A new definition of significant pauses

Ricardo Sadashi Mishima
Varun Malik
Kadhim Kadhim
Adrian Elliott
Dione Jones
Dominik Linz
Rajiv Mahajan
Dennis Lau
Prashanthan Sanders

Introduction: Cardiac pacing is indicated in patients with symptomatic asystolic pauses. However, the incidence of asymptomatic pauses as well as the incidence of syncope without concurrent pauses are unknown. The aim of this study is to describe the incidence and extent of asymptomatic pauses during daytime, as well as the incidence of syncope without concurrent pauses in patients with continuous heart rate monitoring over a prolonged follow-up period.

Methods: Consecutive patients with an implantable loop recorder (ILR) device and detailed symptom and syncope log-book were studied. The electrograms were analysed and pauses due to undersensing were excluded. In addition, pauses occurring during night (between 10pm and 6am) were also excluded.

Result: A total of 639 patients with ILRs implanted between April 2011 and April 2019 were screened. After exclusion due to lack of follow up and/or data and age <18 years old, 516 patients were analysed. The mean follow-up period was 786.2 ± 418 days. Throughout this period, 78 patients had diurnal pauses out of which 26 had at least one episode of syncope or presyncope associated with a pause. The total number of diurnal pauses recorded was 242. In addition, 37 episodes of syncope and 119 episodes of presyncope were reported. The incidence of both syncope and presyncope was significantly higher in those with diurnal pauses. However, only 5 episodes of syncope and 36 episodes of presyncope were associated with a diurnal pause while in 32 syncopal events and 13 presyncopal events normal sinus rhythm was the underlying rhythm. Syncopal and presyncopal pauses were significantly longer than asymptomatic pauses (p < 0.001). The difference was not significant between syncopal and presyncopal pauses (p=0.27). Duration was not significantly different across pause type (P for trend = 0.07). The proportion of symptomatic pauses in accordance with pause type was not statistically significant. After adjustment pause duration and ILR implanted due to syncope or presyncope were the strongest predictors of symptoms associated with a ventricular pause, whereas male gender was protective.

Conclusion: While syncope and presyncope are more frequent among those with diurnal pauses, the vast majority of these episodes are not due to a pause. In addition, pauses shorter than 4 seconds are rarely associated with presyncope and syncope only occurred with pauses longer than 4 seconds.