Cognitive function may be a predictor of retinopathy progession in patients with type 2 diabetes.

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Background

Cognitive function,depression and anxiety may be associated with type 2 diabetes(T2DM) and its complications. In particular diabetic retinopathy (DR) is a complication that affects people with diabetes.

Aim

In an observational prospective study of a cohort of T2DM patients followed for 8 years,we monitored a number of clinical, psychological and cognitive variables to identify possible predictors of progression of DR.

Patients and Methods

Patients (n=498) with T2DM, of which 249 not treated by insulin (NIT) and 249 on insulin treatment (IT), were enrolled at baseline. The following variables were recorded: age, gender, diabetes duration, schooling, occupation, social status, smoking, self-monitoring of blood glucose, hypertension, menopausal status, fasting blood glucose, HbA1c, BMI, total and HDL cholesterol, triglyceride, retinopathy grading, presence of foot ulcers, depression and anxiety scores (Zung questionnaire) and cognitive function (Minimal Mental State Examination, MMSE). The same variables were collected again after 4 (JEI 37,79-85,2014) and 8 years. DR assessment was by grading of digital 45° photographs of the macular and nasal areas. Grading of the worst eye was considered.

Results

Out of 477 patients for whom fundus evaluation was available at baseline, 240 (160 IT and 80 NIT) had no DR, 110 (48 NIT and 62 IT) had mild non proliferative DR and 127 (24 NIT and 103 IT) had moderate or more severe DR. After 8 years, 357 patients were available for analysis, of whom 191 had remained with no or mild DR and 166 had developed moderate or more severe DR. Patients who had moderate or more severe DR at baseline were not included in the follow-up analysis. On multivariate analysis, being on insulin treatment (OR 1.90, 95%CI 1.02;3.55, p=0.043) and having mild vs no DR at baseline (OR 4.51, 2.44;8.31, p<0.0001) were associated with progression to moderate/more severe DR, whereas male gender (OR 0.49, 0.26;0.92, p=0.028) and a higher MMSE score (indicative of better cognitive ability) (OR 0.90 per scoring point; 0.83;0.99, p=0.026) were protective. None of the other baseline variables was associated with progression of DR in this cohort.

Conclusions

Lower MMSE score may represent a novel risk factor for progression of DR, on top of other known determinants. Microangiopathy might develop at both brain and retinal level and manifest itself with changes in cognitive function and retinopathy.