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An Unusual Case of Diaphragmatic Stimulation: Reel Syndrome

Abhishek Kr Verma

Department of Cardiology, Dr. RML Hospital, New Delhi, India

Abstract: ***Twiddler syndrome, Reel syndrome and Rachet syndrome are rare causes of pacemaker lead macrodislodgement leading to pacemaker malfunction. They usually present with symptom of syncope in dependent patients due to lack of capture. We report a case of 50 year old female with Reel syndrome presenting with diaphragmatic stimulation.***

Keywords: Pacemaker malfunction, Diaphragmatic stimulation, Twiddler syndrome, Reel syndrome, Rachet syndrome

1. Introduction

Lead dislodgement syndromes (Twiddler, Ratchet or Reel syndromes) are rare causes of pacemaker malfunction that can occur most commonly early after device implantation. Each one of them is associated with a unique pattern of lead coiling and dysfunction. [(1)] Twiddler's syndrome is caused by retraction and dislocation of the electrodes due to rotation of the generator around its coronal axis. Due to this rotational movement, the electrode winds as a braid. Ratchet syndrome results from retraction and electrode dislocation with ratcheting but without coiling of the generator due to progressive displacement of the electrodes from their fixing protections. Reel Syndrome occurs when the generator rotates around its sagittal axis, causing the electrode to roll up like a spool above or below the generator. . Reel syndrome commonly occurs within a month of implantation and normally there is no damage of the leads. [(2)] It usually presenting with symptoms of syncope or heart failure. Rarely it may present with diaphragmatic contractions or arm twitching. We present a case of Reel syndrome with diaphragmatic stimulation.

2. Case

A 50 year old female presented to us on November 2023 with complete heart block. A single chamber pacemaker (VVIR) was implanted with uneventful hospital course. Lead was placed in right ventricular apex with satisfactory interrogation results (figure 1). Seven months later she came with complaint of abdominal pulsation. Her ECG showed CHB with a rate of 45/min with no pacing spikes. Fluoroscopy revealed pacemaker lead tip at superior vena cava and right atrium junction with coiling of leads around pulse generator (figure 2). A temporary pacemaker was inserted and lead repositioning was done. Post lead repositioning patient was discharged in stable condition.

3. Discussion

Reel syndrome is caused by rotation of pulse generator around it transverse axis leading to coiling of leads around pulse generator. It usually occurs due to vigorous manipulation by patient. Large pocket, old age, female gender and dementia are other contributing factors. [(3)]

Our patient presented with symptom of diaphragmatic contractions due to stimulation of right phrenic nerve which is a rare manifestation of Reel syndrome. [(4)] Due to life threatening complications of lead dislodgement, prevention becomes important. Smaller device pockets, suturing of the device to the fascia, and device placement in the pectoral tissue are important preventative strategies. The patient should also be educated to not manipulate the device in any manner. [(5)]

4. Conclusion

Our case highlights that individuals with cardiac device implantation may present with unusual and rare symptom. Device interrogation and fluoroscopy should be conducted to evaluate lead dislodgement.

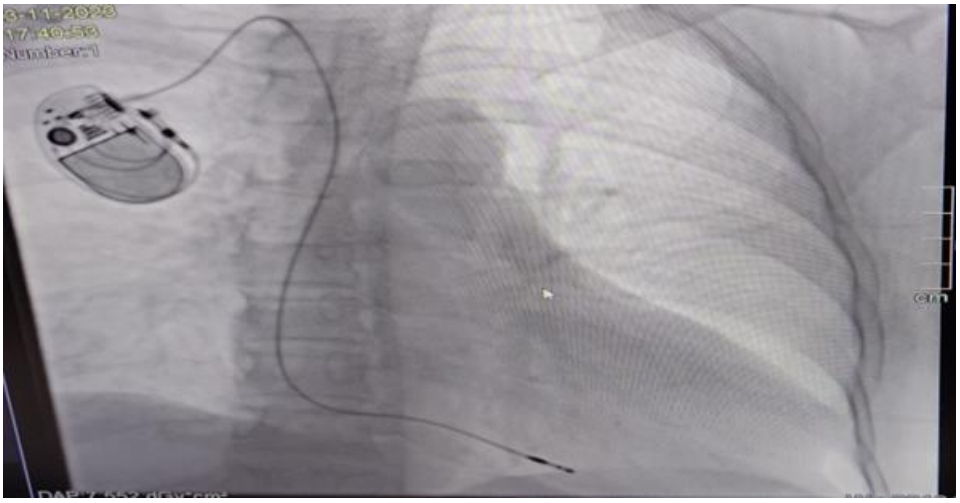

Figure 1: Fluoroscopy showing intial pacemaker implantation with pacing lead in right ventricular apex

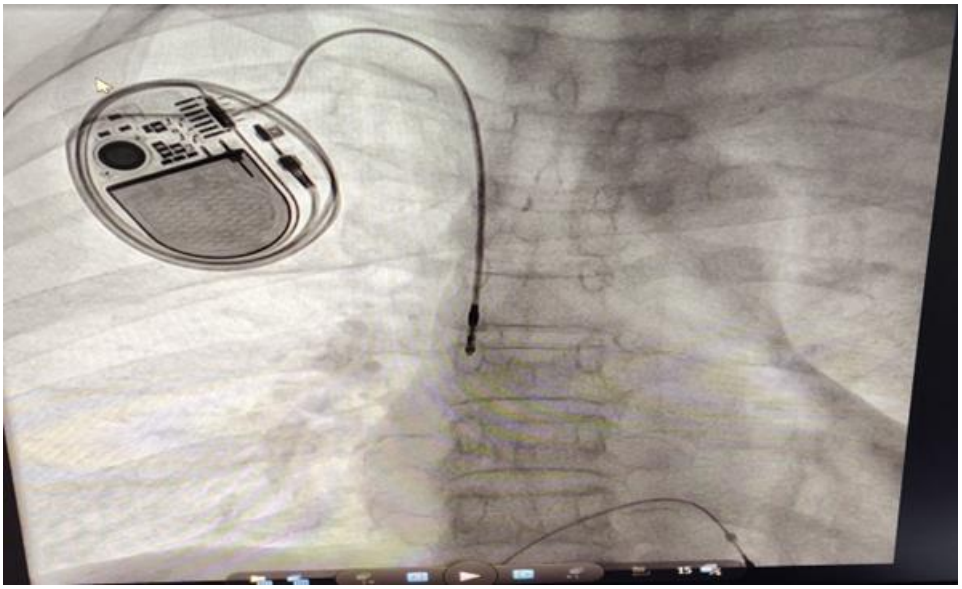

Figure 2: Fluoroscopy showing displaced lead in SVC - RA junction with coiling of leads around pulse generator

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