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Temporal patterns of premature atrial contractions predict atrial fibrillation occurrence in bradycardia patients continuously monitored through pacemaker diagnostics

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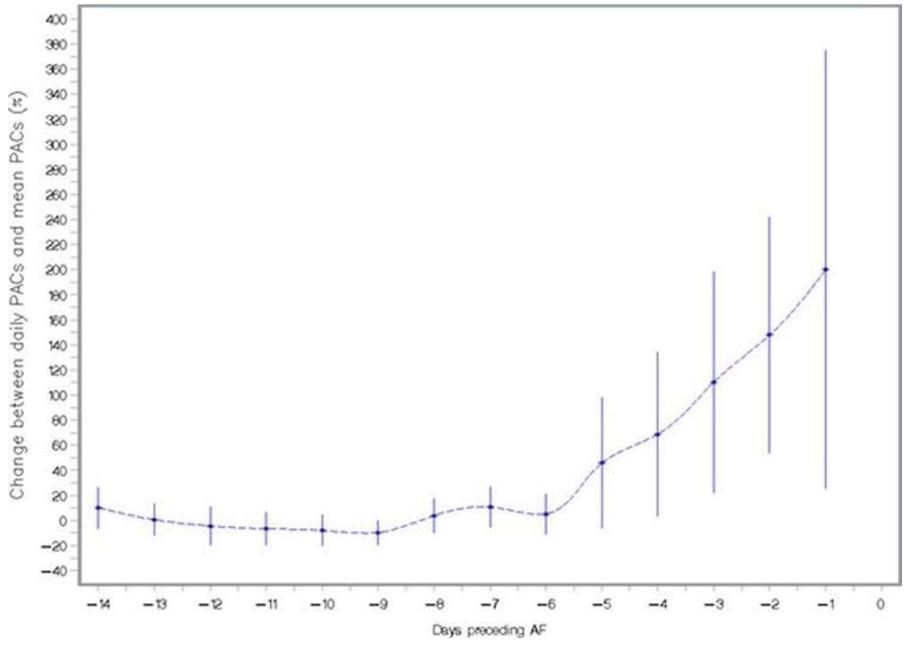
Background: The frequency of premature atrial complexes (PACs) has been indirectly related with atrial fibrillation (AF) occurrence and adverse outcomes.
Objective: To evaluate whether temporal patterns of PACs are directly associated with AF onset in pacemaker patients with continuous monitoring of the atrial rhythm.
Methods: Overall, 193 pacemaker patients (49% female, 72±9 years old), enrolled in a national registry, were analyzed. Frequency of daily PACs was measured in a 14-day initial observation period, during which patients were in sinus rhythm. In the following period, temporal occurrence and frequency of daily PACs and eventual onset of AF were derived by pacemaker diagnostics.
Results: In the run-in period, median PACs frequency was 614 PACs/day (interquartile range=70–3056). Subsequently, in a median follow-up of 6 months, AF occurred in 109 patients, in particular in 37/96 (38.5%) patients with a PAC rate $<$614 PACs/day and in 72/97 (74.2%) patients with PAC rate $\geq$614 PACs/day ($p<0.001$). In patients with AF occurrence, the number of daily PACs, normalized by dividing for the average of PACs in 10 preceding days, progressively increased in the 5–6 days preceding AF (Figure). Cox Model predictive analysis showed that the risk of AF was significantly higher in patients with a relative increase of the daily PACs higher than 30% compared with PACs average number in 10 preceding days (hazard ratio (95% confidence interval) = 3.67 (2.40–5.59), $p<0.001$).
Conclusion: PACs frequency increases in the 5–6 days preceding AF onset. A relative increase of the daily PACs is significantly associated with the risk of AF occurrence.



PACs changes daily trend before AF