. Initially, before the beginning of the CPAP-therapy, these figures were 34.7% and 29.1%, respectively. Conclusion: Successful CPAP-therapy can eliminate the need for implanting brady-devices in patients with severe OSA and associated clinically significant disorders of SA and AV conduction.