AD-0824   Factors associated with the 5-year overall mortality in type 2 diabetes in the Moscow region: a prospective cohort study

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BACKGROUND

There is a paucity of data on factors that could be related to overall mortality in type 2 diabetes (T2DM) beyond cardiovascular and renal complications. In particular, little is known about cognitive dysfunction and depression as potentially life-shortening conditions, especially in different cultural contexts.

AIM

To identify clinical, laboratory and psychological predictors of the 5-year overall mortality in an unselected sample of type 2 diabetic patients in the Moscow region.

STUDY DESIGN

Prospective observational cohort study. No study-specific intervention was planned except routine clinical management of patients by their primary doctors. At 5 years after baseline assessments, all patients were contacted by phone or mail to assess their vital status.
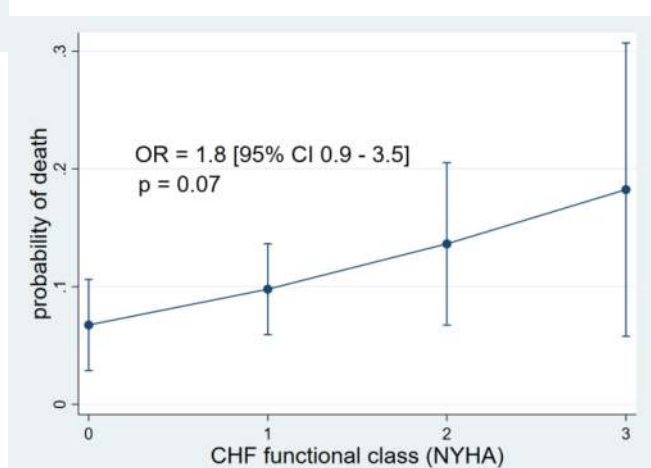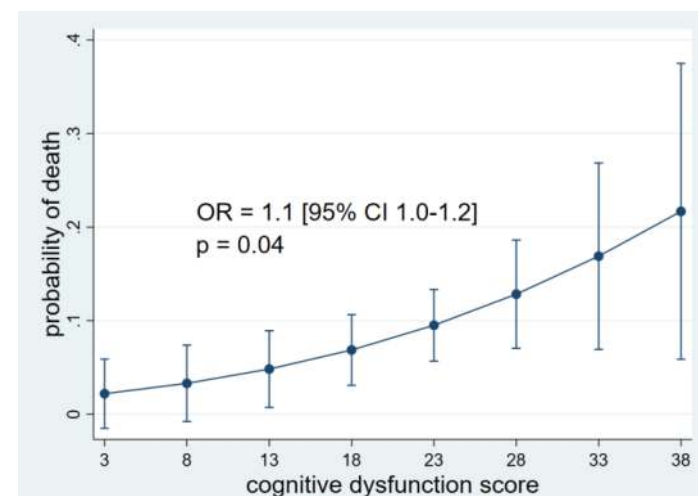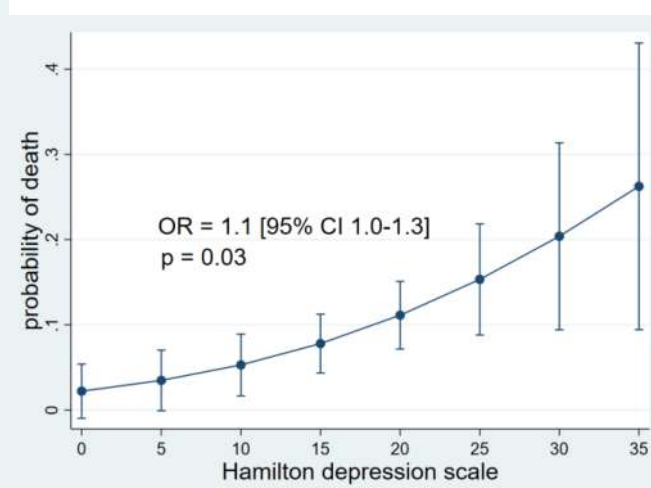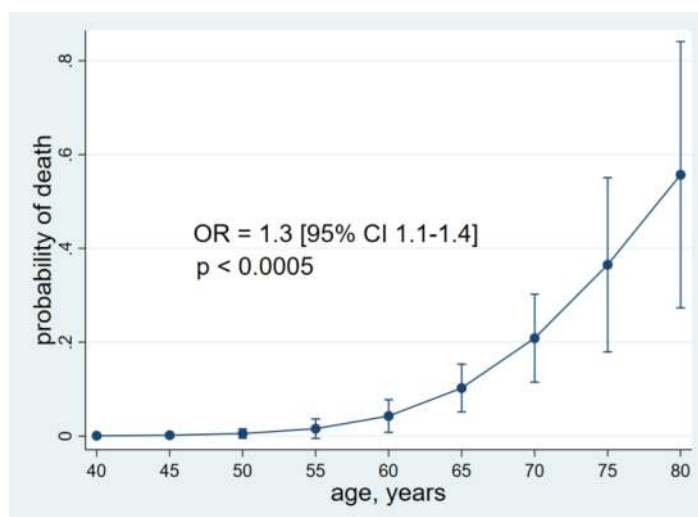
PATIENTS AND METHODS

- 178 consecutive T2DM patients (F : M = 145 : 33, aged 37 to 82 years, diabetes duration of 0,5 to 30 years) were recruited.
- Baseline assessments:
- standard clinical and laboratory assessments, including HbA1c, diabetes complications and major concomitant disorders
- Hamilton Depression Scale
- Cognitive dysfunction (locally adapted cognitive battery, MMSE);
- *Statistics:* 165 patients with confirmed outcomes were included into the regression analysis. Multiple logistic regression analysis was performed to find predictors of the 5-year overall mortality among baseline measurements, with results presented as odds ratios (OR) and 95% confidence intervals (CI). Given the exploratory nature of the study, results were considered to be statistically significant at alfa <0.1.

RESULTS

At 5 years, 150 (84%) patients were alive and 15 (8,4%) were dead; no information on the vital status of the rest 13 (7,3%) could be obtained. The factors that were independently associated with the death outcome shown in the figures and Table below.

Baseline variables, significantly associated with 5-year mortality

Baseline variables	5-year overall mortality		
	Odds Ratio	95% CI	P value
Gender: male vs. female	11.2	2.0 – 62.0	0.01
Age	1.3	1.1 – 1.4	< 0.0005
Cognitive dysfunction score	1.1	1.0 – 1.2	0.04
Hamilton Depression score	1.1	1.0 – 1.3	0.03
Chronic heart failure	1.8	0.9 – 3.5	0.07

OR = 1.3 [95% CI 1.1-1.4]
p < 0.0005

OR = 1.1 [95% CI 1.0-1.3]
p = 0.03

OR = 1.1 [95% CI 1.0-1.2]
p = 0.04

OR = 1.8 [95% CI 0.9 - 3.5]
p = 0.07

Predicted probabilities, obtained from this logistic model (with the use of marginal means), showed the following:
- Male and female patients had a mean predicted probability to die within the next 5 years of 22,9% and 6,7%, respectively
- The highest score of cognitive dysfunction was associated with 25% predicted probability of death, whereas the lowest score with 2%
- The corresponding predicted probabilities for the highest and lowest depression scores were 26% and 2%, respectively
- 5-year predicted probability of death in patients without CHF was 6,7%, with CHF NYHA class I, 9,8%, class II 13,6%, class III 18,2%, and class IV 23,5%.

All other parameters, such as duration of diabetes, HbA1c, lipid levels, insulin therapy, history of severe hypoglycemia or diabetic ketoacidosis, chronic diabetic complications, arterial hypertension, cardiovascular and cerebrovascular disease, brain ischemia score (Hachinsky scale) and diabetes-dependent quality of life, did not show any independent association with the outcomes.

DISCUSSION AND CONCLUSIONS

This is the first prospective study to assess the influence of depression and cognitive dysfunction on the overall mortality in T2DM patients in Russia.

The results indicate that cognitive dysfunction and depression have a small but significant negative impact on the 5-year survival.

No diabetes-related variable, such as HbA1 and diabetes-related and cardiovascular complications, except CHF, seemed to be associated with a 5-year overall mortality.

The major study limitation is its small sample and small number ov outcome.

The influence of age on survival is self-evident, while the strongest probability of death for male diabetic patients is in line with the known much shorter life expectancy for men in Russia, compared to women.

The results emphasize the importance of diagnosis of depression and/or cognitive dysfunction in T2DM. Whether their higher contribution to mortality, compared to conventional diabetes-related parameters, is universal or country- and healthcare system-specific, requires further and larger studies to verify the model and the candidate predictors.