Device Therapy - Device Complications and Lead Extraction

PROMET: the effect of age on patient outcomes in non-laser transvenous lead extraction

Akhtar Z.[1]; Elbatran A.[1]; Starck CT.[2]; Leung L WM[1]; Sohal M.[1]; Gallagher MM.[1]

[1]St George"s University Hospital NHS Foundation Trust, London, United Kingdom of Great Britain & Northern Ireland
[2]German Heart Center Berlin, Berlin, Germany

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Background: Cardiac implantable electronic devices (CIEDs) improve morbidity and mortality. This has fuelled an upsurge in implantation of these devices across all patient cohorts, simultaneously increasing the need for transvenous lead extractions (TLE). As the global population expands and life-expectancy extends, TLE will play a significant role in CIED management. Advancing patient age is a recognised risk factor for poor outcomes however the association between patient age and TLE outcomes remains unclear.

We sought to evaluate the relationship between patient age and non-laser TLE outcomes.

Method: Data of 2205 patients (3849 leads) was collected retrospectively from six high-volume TLE institutes across Europe (PROMET) between January 2005-December 2018. Propensity 1:1 score matching was performed to limit the effects of confounding variables, pairing 353 patients in the >80 years of age category with 353 patients in <80 years of age group. Procedural outcomes were compared between the two age groups and multivariate regression analysis was used for predictors of 30-day mortality.

Results: In the <80 and >80 years-of-age cohorts, there was a similar proportion of male patients (65.3% vs 67.9%, p = 0.47) treated under general anaesthesia (96.5% vs 93.4%, p = 0.078) for a pre-dominant infectious indication (56.7% vs 60.3%, p = 0.52) but with a higher requirement of the EvolutionTM sheath in the octogenarians (39.4% vs 48.4%, p = 0.015). A similar clinical success per lead was achieved between the two age groups (96.6% vs 98%, <80 vs >80 years, p = 0.245) as was complete lead extraction (95.5% vs 96.6%, <80 vs >80 years, p = 0.44) with a comparable minor complication rate (2.3% vs 3.1%, <80 vs >80 years, p = 0.29) and major complications (1.1% vs 1.4%, <80 vs >80 years, p = 0.74). Thirty-day mortality was higher in the octogenarian cohort than the <80-year-olds without reaching statistical significance (5.4% vs 2.6%, p = 0.08); peri-procedural mortality was similar in both age groups (0.3% vs 0.6%, respectively, p = 0.56). Multivariate regression analysis revealed age (p = 0.013, OR 1.06 [1.01-1.12]), systemic infection (p = 0.026, OR 3.4 [1.16-10.35]) and lead dwell time (p = 0.007, OR 1.01 [1.003-1.017]) increased the odds of 30-day mortality.

Conclusion: Transvenous lead extraction is similar in efficacy and safety across all age groups. Thirty-day mortality is higher in the advanced age group, signifying the importance of post-procedural management in this cohort.

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