Folia Cardiologica 2023
vol. 18, no. 3, pages 134–136
DOI: 10.5603/FC.a2023.0005

ISSN 2353–7752
e-ISSN 2353–7760

81-year-old patient with tachycardia–bradycardia syndrome after bilateral mastectomy with pacemaker pocket infection

Przypadek 81-letniej pacjentki z zespołem tachykardia–bradykardia po obustronnej mastektomii z infekcją loży stymulatora w wywiadzie

Katarzyna Krajewska[1, 2], Marcin Witkowski[1, 2], Przemysław Mitkowski[3], Anna Tomaszuk-Kazberuk[1, 2], Bożena Sobkowicz[1, 2], Anna Lisowska[1, 2]

[1]Department of Cardiology, Medical University of Bialystok, Białystok, Poland
[2]Cardiology Clinic and Intensive Cardiac Care Unit, University Clinical Hospital in Bialystok, Białystok, Poland
[3]1st Department of Cardiology, Medical University of Poznan, Poznań, Poland

Abstract

The case report presents a history of an 81-year-old woman with paroxysmal atrial fibrillation, treated with apixaban at a reduced dose, who has a DDD pacemaker implanted in March 2018 due to tachycardia-bradycardia syndrome. In the interview were left-hand mastectomy in 2012 and right-hand mastectomy in October 2022 caused by breast cancer. In November 2022 the patient was admitted to the Department of Cardiology to stimulate system removal because of a pacemaker pocket infection. Then, according to the interview of sick sinus syndrome, the electrocardiogram Holter monitoring was made and due to its results the patient was qualified for repeated electrotherapy. Considering the general clinical view it was decided to implant the leadless MICRA pacemaker.

Key words: tachycardia-bradycardia, sick sinus syndrome, pacepocket infection, MICRA

Folia Cardiologica 2023; 18, 3: 134–136

Introduction

Tachycardia–bradycardia syndrome is a manifestation of sick sinus syndrome. It is a disorder of the sinoatrial node. The condition is caused by a not fully functional pacemaker and damaged impulse transmission. The implication of this is bradycardia after fast supraventricular rhythm episodes [1]. The dysfunction occurs mostly in older but can appear at any age. One in 600 cardiac patients of 65 years of age or older develops sinus node dysfunction [2]. The treatment of the disease includes pacemaker implantation, which may cause complications. Most studies show complication rates after dual-chamber pacemaker implantation — 4.8% at 30 days, 5.5% at 90 days and 7.5% at 3 years [3]. Infections after 12 months after the procedure account for approximately 1.3% of complications [4].

Address for correspondence: Katarzyna Krajewska MD, Klinika Kardiologii, Uniwersytecki Szpital Kliniczny w Białymstoku, Skłodowskiej-Curie 24A, 15–276 Białystok, Poland, e-mail: katarzyna.krajewska@umb.edu.pl

Case report

81-year-old woman with paroxysmal atrial fibrillation, treated with apixaban in reduced dose, after DDD pacemaker implantation in march 2018 due to tachycardia-bradycardia syndrome was admitted to the Department of Cardiology of the University Clinical Hospital in Bialystok on 5.11.2022 to stimulate system removal because of pacemaker pocket infection. The patient complained about fatigue and weight loss. In the interview were also: left-hand mastectomy in 2012 and right-hand mastectomy with lower axillar lymph nodes removal in 13.10.2022 caused by breast cancer, left upper limb lymphatic oedema, arterial hypertension, hypothyroidism, organic mood disorders.

At admission, the patient was cachectic, conscious in logical contact and slightly demented. In physical examination: blood pressure 137/57 mm Hg, heart rate 58/min., SpO_2 98%, without fever, lymphatic oedema of the left upper limb, in the left subclavian area - large wound with big skin loss and purulent content leakage moreover severe redness and swelling with the partially emerged stimulating system. Furthermore, in the right axillary fossa a tuberous, palpatory immobile and hard change, size of approximately 5 × 5 cm was observed. The abdomen was soft and indolent with negative peritoneal symptoms. In electrocardiogram (ECG) — effective atrial and chamber stimulation with a chamber rhythm of 58/min. In laboratory tests, the patient showed mild anaemia (haemoglobin 9.4 g/dL), slight hyperpotassaemia (K+ 5.4 mmol/dL), mixed hyperlipidaemia and low inflammatory parameters. Blood cultures were negative. In transthoracic echocardiography left ventricle with preserved global systolic function (ejection fraction 52%) and second-degree diastolic dysfunction was shown, moderate regurgitation of the mitral and tricuspid valves, and leads of pacemakers in the right cavities of the heart. In treatment applied: vancomycin (empirically) 3 × 500 mg *i.v.*, Clexane 2 × 40 mg *s.c.* (apixaban was cancelled), perindopril 1 × 1.25 mg *p.o.*, levothyroxine 112 mcg 1 × 1 *p.o.*, sertraline 50 mg *p.o.* On 7.11.2022 patient underwent a procedure of pacing system removal without complications.

Simultaneously parts of leads were taken due to microbiological examination. After pacemaker removal in ECG, a first-degree atrioventricular block was observed. During a couple of next days after the procedure there was slight bleeding between the wound edges and seeping the dressing with blood. According to that, the decision to readminister anticoagulant therapy was held. Apixaban was introduced again on the fourth day after the procedure. The state of the patient remained stable. The next days showed progressive renal function impairment — glomerular filtration rate dropped to 34 mL/min from 45 mL/min originally. Vancomycin concentration in serum was above the therapeutic range. After consultation with the hospital microbiologist, the dose was reduced to 2 × 500 mg until the result of the pacemaker leads culture. It turned that from wound swab and leads there was a growth of resistance to vancomycin *Staphylococcus lugdunensis*. It was necessary to change the therapy — aimed antibiotic therapy with cloxacillin 2 g every 6 hours *i.v.* was started, it needed to remain for 14 days. Blood screening showed severe anaemia (haemoglobin 8 g/dL) — taking into account recent neoplasm history and general clinical condition 1 unit of blood was transfused. According to the interview of sick sinus syndrome, the ECG Holter monitor was made. It showed sinus rhythm 40–82/min., average 62/min., 24 pauses lasting > 2 seconds in sinus pause mechanism, moreover 3 episodes of bradycardia < 40/min. (minimum 30/min.). A decision to qualify the patient for pacemaker implantation was made. It was decided to implant the leadless MICRA pacemaker after ending the antibiotic therapy. In 8.12.2022 patient was readmitted to the Department of Cardiology of University Clinical Hospital. From the previous hospitalisation, the patient did not report any symptoms. On 10.12.2022 in general anaesthesia IPG Micra RV was implanted without complications.

Conclusions

The new generation leadless pacemakers are the optimal solution of electrotherapy for patients in elderly age with a difficult visceral approach or in states that do not allow for implantation of a traditional pacemaker. In this case, the patient had a mastectomy in the area where the new pacemaker was about to be implanted. That is why the patient needed over-standard treatment. The last mastectomy operation happened nearly a month before, it was too soon to implant a new pacemaker safely — it would have to be located in the right subclavian area.

According to all above, the most optimal and beneficial solution was to implant IPG Micra.

Discussion

The most common reason for pacemaker implantation is sick sinus syndrome (SSS). Interestingly, the risk of sudden cardiac death and more over the entire time of living in this group of patients is similar to the general population. Although, apart from this SSS may lead to transient bradycardia, which may appear as dizziness, collapse, decreased effort tolerance or increased exhaustion. The published data expressly say that patients with asymptomatic SSS do not earn any profit from pacemaker implantation. According to that, only electrocardiographically proven symptomatic SSS is an indication for the procedure [1] which causes significant improvement in life quality [4]. Unfortunately, even in the presence of full indications for pacemaker implantation, the possibility of complications must be

considered in such therapy. Most of the complications resulting from cardiac pacing and cardiac resynchronization therapy occur in the postoperative period [5]. In this case, the pacemaker box infection is a late complication [3]. According to data, such an infection after 12 months after the procedure accounts for approximately 1.3% of complications [4]. In the present case the infection developed after over 4 years. The patient had undergone serious surgery about a month before — right-hand mastectomy — which was a counter-indication to another traditional pacemaker placement. The IPG Micra was considered the most optimal treatment. A leadless pacemaker is a new type of device, which is especially beneficial in young patients with long-life perspectives when there is a need for a lead exchange or reimplantation but also in old who have limited vascular approach. Such pacemakers do not need a battery that is located under the skin in a subclavian area which had a critical meaning in this case. Moreover, there is no risk of lead fracture or dislocation which is a common reason for pacemaker dysfunction [1].

Conflict of interest

None declared.

Streszczenie

W niniejszej pracy przedstawiono przypadek 81-letniej pacjentki z wywiadem napadowego migotania przedsionków, leczonej przeciwkrzepliwie apiksabanem w dawce zredukowanej, po implantacji stymulatora typu DDD w marcu 2018 roku z powodu zespołu tachykardia–bradykardia. W wywiadzie stan po zabiegu mastektomii lewostronnej w 2012 roku, a w październiku 2022 roku — mastektomii prawostronnej z powodu raka piersi. W listopadzie 2022 roku chora została przyjęta do Kliniki Kardiologii Uniwersyteckiego Szpitala Klinicznego w Białymstoku w celu usunięcia układu stymulującego ze względu na zakażenie loży stymulatora. Ze względu na wcześniejszy wywiad zespołu chorego węzła po usunięciu układu wykonano badanie elektrokardiograficzne metodą Holtera i ponownie zakwalifikowano pacjentkę do elektroterapii. Z uwagi na całokształt obrazu klinicznego zdecydowano o implantacji stymulatora bezelektrodowego typu Micra.

Słowa kluczowe: tachykardia–bradykardia, zespół chorego węzła, infekcja loży stymulatora, MICRA

Folia Cardiologica 2023; 18, 3: 134–136

References

1. Glikson M, Nielsen JS, Kronborg MB, et al. ESC Guidelines on cardiac pacing and cardiac resynchronization therapy 2021. Eur Heart J. 2021, doi: 10.1093/eurheartj/ehab364, indexed in Pubmed: 34455430.
2. Adán V, Crown LA. Diagnosis and treatment of sick sinus syndrome. Am Fam Physician. 2003; 67(8): 1725–1732, indexed in Pubmed: 12725451.
3. Ellenbogen KA, Hellkamp AS, Wilkoff BL, et al. Complications arising after implantation of DDD pacemakers: the MOST experience. Am J Cardiol. 2003; 92(6): 740–741, doi: 10.1016/s0002-9149(03)00844-0, indexed in Pubmed: 12972124.
4. Olsen T, Jørgensen OD, Nielsen JC, et al. Incidence of device--related infection in 97 750 patients: clinical data from the complete Danish device-cohort (1982–2018). Eur Heart J. 2019; 40(23): 1862–1869, doi: 10.1093/eurheartj/ehz316, indexed in Pubmed: 31155647.
5. Fleischmann KE, Orav EJ, Lamas GA, et al. Pacemaker implantation and quality of life in the Mode Selection Trial (MOST). Heart Rhythm. 2006; 3(6): 653–659, doi: 10.1016/j.hrthm.2006.02.1031, indexed in Pubmed: 16731465.