Reel Syndrome - A Variety of Twiddler’s Syndrome

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Abstract

Reel syndrome is an uncommon condition in which a patient’s subconscious, inadvertent, or deliberate external manipulation of their cardiac pacemaker results in the movement of the transducer wires along its transverse axis. We report a clinical case of a 67 year old lady with permanent pacemaker presenting with pacemaker malfunction and was detected with reel syndrome.

Introduction

Twiddler’s syndrome was first described by Bayliss in 1968 and refers to a permanent malfunction of the pacemaker as a result of rotation of the device. The reported frequency of Twiddler’s syndrome is around 0.07-7%. It is an uncommon condition in which a patient’s subconscious, inadvertent, or deliberate external manipulation of their cardiac pacemaker/implantable cardioverter defibrillator results in the movement of the transducer wires along its longitudinal axis. The lead is tightly twisted upon itself with the development of tension resulting in pacing malfunction. Reel syndrome is a variety of twiddler’s syndrome where the leads are noted to wrap around the device along its transverse or horizontal axis. The symptoms, method of diagnosis, and treatment are the same as twiddler’s syndrome.

Clinical Scenario

67 year old lady with diabetes, hypertension, mild CKD, persistent hyperkalaemia (type IV Renal tubular acidosis) good LV function and with recent permanent pacemaker implantation (VVI) for symptomatic complete heart block presented to the emergency room with history of sudden onset breathlessness of 30 minutes duration. She was conscious with laboured breathing. On examination her Pulse: 30 bpm, regular, BP: 210/90 mm of Hg, SPO2: 78% on room air; bi basal rales on respiratory system examination, variable first heart sound on auscultation. ABG revealed acute severe metabolic acidosis. She was electively intubated and put on assisted ventilation.

ECG showed loss of pacing and sensing suggestive of pacemaker malfunction. Chest X-ray revealed ventricular lead wrapped repeatedly around the pulse generator along its transverse axis. Patient was put on temporary pacemaker on emergent basis. Post extubation patient denied any active manipulation. However the patient and family said they would often help her to retract both shoulders to relieve shoulder pain and backache.

Her laboratory parameters revealed hyperkalaemia and urinary tract infection with ESBL klebsiella. She was treated with parenteral antibiotics as per the sensitivity pattern. With the control of infection, lead repositioning was done after ensuring no lead fracture or insulation break and the pulse generator was secured. Both the leads were found to have good sensing and pacing parameters. The pulse-generator was fixed on the pectoral muscle with non-absorbable sutures. Postoperative hospital stay was uneventful and the patient is doing well in subsequent follow-ups.

Discussion

Twiddler’s syndrome and Reel syndrome cause wide array of symptoms, most notably dysrhythmias, syncope or near syncope. Although cardiac symptomatology predominates, the stimulation of the phrenic nerve by the dislodged leads can cause diaphragmatic contractions and the stimulation of the...
brachial plexus can cause rhythmic arm twitching.\(^3\) In majority of the cases the dislodgement of the leads is painless. It usually occurs in the first year of implantation; “late twiddler’s syndrome” has recently been reported.\(^4\) Risk factors for this condition include elderly age, obesity, female gender, psychiatric illness, and the small size of the implanted device relative to its pocket.\(^5\) Diagnosis is easily made by chest radiographs, which normally show dislodgement of the lead is painless.

Sometimes there is lack of evidence of twisting of the generator. Some authorities have hypothesised that caudo-cranial movement of the generator during abduction of the arm pushes the leads cranially.\(^6\) Any free-moving proximal segment of the lead may then be twisted to form a loop. If a cogwheel phenomenon is present, the loop does not unwind when the arm is brought down again. When the movement is repeated, further twisting occurs. The same hypotheses could have possibly caused the Reel syndrome in our patient too.

Minimising the pocket size and suturing the device generally prevent the development of this syndrome. Some authorities have advocated the use of a Dacron patch, which stabilises the pulse-generator by promoting tissue in-growth, in all cases of device implantation. Active fixations of leads are also encouraged.

**Conclusion**

Reel syndrome is a rare complication of permanent pacemaker implantation with potential catastrophic consequences and can occur even late after pacemaker implantation.

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**References**