Peripheral Sensory Neuropathy is a Predictor of Mortality in People with Diabetes

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Data Collection

- Study cohort token from the QICKD trial database.
- Anonymous records for all patients.
- Five years of data (2006-2011).

- Diabetes population: Adults with Type 1 or Type 2 (35,502 people)
- Identified using clinical read codes
- Validated using serum glucose and HbA1c results.

Presenter Disclosure Information

The American Diabetes Association requires the following disclosure to the participants:

Dr Andrew McGovern

Disclosed no conflict of interest

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Method

- Predictor variables:
  - Peripheral neuropathy (10g monofilament test)
  - Age/gender
  - Smoking status
  - Alcohol use
  - Blood pressure
  - Ischaemic heart disease
  - Previous stroke or transient ischaemic attack
  - Renal impairment
  - Heart failure
  - HbA1c measurement
  - Cholesterol measurement

Study Aim and Design

Does the presence of sensory neuropathy predict increased risk of death?

Retrospective cohort study on a large community based population in England

Method

- Division of data:
  - 2.5 years: Baseline data
  - 2.5 years: Follow up

- Only those with monofilament testing included: 18,748 (52.2%)
- Outcome: all cause mortality
- Statistical methods:
  - Multilevel logistic regression analysis
  - Lme4 package in R
Results

- Abnormal sensation was identified in 1,548 (9.0%)
- Sensory neuropathy associated with mortality:
  \[ \text{OR} = 1.70 \ (1.41-2.06; \ p < 0.001) \]
- HbA1c > 58 mmol/mol (7.5%):
  \[ \text{OR} = 1.16 \ (1.01-1.34; \ p = 0.037) \]
- Current smoker:
  \[ \text{OR} = 1.63 \ (1.39-1.89; \ p < 0.001) \]
- Ischaemic heart disease:
  \[ \text{OR} = 1.27 \ (1.12-1.43; \ p < 0.001) \]

ROC curve without:

- Sensory neuropathy
  \[ \text{AUC} = 0.8390 \]
- Smoking status
  \[ \text{AUC} = 0.8397 \]
- Ischaemic heart disease
  \[ \text{AUC} = 0.8410 \]
- Heart failure
  \[ \text{AUC} = 0.8373 \]

Conclusion

In people with diabetes the presence of sensory neuropathy (detected by primary care health-care providers using a 10g monofilament) is associated with an increased risk of death within the next 2.5 years.

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