P4122 | BEDSIDE
Identifying a single p-wave during a cardiac cycle to reduce inappropriate detection of atrial tachyarrhythmia episodes in an implantable loop recorder
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Background: We developed and validated an algorithm to reduce inappropriate detection of atrial tachyarrhythmia (AF/AT) in implantable loop recorders (ILR) based on detection of a single p-wave during cardiac cycles.
Methods: We evaluated the first 2-min of stored AF/AT episodes from pts with ILR devices. Development set consisted of episodes in pts with various indications of ILR. The validation set consisted of episodes from pts with history of AF. The current detection algorithm looks for evidence of AF and AT based on patterns in a Lorenz plot of difference in RR intervals over a 2-min period. In the enhanced algorithm, evidence of AF and AT is reduced if evidence of p-wave is detected. Evidence of a single p-wave during a cardiac cycle is identified using morphologic features of the ECG during a 600ms window prior to an R-wave. Generalized estimating equation (GEE), which adjusts for multiple episodes in pts, was used to determine the %change in true and false AF and AT detection.
Results: The development dataset consisted of 692 episodes (39 pts) detected as AF. The validation dataset consisted of 2638 episodes (228 pts) detected as AF and 3219 episodes (54 pts) detected as AT. In the validation set, the enhanced algorithm reduced inappropriate detection of AF (455 of 790) and AT (1815 of 3219) episodes while also reducing the detection of true AF (70 of 1848) and AT (21 of 723) episodes during the first 2-min of the episode (GEE estimates in Figure).

Conclusion: An algorithm enhancement for AF/AT detection in ILR incorporating p-wave information can substantially reduce inappropriate detection of AF/AT that are short in duration with minimal reduction in detection of true episodes. How this algorithm will perform during long duration episodes needs validation using a Holter study.

P4123 | BEDSIDE
Gastroparesis: an under-recognized complication after atrial fibrillation catheter ablation procedure
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Purpose: Percutaneous catheter ablation (CA) is a well-established treatment for symptomatic atrial fibrillation (AF). Major complications occur in up to 6% of procedures, being mostly cardiovascular events. Among extracardiac complications, only a few cases of gastroparesis have been reported. We present two cases of gastroparesis after CA.
Methods: From May 2011 to December 2012 a total of 106 procedures were performed (80 RF and 26 CrT procedures). Mean age was 63.6±10 years. AF was persistent in 48% of cases. The incidence of gastroparesis was 1.88% (2/106). Patients complained of shortness of breath, dysphagia, early satiety and epigastric discomfort within 72-96 hours after CA. RF standard CA was performed in both cases (a 3.5-mm irrigated catheter with up to 35 W in a temperature-controlled, power limited mode). CT scan excluded atrio-esophageal fistula and showed a marked gastric dilatation and remnants of food (figure).

Conclusion: Gastroparesis is a poorly defined and often under-recognized extracardiac complication caused by vagus nerve injury after CA. Delayed presentation and subtle symptoms can mask this complication. A prompt diagnosis and treatment are necessary in order to avoid significant patient morbidity.