A case of Defibrillator Twiddler’s syndrome

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Here we describe a case of Twiddler’s syndrome in a patient with an implanted cardioverter-defibrillator who tinkered with the device, shifting it to a vertical position and causing her skin to protrude in various locations. Fluoroscopy was used to determine what direction the device was rotating in during specific body postures and physical activities. Inappropriate shocks were delivered whenever the patient pushed the device down toward her sternum. The syndrome did not recur following training of the patient in a lead-revision procedure that involved shifting the device down vertically toward her lateral side with her hands. (Korean J Med 78:113-116, 2010)

Key Words: Twiddler’s syndrome; Defibrillator; Complication

Introduction

Excessive unintentional or intentional coiling of the leads in an implanted cardioverter-defibrillator (ICD) may occur because of rotation or repeated flipping of the pulse generator caused by physical activity or from patient manipulation. We examined the mechanism of device rotation in a patient with Twiddler’s syndrome using fluoroscopy.

Case Report

The patient was a 70-year-old heavyset lady with large, drooping breasts who had received an ICD to manage dilated cardiomyopathy. Six episodes of inappropriate shocks by the ICD were detected four weeks after implantation. Analysis revealed a marked reduction in the R wave from 8.4 mV at the time of implantation to 1.5 mV with a decrease in impedance from 750 to 300 Ohm upon interrogation of the ICD. Variable noise and T-wave over-sensing were the cause of the inappropriate shocks. A chest roentgenogram revealed that the lead had dislodged from the right ventricular apex and had become displaced to the area of the tricuspid annulus. A ring-like structure composed of a compactly coiled portion of the lead (St. Jude Medical, RiataTM RE38054) was observed near the defibrillator that shortened both sides of the lead (Fig. 1). The patient insisted there was intermittent protrusion of the skin over...
Figure 1. (A) Chest PA roentgenogram showing dislocation of the defibrillation lead. The distal defibrillation coil is in the right atrium while the proximal one is in the axillary vein. A ring-like structure corresponding to a compactly coiled portion (arrow) of the lead is seen just above the defibrillator. (B) Lead replacement operation. One-to-one matching of the coiled lead and a defibrillator with those in the roentgenogram is seen.

Figure 2. Photographs of the patient three months after lead replacement (left lateral decubitus position and craniocaudal view). (A) No scratches or bruises were observed on the skin except for a line of pigmentation due to adhesive plaster. (B) The skin over the device pocket is shown protruding (arrows) as the patient raises her arm on the device-implantation side toward her head.

Discussion

There are several complications of permanent pacemaker implantation, including dislocation of the endocardial leads, in-
Twiddler’s syndrome is a rare complication, with a frequency of 0.07~7%7,8). The syndrome was first described by Bayliss et al.9) in 1968. It is characterized by a coiling of the pacemaker lead due to rotation of the pacemaker generator on its long axis10). The recently described Reel syndrome occurs due to rotation of the implanted device on its transverse axis with subsequent coiling of the leads around the device11). Twiddler’s syndrome without rotation of the device has also been reported12). This condition is more common in the elderly, presumably due to the laxity of their subcutaneous tissue6,13). Other risk factors include obesity, female sex, psychiatric illnesses, and small size of the implanted device relative to its pocket13). Most patients with Twiddler’s syndrome are diagnosed within the first few months after implantation. The syndrome in this case occurred within one month of implantation. A few preventive methods have been recommended, including the creation of a small surgical pocket with suturing of the device to the fascia. However, this alone would not be very effective in cases such as ours where the skin is very lax. Another method is the use of a Dacron patch, which stabilizes the pulse generator by promoting tissue ingrowth. Some authorities have advocated the use of a Dacron patch in all cases of device implantation, whereas others have challenged this generalized recommendation14,15). The patient here was an elderly, heavyset woman with large, drooping breasts. These features may be a risk factor for the syndrome. The implanted device in this study had shifted to a vertical position as a result of the patient’s normal body posture. The shift occurred when the patient raised the implantation-side arm toward her head while lying on her non-device side. She reported that her skin was protruding over the device due to the shift, and she tried a reduction maneuver on her own to return the device to its original position, but it caused Twiddler’s syndrome. Fluoroscopic examination was helpful in determining what direction the device was rotating in during specific body postures and physical activities. The maneuver described here may be useful as a preventative measure against Twiddler’s syndrome.

**REFERENCES**

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