COMPASS 31: a screening tool for cardiac autonomic neuropathy in diabetes?

Aims: COMPASS 31 is widely employed for screening for cardiac autonomic neuropathy (CAN) in diabetes, yet its diagnostic performance varies across studies. In the present study, the authors aimed to evaluate the diagnostic performance of the questionnaire in people with type 1 (T1DM) and type 2 diabetes (T2DM), respectively. Additionally, the authors assessed its diagnostic performance in diagnosing diabetic peripheral neuropathy (DPN) as a secondary aim.

Methods: The study involved 97 participants with T1DM and 140 with T2DM. All participants underwent DPN assessment, classic cardiovascular reflex tests (CARTs), and completed the COMPASS 31 questionnaire. Probable DPN was defined by at least two abnormalities among neuropathic symptoms, signs, vibration perception, or thermal thresholds. Each CART was individually scored, with 0 considered normal, 1 borderline, and 2 abnormal. Early and confirmed CAN were defined by the presence of at least one abnormal and two abnormal tests, respectively. COMPASS 31 questionnaire responses were analysed to obtain six domain weighted scores and a total weighted score (TWS), which was considered abnormal if >16.44. The diagnostic accuracy of COMPASS 31 in each group was assessed using Receiver Operating Characteristics (ROC) curves.

Results: The TWS of COMPASS 31 was similar in both groups but significantly associated with confirmed CAN only in T1DM (P=0.006) and not in T2DM (P=0.177). The TWS correlated more strongly with CART-scores in T1DM (rho=0.36, P=0.002) than in T2DM (rho=0.08, P=0.322) (P=0.016). In T1DM only, the area under the ROC curves indicated fair diagnostic accuracy (>0.7) for confirmed CAN (0.73±0.07 in T1DM vs. 0.61±0.08 in T2DM) and DPN (0.75±0.06 in T1DM vs. 0.68±0.05 in T2DM). COMPASS 31 TWS demonstrated acceptable diagnostic performance in T1DM, with a sensitivity and specificity for confirmed CAN of 81.2% and 60.3%, respectively, while the sensitivity and specificity for DPN was 76.3% and 78.0%. In the T2DM group, all similar measures were <70%.

Conclusion: COMPASS 31 exhibits a weaker association with CAN in T2DM compared to T1DM, with fair diagnostic accuracy for confirmed CAN observed only in T1DM.

Comments. The present study explores an important issue related to the use of questionnaire-centred screening methods for diabetic neuropathies, where the multifactorial origin of symptoms must be considered. The study excels due to its size and the use of established CARTs, while the unexplored impact of psychological factors such as anxiety and depression are its most noticeable weakness. Overall, the study emphasizes the elusive nature of CAN and highlights the importance of exercising caution when relying solely on symptoms for its diagnosis, particularly in individuals with T2DM.

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Reference. D'Ippolito I, Menduni M, D'Amato C, Andreadi A, Lauro D, Spallone V. Does the Relationship of the Autonomic Symptoms Questionnaire COMPASS 31 with Cardiovascular Autonomic Tests Differ between Type 1 and Type 2 Diabetes Mellitus? Diabetes Metab J. 2024 Feb 26. doi: 10.4093/dmj.2023.0301. Epub ahead of print. PMID: 38408489.
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