Atypical chest pain as an unusual presentation of Implantable Cardioverter-Defibrillator (ICD)

Khedekar, M; Tauseef, A; Randhawa, A; Ashfaq, Z

Background: Implantable cardioverter-defibrillators (ICDs) remain the mainstay intervention for prevention of sudden cardiac death. Commonly reported complications of ICDs are wound infection, lead displacement, lead fracture, pneumothorax, hemothorax and uncommonly, lead perforation. Here we present a rare case of atypical chest pain after displacement of ICD.

Case: A 54-year-old caucasian male with past medical history of heart failure with reduced ejection fraction (30-35%) and S-ICD placement for ventricular tachycardia (VT) presented to the emergency department with acute asthma exacerbation complicated by sudden onset, severe (8/10) left sided chest pain. Vitals were normal; EKG showed no ischemic changes. Troponin, D-Dimer and pro-BNP levels were within normal limits. Despite symptomatic import emend of asthma, patient continued to have frequent, episodic sub-sternal, left sided chest pain, 9/10 in intensity, radiating to the back. Patient was diaphoretic, tachypneic, dyspneic, hypoxic and had non sustained VT. Pain improved on sublingual nitroglycerin and morphine, and patient was started on heparin drip as per Acute Coronary Syndrome (ACS) protocol. However, EKG remain unchanged with each episode, as did troponin levels. CTPA was done which ruled out medical emergencies including pulmonary embolism and aortic dissection. Upon detailed examination, it was noticed that there was displacement of patient's ICD from left anterior axillary line to his back, corresponding to the site of pain, with tenderness elicited over the area. CXR confirmed displacement of ICD. Subsequently, ICD was explanted which resulted in resolution of the chest pain. New VVI ICD was implanted thereafter.

Discussion: ICDs are used for secondary prevention in patients with an episode of sustained ventricular arrhythmia, for primary prevention in patients with risk factors for sudden cardiac death, and for cardiac resynchronization therapy (CRT) in patients with dyssynchronous ventricles. ICDs monitor rhythms to detect life threatening ventricular tachyarrhythmias and provide therapy in the form of anti tachycardia pacing (ATP). Even though ICD placement is invasive, it is safe but still can complicates in less then 1% of the population who underwent ICD placement.

Conclusion: Displacement of ICD is an uncommon cause of atypical chest pain that may be considered in patients with ICD in situ in the absence of other explanations for intractable chest pain once emergent conditions including ACS, PE, aortic dissection and tension pneumothorax have been ruled out.

References

1. Kamp NJ, Al-Khatib SM. The subcutaneous implantable cardioverter-defibrillator in review. *Am Heart J*. 2019;217:131-139. doi:10.1016/j.ahj.2019.08.010
2. Amir Gahremanpour, Mohammad Saeed, Yochai Birnbaum; Evaluation of Chest Pain after Implantable Cardioverter-Defibrillator Placement. *Tex Heart Inst J* 1 June 2017; 44 (3): 226–227. doi: https://doi.org/10.14503/THIJ-17-6293

3. Elif Kaya, Tienush Rassaf, Reza Wakili,Subcutaneous ICD: Current standards and future perspective, IJC Heart & Vasculature, Volume 24 2019,100409, ISSN 2352-9067,https://doi.org/10.1016/j.ijcha.2019.100409.
4. Chauhan A, Grace AA, Newell SA, et al. Early complications after dual chamber versus single chamber pacemaker implantation. *Pacing Clin Electrophysiol*. 1994;17(11 Pt 2):2012-2015. doi:10.1111/j.1540-8159.1994.tb03791.x
5. Jordan A. Hess, Partha Sardar, James C. Fang,Unexpected Etiology of Atypical Chest Pain,The American Journal of Medicine,Volume 129, Issue 9,2016,Pages e185-e186,ISSN 0002-9343,https://doi.org/10.1016/j.amjmed.2016.04.017.
6. Uhlig K, Balk EM, Earley A, et al. Assessment on Implantable Defibrillators and the Evidence for Primary Prevention of Sudden Cardiac Death [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2013 Jun 26. Available from: https://www.ncbi.nlm.nih.gov/books/NBK248310/