ECG and Holter findings of transcatheter closure of peri-membranous ventricular septal defects with Nit-Occlud(®) Lê VSD coil

Odemis E., Tola H.T., Tanidir I.C., Ergul Y.,
Department of Paediatric Cardiology, Istanbul Mehmet Akif Ersoy, Thoracic and Cardiovascular Surgery Center and Research Hospital, Istanbul, Turkey

Introduction: This study aims to investigate presence of arrhythmia, QT dispersion and heart rate variability (HRV) by performing ECG and Holter monitorization in patients whose VSD was closed with a transcatheter method using a Nit-Occlud(®) Lê VSD coil.

Patients and Method: The ECG and Holter recordings of 24 cases who presented to our clinic between January, 2010 and December, 2014 and whose ventricular septal defects were closed using a Nit-Occlud(®) Lê VSD coil were evaluated retrospectively. The 12-lead ECGs and Holter ECGs of the cases were taken before the procedure and at day 1, in month 6 and month 12 after the procedure. The presence of arrhythmias, HRV variables and QT dispersion were checked.

Results: In total, 24 cases were included in the study. Among these cases, 12 (50%) were male. Their average age was 7.9 ± 4.6 years (1.3-17.2 years) and average weight was 29.3±13.9 kg (10-66 kg). Based on a comparison between the values before the procedure and in month 6 and month 12 after the procedure, no significant differences were identified between their QT min, max, dis, QTcmin, max, dis values and heart rate variability values at Holter ECG follow-ups (according to time domain and frequency domain analyses) (for every value, p value > 0.05). On the other hand, 3 patients had ventricular premature beats at a very rare frequency prior to the transcatheter closure of VSD with a Nit-Occlud(®) Lê VSD coil. After the procedure, the ventricular premature beats persisted in these patients and 2 (8%) patients had non-sustained ventricular tachycardia of 3 and 5 beats. However, this pathology regressed as seen in their Holter readings in month 6 and month 12. None of the patients developed atrioventricular block.

Conclusion: Following the transcatheter VSD closure with a Nit-Occlud(®) Lê VSD coil, no impairments in atrioventricular conduction, HRV changes or increased QT dispersions are observed. Although there were very brief non-sustained ventricular tachycardias following the procedure, they are resolved in the follow-up.