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Online webinar training and smartphone tools to analyse complex atrial fibrillation maps: a randomized trial

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Topic(s):
e-Cardiology - Other

Citation:

Background:
Multipolar intracardiac and body surface electrograms are emerging tools to map atrial fibrillation (AF) and guide ablation, yet maps can often be difficult to interpret.

Objectives:
(1) To assess the impact of training on the identification of AF driver sites on panoramic maps where ablation terminated persistent AF, for both freely available and commercial methods; and (2) to extend this concept to mobile health.

Methods:
Two independent mapping techniques were used to identify rotational activity patterns from a multicenter registry of patients in whom targeted ablation terminated non-paroxysmal AF. Cardiology Fellows-in-training naive to AF mapping were enrolled and randomized to training vs no training (control). All participants evaluated an initial set of movies to identify sites of AF termination. Participants randomized to training evaluated a second set of movies in which they received feedback on their answers. Both groups re-evaluated the initial set to assess the impact of training. This concept was migrated to a smartphone application (app).

Results:
The AF multicenter registry cohort was 65 years old (IQR 55-70), with a median LA diameter of 47 mm (IQR 37-54), 63% males.
Both mapping methods showed at least 1 driver at AF termination site (p<0.001), with up to a maximum of 3 drivers per map.
Twelve Cardiology Fellows (median age 30 years old (IQR 28-32), 6 females) read 480 AF maps. Baseline identification of AF termination sites by ablation was poor (40%±12% vs 42%±11%, P=0.78), but similar for both mapping methods (P=0.68). Training improved accuracy for both methods: A (P=0.001) and B (p=0.012), respectively; whereas controls showed no change in accuracy (P=NS) (Figure). The Smartphone app accessed AF maps from multiple systems on the cloud to recreate this training environment.

Conclusion: Digital online training improved interpretation of panoramic AF maps in previously unexposed clinicians. Combining online clinical data, smartphone apps and other digital resources provides a powerful, scalable approach for training in electrophysiology.
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