Small diameter sensory afferents (A-delta, C-fibers) can be affected by a dysregulation of glucose metabolism that may ultimately lead to diabetic neuropathy. Interestingly, these afferents may be affected early in the progression of diabetes. Given this, tests of small diameter afferent function might serve as an "early detection system" for future onset of diabetes and/or diabetic neuropathy, to examine this hypothesis, 248 healthy, pain-free men and women, without a current diagnosis of diabetes mellitus (assessed from self-report) were assessed using several QST measures: warm and cold thresholds, heat pain tolerance, cold pressor threshold/tolerance, pressure pain threshold, and nociceptive reflex threshold (NFR; a spinally mediated reflex elicited by A-delta fiber activation).

Objectives

To determine whether a risk for diabetes is associated with QST measures of small diameter afferent function.

Participants

Healthy Participants: N = 248
Participant Characteristics: Female (53.2%), White, non-Hispanic (46.6%), average age = 29.37 years (SD = 11.28)

Exclusion Criteria:

• >18 yrs of age; cardiovascular, neurological, and circulatory problems; chronic pain condition; recent use of analgesic medication, BMI ≥35, current smoking habits, Chronic Illness Inventory (family history of diabetes and related conditions, including diabetes, heart disease, stroke, and other related conditions, including diabetes, heart disease, and other related conditions).

Methods: NFR Threshold

The average temperature (°C) of last 4 heat pain threshold trials, probe increased from 32 °C at 0.5 °C/sec to 60°C at 0.5 °C/sec until participant reported pain

Results

To be published

Conclusion

Together, these findings suggest that abnormalities in A-delta and C-fiber function may be present in persons at risk for diabetes even prior to a diabetes diagnosis. ABN and C-dysfunction may track differences in risk for diabetes and/or diabetic neuropathy. Limitation: the present study did not assess HgA1c, glucose levels, or glucose tolerance; therefore, we cannot determine whether some participants had undiagnosed diabetes.

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