CARDIOVASCULAR PATIENT WITH PERMANENT PACEMAKER DUE TO COMPLETE ATRIOVENTRICULAR BLOCK

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Permanent pacemaker implantation and medical therapy due to complete atrioventricular block and comorbid cardiac pathology are considered at an example of clinical case. Permanent pacemaker solved the problem of AV-block, however, drug therapy due to arterial hypertension, heart failure and dyslipidemia is not canceled and requires modification.

KEY WORDS: complete atrioventricular block, permanent pacemaker

INTRODUCTION

Complete atrioventricular (AV) block occurs in patients with comorbid cardiac pathology [1–2]. Permanent pacemaker is sole method of treatment of the AV-block, however, it is requiring the control of drug therapy in connection with the change in hemodynamics [3–5].

This clinical case described below shows that pacemaker implantation in patient due to complete AV block is not canceling drugs support.

CLINICAL CASE

The patient L., a woman 46 years old was admitted to the cardiology department of the Kharkiv railway clinical hospital No1 of the branch «Center Of Healthcare» of public joint stock company «Ukrainian Railway» on the 6th of September 2017 with complaints of general weakness, dizziness, presyncope, shortness of
breath during physical activity (walking), disappearing after the rest, light palpitation, headaches in the occipital, parietal, frontal area, pressing character, periodic, arising during excitement, physical exertion.

**ANAMNESIS MORBI**

In 2009, she was diagnosed with neurocirculatory dystonia, in 2015 – arterial hypertension 2nd stage 1st grade (max blood pressure (BP) 147/97 mm Hg; usual BP 135/85 mm Hg), ramipril 2.5 mg was taken from time to time. In 2016 – AV-block second degree (Obits II), in 2017 – complete AV block was diagnosed on a doctor’s visit after complains of severe palpitation and electrocardiography (ECG) (see pic. 1). After consulting with the physician and ECG monitoring patient was referred to pacemaker implantation.

![ECG](image1)

**Fig. 1 Complete AV block, heart rate 35 bpm, sinus atrial rhythm, PR interval irregular**

**ANAMNESIS VITAE**

Childhood infections, injuries, tuberculosis, sexually transmitted diseases were denied by patient. No family history of any endocrine or cardiac disorders. Allergic history is not burdened. Patient denies smoking, do not abuse alcohol.

**OBJECTIVE EXAMINATION**

General condition of the patient was satisfactory, consciousness – clear, state – severe, body position – active. Emotionally stable and in an optimistic mood. Height = 168 cm, weight = 100 kg, BMI = 37.3 kg/m². Temperature – 36.7°C.

Skin is normal colored, without any scars, visible mucous membranes are pale pink and clean. Mucous membranes are pale and wet. Tongue – clear and wet.

Peripheral lymph nodes are not palpable. The thyroid is not palpable, signs of eyelid retraction, periorbital edema, proptosis are absent.

Joints are normal, active and passive movements are not painless.

Respiratory system: the chest is hypersthenic, normal respiratory effort with no use of accessory muscles. Palpation - normal tactile fremitus. Percussion – no clinically significant changes. Auscultation – vesicular breathing, no added sounds. Breathe rate – 20 per min.
Cardiovascular system: no jugular vein distention. Carotid, radial, posterior tibialis, and pedal pulses 2 + symmetric, no edema. Apex beat localized in the 5th intercostal space, diffuse. Percussion: heart borders extended to the left on 1,5 cm of midclavicular line. Auscultation: regular S1, S2, normal rhythm, no murmur, rub, or gallop. BP in left hand = 145/100 mm Hg, BP in right hand = 140/95 mm Hg, HR = pulse = 35 bpm (before pacing).

Gastrointestinal system: abdomen is soft, painless, symmetrical, no discrepancies of the abdominal muscles, no visible peristalsis, liver edge is smooth, painless, palpated 0.5 cm below the costal arch, spleen and pancreas are not palpable, stool and diuresis were unremarkable.

Urogenital and sexual systems: Pasternatsky sign is negative. Menopause during 1 year.

LABORATORY AND INSTRUMENTAL TESTS

Complete blood count, urine and biochemical analysis (07/09/17) were in normal ranges.

Lipid profile (07/09/17) revealed type IIa dyslipidemia according to Frederickson’s phenotype (total cholesterol = 5.29, LDL = 3.75, atherogenic coefficient = 3.33).

ECG 2 days after pacemaker implantation (09/09/17): complete AV block, sinus atrial rhythm, PR interval regular, RR > PP. Esprit DDD pacemaker: there is 100 % ventricular capture – a QRS complex follows each ventricular pacing spike; no atrial pacing spikes are seen; HR – 65 bpm, stimulation threshold - 0.75 V, impedance – 350 Om (see pic. 2).

Echocardiography (06/09/17): left ventricular hypertrophy (LVH), signs of increasing diastolic stiffness of the LV wall.

Fig. 2 Condition after cardiac pacemaker implantation (DDDR) due to complete AV block

CLINICAL SYNDROMES
- Conduction disorder
- Arterial Hypertension
- Heart failure
- Dyslipidemia
- Obesity

CLINICAL DIAGNOSIS

Main: Ischemic heart disease, condition after cardiac pacemaker implantation (DDDR) due to complete AV block, essential arterial hypertension II nd stage, 1 st grade, hypertensive heart (LVH), heart failure II B, II FC with preserved ejection fraction (EF – 65 %), dyslipidemia II a type (after Fredrickson) and moderate added total CV risk.

Comorbidity: Obesity II degree.

RECOMMENDATION AND TREATMENT

Lifestyle modification:
- reducing the weight by 5–10 %,
150 min/week of moderate-intensity exercise (eg, brisk walking) plus flexibility and strength training:
– eat regular meals and snacks, avoid fasting;
– consume plant-based diet (high in fiber, low calories/glycemic index, and high in phytochemicals/antioxidants);
– use mild cooking techniques instead of high-heat cooking.

Surgical therapy:
Control pacemaker parameters after 1, 6 months and 1 year (condition after DDD mode pacing, 9th of September 2017).

Medicament therapy:
– Antiplatelet – Cardiomagnyl 75 mg once daily in the evening;
– Angiotensin receptor blocker – Telmisartan 40 mg once daily in the morning;
– Statin – Atorvastatin 40 mg once daily in the evening.

CONCLUSIONS
Permanent pacemaker solved the problem of AV-block, however, drug therapy due to arterial hypertension, heart failure and dyslipidemia is not canceled and requires modification.

REFERENCES