PO-620-03

ONCOLOGIC PROTON BEAM THERAPY IN PATIENTS WITH CARDIAC IMPLANTABLE ELECTRONIC DEVICES
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Background: Proton beam therapy (PBT) is an attractive treatment for malignancy owing to its high precision on target tissue while sparing adjacent sites. The safety of PBT in patients with cardiac implantable electronic devices (CIEDs) remains unclear.

Objective: To analyze CIED interrogation data in patients who have undergone PBT.

Methods: Consecutive patients with CIEDs who underwent PBT between 2016-2020 at Mayo Clinic in Rochester, MN were prospectively studied. A multidisciplinary team (radiation oncology, cardiology, and anesthesiology) established a practice protocol. CIEDs were interrogated at baseline then daily (if dependent) or weekly following PBT.

Results: A total of 707 CIED interrogations were performed in 59 patients (age 73±11.3 years; 23.7% female; BMI 28.7±5.6) who underwent PBT for thoracic (47.5%) as well as abdominal, pelvic, head and neck malignancies. CIEDs were right sided in 7 (11.8%), defibrillators were present in 17 (28.9%), and 11 (18.6%) were pacemaker dependant. Battery longevity decreased modestly after PBT (6.69±3.49 vs. 6.66±3.47 yrs, p=0.01). No difference was seen in sensing amplitude (7.85±5.89 vs. 7.98±5.92 mV, p=0.68), lead impedance (545±208 vs. 548±206 Ω, p=0.49), or pacing threshold (0.38±0.27 vs. 0.38±0.27 V*ms, p=0.29). Power-on reset occurred in 3 patients (5.1%) with thoracic PBT - none resulting in harm. There were no reports of inability to interrogate, unexpected early replacement, loss-of-pacing, or inappropriate shocks.

Conclusion: PBT can be performed with minimal effect on CIED function. Battery longevity may be impacted modestly by PBT and/or frequent interrogation. Caution needs to be taken in patients undergoing thoracic PBT given a small risk of power-on reset.

PO-620-04

INTRA-OPERATIVE FINDINGS WITH MASSIVE DEVICE-RELATED THROMBUS AFTER PERCUTANEOUS LEFT ATRIAL APPENDAGE CLOSURE: MECHANISTIC INSIGHTS
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Background: Left atrial appendage closure (LAAC) devices are an alternative to antithrombotic therapy for stroke prevention in high-risk patients with atrial fibrillation who are not candidates for systemic anticoagulation. However, device related thrombus (DRT) has an observed incidence of ~4% after LAAC. The mechanism of massive thrombus formation remains incompletely understood.

Objective: To present and examine the intraoperative findings of 2 cases of massive DRT occurring late post LAAC device implantation and propose potential mechanisms for these rare complications.

Methods: N/A

Results: Patient 1 was a 75-year-old female with paroxysmal AF and CHA2DS2-VASc Score of 5 with Watchman implanted two years prior to presentation. She had completed 45 days of warfarin and ASA after implantation. She underwent elective open heart surgery for severe mitral valve regurgitation and moderate to severe aortic valve regurgitation. Large DRT (2x2cm) was diagnosed intraoperatively, which was treated with left atrial appendage and device resection. Patient 2 was a 75-year-old female with permanent AF and CHA2DS2-VASc Score of 5 with Watchman implanted two years prior to presentation. She had completed 45 days of warfarin and ASA after implantation. She underwent elective open heart surgery for severe mitral valve regurgitation and moderate to severe aortic valve regurgitation. Large DRT (2x2cm) was diagnosed intraoperatively, which was treated with left atrial appendage and device resection.
Score of 5, who was referred for routine post implant surveillance TEE. She had also completed 45 days of warfarin and ASA after implantation. A large DRT measuring 2 x 2 cm was noted. The patient was treated with warfarin and subsequently dabigatran with improvement in the size of thrombus on TEE. However, a gastrointestinal bleed led to the cessation of anticoagulation. Subsequent TEE demonstrated enlargement of massive DRT (3x2 cm). She was referred to cardiac surgery for thrombectomy and resection of the Watchman device and LAA. In both cases, the intraoperative findings demonstrates well-seated LAAC without gross findings of malapposition or peri-device leaks. The central screw was visible without evidence of endothelialization in both cases (Figure 1).

**Conclusion:** Incomplete endothelialization of the central screw with thrombus attachment was noted intraoperatively in both cases of massive DRT. Strategies or new designs to mitigate the risk of an exposed central screw as a possible nidus for thrombus formation may decrease the risk for DRT.

**PO-620-05**

ARRHYTHMIC EVENTS IN PATIENTS WITH CARDIAC IMPLANTABLE ELECTRONIC DEVICE POST COVID19 VACCINE

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**Background:** COVID19 is often associated with cardiac arrhythmia, and vaccination significantly reduces the risk of symptomatic disease, including arrhythmia. Vaccination is often accompanied by a flu-like syndrome and rarely, more serious side effects including cardiac involvement. We sought to investigate if vaccination with mRNA based COVID19 vaccine is associated with arrhythmic events recorded on cardiac implantable electronic devices (CIED).

**Objective:** To assess correlation between COVID19 vaccination and arrhythmic events among patients with CIED.

**Methods:** We adjudicated all arrhythmia alerts received in our institution between October 2020 and October 2021 in patients receiving a COVID19 vaccine (Moderna or Pfizer). For each patient, we compared the incidence of alerts in the 72 hours, 1 week and 2 weeks before and after the vaccination. In patients with multiple vaccination doses, each vaccination was treated separately. McNemar’s test was performed to measure the interaction between alerts and vaccination at different intervals.

**Results:** A total of 581 patients at a mean age of 70.6 were included, with 610 arrhythmic events. 440 patients were vaccinated, with 421 arrhythmic events. We found that 12 patients had arrhythmic events within 72 hours after vaccination, while only 3 patients had events in the 72 hours before vaccination, for a significant interaction between vaccination and arrhythmic events (p = 0.03, OR 4.0 CI 1.079-22.088). The most common type of alert within 72 hours post vaccination was VT/VF, followed by AT/AF (Figure 1). Of those, 8 patients required an intervention including medication change (4/8), ICD shock/ATP therapy (3/8) and pacemaker implantation (1/8). There was no correlation between vaccination and arrhythmia at longer time intervals (20 vs 16 events before/after 7 days, p = 0.61 and 31 vs 18 events before/after 14 days, p = 0.083).

**Conclusion:** The development of mRNA based vaccine was critical in the efforts to mitigate the COVID19 pandemic, with countless lives saved and morbidity, including cardiovascular, prevented. In this work we found that mRNA based COVID19 vaccine was associated with arrhythmic events within 72 hours after vaccination. The implications of these events is yet to be clarified and a larger cohort is required to validate these results.