Influence of high-pass filtering on noncontact mapping and ablation of atrial tachycardias.

The aim of the study was to define the impact of different high-pass filter settings (HPF) on the accuracy of mapping of ectopic atrial tachycardias (EAT) using a noncontact mapping (NCM) system. In 20 patients with 22 EAT a noncontact probe was deployed in the right (n = 19) or in the left atrium (n = 3). The device enables interpolation and analysis of unipolar electrograms. It provides information on focus localization and signal morphology. These parameters were compared in different HPF of 0.5 Hz, 2 Hz, 8 Hz, and 16 Hz. The NCM signal morphology was preserved at all HPF. An initial negative deflection recorded by NCM system showed a positive predictive value of 93% regarding the ablation success. The deviation (spatial disparity) between visualized focus origin and successful ablation site was 6.9 +/- 5.4 mm. Between two consecutive filter settings, the focus shift was more pronounced between 0.5 and 2 Hz (5.4 +/- 4.5 mm) compared to a setting between 8 and 16 Hz (2.9 +/- 2.9 mm; P< 0.05). Successful ablation was achieved in 15/18 right atrial tachycardias (83%) and in 2/3 left atrial arrhythmias. Different HPF influence NCM spatial analysis of EAT. However, a small variability in foci localization does not impact final ablation results.