Background: In modern implantable defibrillators (ICD) atrial pacing algorithms can be an effective approach to prevent atrial fibrillation recurrences. The aim of the present study was to quantify the type and frequency of onset triggers in ICD patients suffering from atrial fibrillation (AF).

Methods: Between April 2001 and December 2002 58 patients (age 67±9 yrs, 81% men, 86% structural heart disease, 62% known AF) with a primary ICD indication were enrolled in the GEM III AT (Medtronic Inc.) registry at 8 centers. During a mean follow-up of 2.0±0.8 years all patients with at least 1 EGM-documented AF spontaneous onsets (range 1-15 episode/patient) and 24-hour electrocardiographic recording for heart rate variability (HRV) analysis were obtained immediately after conversion to sinus rhythm. Statistical analyses were performed by ANOVA and Spearman correlation.

Results: In 11/58 (19%) patients, 160 episodes with an EGM-documented AF onset were eligible for data analysis. Using the extensive AF diagnostic capabilities of the GEM III AT (Medtronic Inc.), we analysed the diurnal distribution of AF onsets as well as the frequency and timing of AF onset triggers in ICD patients suffering from AF. Atrial pacing algorithms eliminating onset triggers can be an effective approach to prevent atrial fibrillation recurrences. The diurnal distribution of triggers may influence the application and programming of preventive pacing algorithms.

Conclusion: In patients with paroxysmal atrial fibrillation a positive relation between IL-6 levels and parasympathetic indices of HRV, suggests a possible role of inflammation in autonomic modulation that may facilitate arrhythmia occurrence.