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AUTHORS: A Öcal,E Ibrsim,T Yavuz,S Bilgin,A Kutsa

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THE TREATMENT OF SEPSIS AND TRICUSPID STENOSIS CAUSED BY FREE PACEMAKER LEAD

A. ÖCAL, MD,
E. İBRİŞİM, MD,
T. YAVUZ, MD,
S. BİLGİN, MD,
A. KUTSAL, MD

From: Department of
Cardiovascular Surgery,
School of Medicine,
Süleyman Demirel
University, Isparta, Türkiye

If an infection occurs due to a permanent pacemaker this is an important consequence, it can lead to a high rate of mortality and morbidity. We have in report a case with thrombosis caused by that can lead to sepsis and tricuspid stenosis. The patient was treated by removing the free lead surgically and combination of antibiotic therapy.

Key words: Free lead, pace maker complication, sepsis

Adress for reprints:

Dr. Turhan Yavuz
Süleyman Demirel
Üniversitesi Tıp Fakültesi,
Kalp ve Damar Cerrahisi
Anabilim Dalı
Isparta, Türkiye
Tel: +90 246 2326886

If an infection occurs due to a permanent pacemaker this is an important consequence which should be treated efficiently, otherwise it can lead to a high rate of mortality and morbidity (1-5). Early diagnosis and aggressive treatment are vital in such a case. Even with an efficient treatment, endocarditis and sepsis have a mortality rate of 24%. In our case, thrombosis caused by the lead surface has led to sepsis and tricuspid stenosis.

CASE REPORT

A 34-year-old women was admitted to our clinic due to tachycardia episodes. The result of electrophysiological study revealed a sick sinus syndrome; thus we placed a permanent pacemaker (DDD). After a while, the same patient was admitted to our hospital once again due to rubor and pain at the pace maker pocket region. Pacemaker was re-replaced, in the meantime cephalosporin treatment was started, and then the patient was discharged from the hospital. 4 months later, the patient returned with a recurrent infection and an

increased complaint of palpitation. We observed that the leads were separated from the generator. We removed the generator and atrial lead but we could not remove the ventricular lead; so we left it in the pocket of pacemaker, the pacemaker's location was changed as well.

3 months later, the patient was admitted to our hospital due to the same complaints once more. She suffered from fever, palpitation and shivers. Palpitation was of variable intensity depending on the patient's position. We observed that the lead was moving freely in the right ventricle. Echocardiography showed a thrombus that was moving together with the septal leaflet of the tricuspid valve. *Staphylococcus epidermidis* was detected in six blood cultures. Vancomycin and amikacin treatment was administered for 3 weeks. After fever was over, we decided to remove the free lead by a surgical intervention.

SURGICAL METHOD

We performed a median sternotomy after conventional cannulation procedure and opened the right atrium with beating heart without cardiac arrest. The free lead was removed from the right ventricle via tricuspid valve. We cleaned all thrombi. We took blood samples from one of the thrombi and lead surface for culture and completed the operation. A VT episode was observed on the 3rd postoperative day. We regulated pace levels; and from then on, no complication was observed and no pathogen was detected in any of the cultures. Patient was discharged right after her recovery; antibiotic treatment was used during the two weeks after the operation.

DISCUSSION

As an early complication of permanent pacemaker placement, hematoma and infection in the pocket region may occur. If infection has occurred, generator and all of the leads must be removed (1-5). A temporary pacemaker should be inserted and an appropriate antibiotic treatment should be started as well. Our case was admitted to the

hospital due to inflammation in the pocket of the pacemaker. Although we removed the pacemaker, we were unable to remove the lead of the right ventricle. There are many articles stating that repeated pacemaker applications contributed to the increase in infection rate.

The infection rate of permanent pacemaker placement was 0,3-19.9% in the literature.

Not only a local infection is present but also an infective endocarditis and sepsis may be observed, although sepsis is quite rare in such a case. Definitive diagnosis is provided by two positive cultures or one positive culture plus one minor criteria (fever, shivers, increase in the number of white blood cells). We have observed six positive cultures in our case.

Pacemaker infections are frequently caused by staphylococci. *S. aureus* is observed in the early stage, while *S. epidermidis* appears in the late stage.

There may be thrombi in the superior vena cava and right ventricle; and even pulmonary embolism may occur in such a case (6,7). Although diffuse thromboses were in the right cardiac chambers, pulmonary embolism was not observed in our case.

Tricuspid insufficiency may occur in pacemaker endocarditis. Tricuspid insufficiency may be caused by the perforation of the tricuspid leaflet. Tricuspid valve stenosis is very rarely seen in such a case (8). Perhaps, lead thrombosis contributed to tricuspid thrombosis. Tricuspid stenosis may occur, like we have observed in our case. Infection at the pacemaker site is a rare but very serious problem. Transesophageal echocardiography is very helpful especially in case of vegetation formation.

Antibiotic treatment must be started and pacemaker should be removed immediately. If early diagnosis and treatment can be applied in such a case, the prognosis is very good.

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