Title: Do Negative Chronotropic Medications Affect the Outcomes of Tilt Table Testing in Non Hypermobile Patients?

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Background: Tilt table testing (TTT) can be useful in evaluating patients with unexplained and/or recurrent syncope/presyncope and Postural Orthostatic Tachycardia Syndrome (POTS). Some patients may be on negative chronotropic agents such as β-blockers and nondihydropyridine calcium channel blockers (non-DHP CCB), which may have a confounding effect on the TTT outcome. The Long Island Heart Rhythm Center (LIHRC) provides cardiac care at a large osteopathic medical school (NYITCOM) and its hypermobility treatment center including the evaluation of syncope/presyncope and POTS. Although negative chronotropes are known to affect TTT outcomes and may obscure the diagnosis of POTS, their specific impact in patients without underlying hypermobility has not been well characterized.

Objective: To explore the effect of negative chronotropic medications on TTT outcomes in non hypermobile patients.

Methods: LIHRC patients with syncope, presyncope, and/or POTS who received TTT between 2019 and 2025 were included. Patients with Ehlers–Danlos Syndrome/Hypermobility Spectrum Disorder were excluded. TTT outcomes and concurrent medication use were documented. Binary logistic regressions were used and were adjusted for age and sex. Data reported as mean ± SD and $p \leq 0.05$ was considered statistically significant.

Results: 280 patients with syncope/presyncope, and/or POTS of which 124 had tilt table testing and 91 (73.4%) non-hypermobile patients were the subject of this study. 73 (80.2%) were not on negative chronotropic medications: age 40.08±18.3 years; M/F (9.6%)/(90.4%). 18 (19.8%) were on negative chronotropic medications (13 β-blockers, 5 non-DHP CCB therapy): age 50.6±17.2 years; M/F (22.2%)/(77.8%). Logistic regression showed younger age was associated with a POTS diagnosis during TTT ($p = 0.018$). There was a trend towards less TTT- diagnosed POTS in those on negative chronotropes ($p = 0.060$). All other binary logistic regressions were non significant.

Conclusions: Negative chronotropic medications may affect the outcome of TTT in non hypermobile patients. In this study there was a trend towards less POTS identified during TTT in those on negative chronotropic medications. In addition, younger age was associated with POTS

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during TTT. A case-controlled study would help determine the true impact of negative chronotropic medications on TTT results in this cohort.

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