PACE LEAD DYSFUNCTION FOLLOWING THE LATERAL POSITIONING DURING GENERAL ANESTHESIA: A CASE REPORT

Case Report

ANESTEZİ ESNASINDA LATERAL POZİSYON SONRASI GELİŞEN KALP PİLİ DİSFONKSİYONU: OLGU SUNUMU

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ABSTRACT

Pacemakers and the underlying heart conditions present challenges to the anesthesiologists. This case report presents a patient with a pace lead malfunction following the lateral position during the operation.

Key Words: *Pacemaker; Pacemaker Malfunction.*

ÖZET

Kalp pili ve altta yatan kalp hastalıkları anestezistler için zorlu bir alan oluşturmaktadır. Bu olguda, operasyon esnasında pozisyon verilmesi sonrası kalp pili elektrodu malfonksiyonu gelişen bir hasta sunmaktadır.

Anahtar Kelimeler: *Kalp Pili; Kalp Pili Malfonksiyonu.*

INTRODUCTION

Electrophysiological disorders are rather common problems for elderly patients. Pacemakers are widely used for the treatment of these patients' conduction and arrhytmia problems.(1). Therefore, anesthesiologists encounter frequently with the patients who has got pacemakers.

Complications related to pacemaker include infection, venous thrombosis, emboli, tricuspid regurgitation (2), and software, hardware based problems such as failure to pace and sense, pulse generator failure, pacemaker syndrome and pacemaker mediated tachycardia. (3) This case presents a patient with a permanent pacemaker malfunction following positioning from supine to lateral during the surgery.

CASE REPORT

A 70 year-old male patient was prepared for the excision of a lipoma on his back.

He had a medical history of aortic valve replacement and mitral ring annuloplasty. He also had catheter ablation treatment for cardiac arrhythmias 14 years ago. His preoperative examination revealed no specific findings except for pacing for heart block. Device interrogation with a compatible program was done by a qualified personnel just before the operation. Inhibited mode (VVI) of the pacemaker was changed to ventricular pacing with atrial tracking (VVD) mode.

Upon arrival in the operating theater, an intravenous access was established and standard anesthesia monitoring (electrocardiogram, peripheral oxygen saturation, noninvasive blood pressure) was instituted. Following premedication with 2 mg iv midazolam, general anesthesia was induced with iv propofol 2.5 mg/kg, fentanyl 2 mcg/kg, and cisatracurium. End-tidal CO2 level was adjusted between 35-40 mm Hg. Following endotracheal intubation, anesthesia was maintained with end-tidal sevoflurane of 1.3- 1.5% in 40% O2/N2O mixture, then the patient was positioned into the left lateral decubitus. Following the positioning pace rhythm was changed to atrioventricular block at a rate of 30/bpm. **(figure 1**, **figure 2),**

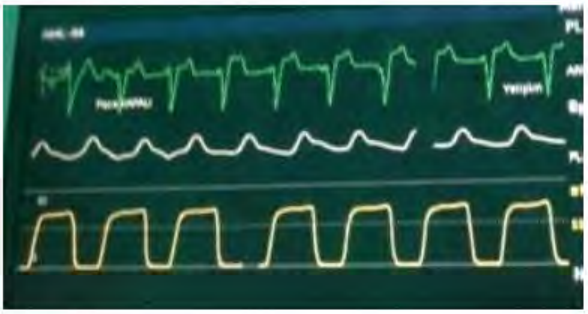

***Figure I*:** *In Supine Position*

Figure II: *In Lateral Position*

then the patient was turned immediately into supine position; and the rhythm turned to regular pace. Blood pressure measurements were stable between periods of before and after positioning and 124-89 mmHg and 130-80mmHg respectively. A new position which can be called ‘’hemi lateral’’organized by supporting thoracal region with pads for surgery. There were no problems during and after the extubation. Surgery was done properly and the patient discharged from the hospital uneventfully.

DISCUSSION

Pacemakers and the underlying pathophysiologies leading to their implantation comprise challenges to the anesthetist.

Complication rate associated with an acute pacemaker implantation is about 4-5%.(3,4) Determining pacing system malfunction is difficult due to vague definitions, insufficient and incomplete reporting mechanisms.(5) The pacing system consists of a pacemaker and one or two leads that connect pacemaker to the heart. According to the annual reports submitted to FDA from 1990 to 2002, 8834 of the 2.25 million pacemakers (0.4%) were explanted because of confirmed device malfunctions.(5).

The most common complication of transvenous pacing is lead dislodgement. Pacing lead displacement and dislodgement can occur about 5-10% of

the patients.(6) The leads may displace inside or out of chambers and if the wire seems too tight or loose, lead displacement should be suspected. Lead dislodgement may cause increased pacing threshold, failure to capture or sense.

Factors that may cause increased pace threshold are myocardial ischaemia/infarction, hypothermia, hypothyroidism, antiarrythmics, severe hypoxia/hypoglycaemia.(1) In our case, none of the abovementioned factors were noticed. The reason was considered as the malfunction of the fibrotic pacemaker lead by the cardiologist. A study by Krutchen et all revealed that pacemaker lead dysfunction may be due to the entrapment in the subclavius muscle-costaclavicular ligament complex during movements.(7) In our case, left lateral decubitus positioning might be the reason for the entrapment and malfunction of the pacemaker leads.

In such a patients the preoperative assessment should include not only regular patient interview and relevant physical exam, but also a focused interview regarding the pacemaker and reviewing patient history with all available records, ECGs and chest X-rays. Chest X-rays reveal valuable information about the position of the pace leads. Anesthesiologists should be familiar with the programme of the pacemaker, patients' dependence on the pacemaker, and functioning (8). Our patient's preoperative examination was done accordingly.

Pacemaker programmer must be present in the OR (operating theatre) before using cautery. Magnet should not be placed on pulse generator while using cautery because it may cause pacemaker malfunction. Temporary pacing (transvenous, noninvasive transcutaneous) should be available in the OR.(2) As ECG monitoring can also be affected by interference; careful monitoring of pulse oximetry and arterial wave is essential during electrocautery.

Despite all precautions, risk of device malfuctioning with an implanted pacemaker can not be nullified. In this case, carefull evaluation by a cardiologist and a technician preoperatively could not preclude pacemaker failure related to positioning. Anesthesiologists should be familiar with the problems of the pacemaker dependent patients.

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