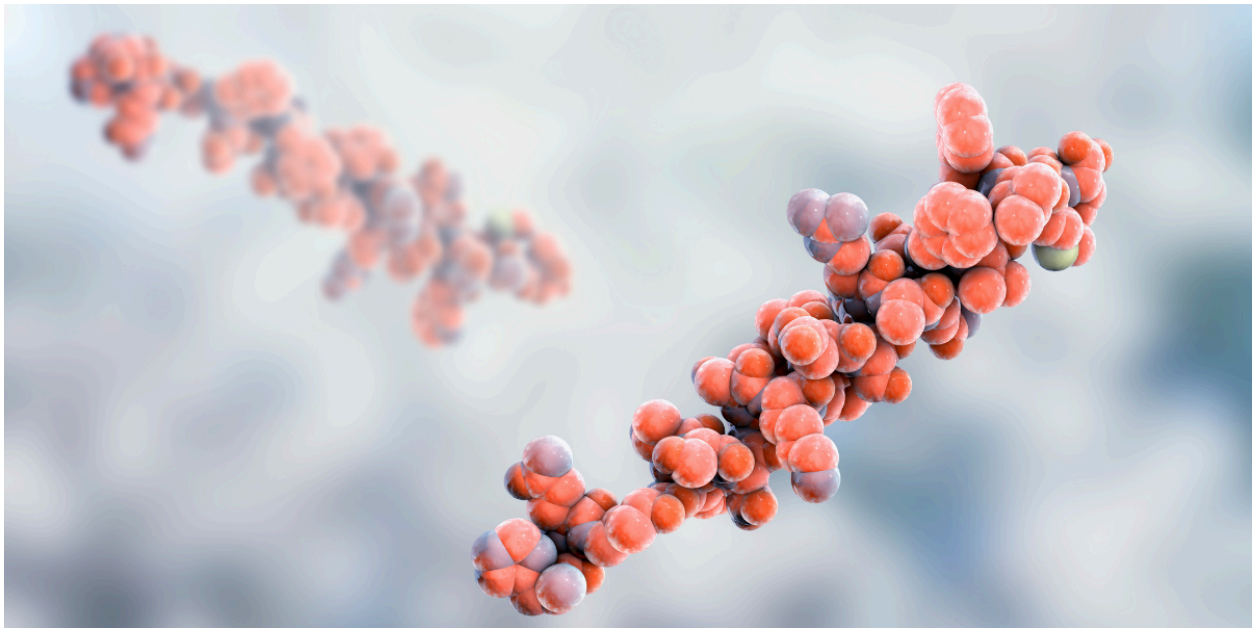

Impact of Glucagon-Like Peptide-1 Receptor Agonists on Autonomic Function in Individuals with Diabetes: An In-Depth Systematic Review and Meta-Analysis

Beyond their metabolic implications in diabetes, glucagon-like peptide 1 receptor (GLP-1R) agonists have been associated with a notable but incremental elevation in heart rate (HR). However, the influence of GLP-1R actions on the autonomic nervous system (ANS) in diabetes remains a topic of ongoing debate. This meta-analysis aims to comprehensively assess the effect of GLP-1R agonists on various measures of ANS function in individuals with diabetes.

Methodology:

Following the guidelines set by the **Cochrane Collaboration** and adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement, this meta-analysis scrutinizes clinical trials that evaluated autonomic function in diabetic subjects undergoing chronic treatment with GLP-1R agonists. The primary outcomes examined include changes in ANS function measured through heart rate variability (HRV) and cardiac autonomic reflex tests (CARTs).

Results:

The studies included in the analysis revealed a significant increase in HR following GLP-1R agonist treatment ($P<0.001$). However, the low frequency/high frequency ratio showed no significant difference ($P=0.410$). Noteworthy, there were no discernible changes in other HRV measures. Regarding CARTs, only the 30:15 value derived from the lying-to-standing test exhibited a significant decrease after treatment ($P=0.002$), albeit this measurement was reported in only two studies. Other outcomes from CARTs demonstrated no significant differences.

Conclusion:

The meta-analysis confirms the observed elevation in HR but suggests the absence of sympatho-vagal balance alteration due to chronic GLP-1R agonist treatment in diabetes, based on the currently available measures of ANS function.

Context on Diabetic Autonomic Neuropathy:

Diabetic autonomic neuropathy represents a diverse range of disorders affecting the autonomic nervous system (ANS) in individuals with diabetes mellitus or metabolic derangements of pre-diabetes, excluding other potential causes. Cardiac autonomic neuropathy (CAN) specifically manifests as an ANS imbalance, impacting autonomic control of the cardiovascular system. Prevalent in at least 20% of unselected patients, CAN's incidence rises to 65% with increasing age or prolonged diabetes duration. Diagnostic criteria, patient cohorts, and testing modalities influence CAN prevalence, reported at about 7% in type 2 diabetes mellitus (T2DM), increasing by 4.6% to 6% per year with diabetes duration.

TM Flow System by **Gateway Clinical:**

At the core of Gateway Clinical's offerings lies the revolutionary TM Flow system. This cutting-edge technology plays a pivotal role in the timely detection and treatment of chronic metabolic diseases. Specifically designed for early identification of autonomic neuropathy and endothelial dysfunction signs, the TM Flow system enhances diagnostic capabilities critical for effective condition management.

How Gateway Clinical Can Assist:

Gateway Clinical encompasses a broad spectrum of topics, covering patient management, billing and coding, staff training, and seamless technology integration. By leveraging Gateway Clinical's resources, you can acquire the skills to enhance efficiency, reduce costs, and deliver superior care to your patients. Whether you're a solo practitioner or leading a large medical group, this guide proves indispensable for optimizing your medical practice.

In Our Exploration:

As we navigate through the complexities of autonomic function alterations in diabetes and the influence of GLP-1R agonists, Gateway Clinical stands as a beacon of excellence. Empowering healthcare professionals with tools and knowledge, Gateway Clinical aids in deciphering intricate connections between treatments and autonomic system dynamics. Join us in this exploration where Gateway Clinical becomes your partner in unraveling medical intricacies.