Clinics in Surgery

Editorial
Published: 14 Oct, 2022

Strokes in Patients with Implantable Pacemaker-Defibrillators may not always be Related to Silent Atrial Fibrillation-but Lead Thrombus Leading to Paradoxical Embolism Across Patent Foramen Ovale

Sanjiv Sharma[1,2], Rhea Sharma[2], Danny Elias[2] and Rohan Sharma[2,3]*

[1]Division of Cardiovascular, Bakersfield Heart Hospital, USA

[2]Central Cardiology Medical Center, USA

[3]Smidt-Heart Institute, Cedars -Sinai Medical Center, USA

Editorial

Stroke in patients with implanted devices (pacemakers/defibrillators) is often ascribed to occurrence of silent paroxysmal atrial fibrillation. In a large study, 2,580 patients, with age >65 years and hypertension but without prior history of atrial fibrillation, who had pacemaker or defibrillator recently implanted, were monitored for 3 months to detect subclinical atrial tachyarrhythmia's (episodes of atrial rate >190 beats per minute for more than 6 min) and then followed for occurrence of ischemic stroke or systemic embolism over the next 2.5 years [1]. The authors found subclinical atrial tachyarrhythmia's were associated with an increased risk of clinical atrial fibrillation (Hazard Ratio, 5.56; 95% Confidence Interval [CI], 3.78-8.17; P<0.001) and of ischemic stroke or systemic embolism (Hazard Ratio, 2.49; 95% CI, 1.28-4.85; P=0.007), concluding that subclinical atrial tachyarrhythmia's, without clinical atrial fibrillation, occurred frequently in patients with pacemakers and were associated with a significantly increased risk of ischemic stroke or systemic embolism.

However, an important issue that is often overlooked is the frequent prevalence of lead thrombi and patent foramen ovale that are not often recognized clinically. There is a definite risk of lead thrombus formation in patients with implanted devices. Mobile thrombi on device leads are present in 30% of patients undergoing ablation and are readily identified with intracardiac echocardiography despite being under recognized with transthoracic echocardiography [2]. Also, a large percentage of patients have subclinical Patent Foramen Ovale (PFO) with paradoxical shunting across the inter-atrial septum predisposing these patients to risk of systemic embolism. Patent Foramen Ovale (PFO) is present in approximately ~25% of the adult population and is a common cause of cryptogenic embolic strokes [3].

We have encountered patients (in the age group >70 years) with clearly documented patent foramen ovale and implanted devices who presented with stroke (bilateral and recurrent in one patient) in the absence of atrial fibrillation and were treated with percutaneous closure of the patent foramen ovale without subsequent recurrence of stroke [4]. Also, a large proportion of patients develop atrial fibrillation because of unrecognized moderate mitral regurgitation, possibly related to untreated/unrecognized hypertension that leads to "opening" of a patent foramen ovale [5].

We believe it is important to consider the presence of an unrecognized Patent Foramen Ovale (PFO) predisposing to paradoxical embolism from a right atrial lead thrombus in the presence of a pacemaker/defibrillator. These patients warrant possibly lifelong anticoagulation or percutaneous closure of the patent foramen ovale to prevent recurrent embolic events.

References

1. Healey JS, Connolly SJ, Gold MR, Israel CW, Gelder ICV, Capucci A; ASSERT Investigators, et al. Subclinical atrial fibrillation and the risk of stroke. N Engl J Med. 2012;366(2):120-9.
2. Supple GE, Ren JF, Zado ES. Mobile thrombus on device leads in patients undergoing ablation: Identification, incidence, location, and association with increased pulmonary artery systolic pressure. Circulation. 2011;124(7):772-8.

OPEN ACCESS

Correspondence:
Sanjiv Sharma, Division of Cardiovascular, Bakersfield Heart Hospital, Interventional Cardiology, Central Cardiology Medical Center, 2901 Sillect Avenue, Ste 100, Bakersfield CA 93308, USA, Tel: 661-323-8384; Fax: 661-323-9326; E-mail: ssharma@heart24.com/ sanjiv1122@yahoo.com

Received Date: *20 Sep 2022*
Accepted Date: *07 Oct 2022*
Published Date: *14 Oct 2022*

Citation:
Sharma S, Sharma R, Elias D, Sharma R. Strokes in Patients with Implantable Pacemaker-Defibrillators may not always be Related to Silent Atrial Fibrillation-but Lead Thrombus Leading to Paradoxical Embolism Across Patent Foramen Ovale. Clin Surg. 2022; 7: 3577.

3. Mojadidi MK, Zaman MO, Elgendy IY. Cryptogenic stroke and patent foramen ovale. J Am Coll Cardiol. 2018;71(9):1035-43.

4. Sharma S, Singh S. Recurrent strokes due to paradoxical embolism of lead thrombus across patent foramen ovale in patients with pacemakers/ defibrillators treated successfully with percutaneous closure of patent foramen ovale.

5. Sharma S, Lardizabal J, Monterroso M, Bhambi N, Sharma R, Sandhu R, et al. Clinically unrecognized mitral regurgitation is prevalent in lone atrial fibrillation. World J Cardiol. 2012;4(5):183-7.