miRNAs, mRNAs, and level of expression of miRNAs host genes should be taken into consideration during research. As miRNAs may compete for binding to clusters in target mRNA the concentration of miRNAs may be found between following mRNAs: miRNA pairs: ABCA7 and miR-5-14452-5p; ABCA7 and miR-11-21055-3p; BACE1 and miR-16-38712-3p; BIN1 and miR-5-15548-3p; CHRNA7 and miR-15-35940-5p; CHRNMB2 and miR-17-39313-3p; FERT2 and miR-7-21142-5p; GRIN2B and miR-1-1553-3p; LRP1 and miR-16-36024-3p; PRNP and miR-6775-5p; PSEN2 and miR-20-42676-3p; APP and miR-15-33256-3p; IRS1 and miR-3-7886-3p; MAPT and miR-19-33623-3p; PPARG and miR-1-2597-5p; PPARG and miR-20-45152-5p; IDE and miR-20-23817-3p; TFAM and miR-6089; INPPSD and miR-1-2121-3p; ACEH and miR-4665-3p. Ten of 20 binding sites are located in CDS and ten in 5’UTR of mRNAs. The high value of ∆G of described binding sites in CDS and 5’UTR of mRNAs can be due to guanine-cytosine rich content in binding sites. The mRNAs of several genes (CD2AP, GSK3B, MAPT, PPARGC1A, TFAM) have binding sites for four miRNAs in 5’UTR and for several miRNAs with a high free energy of interaction above -125 kJ/mole can be used as markers of Alzheimer’s disease. Such clusters of binding sites for several miRNAs with a high free energy of interaction above -125 kJ/mole can be used as markers of Alzheimer’s disease. As miRNAs may compete for binding to cluster in target mRNA the concentration of miRNAs, mRNAs, and level of expression of miRNAs host genes should be evaluated. Twenty single miRNA binding sites with AG of -125 kJ/mole and higher were found between following mRNAs: miRNA pairs: ABCA7 and miR-5-14452-5p; ABCA7 and miR-11-21055-3p; BACE1 and miR-16-38712-3p; BIN1 and miR-5-15548-3p; CHRNA7 and miR-15-35940-5p; CHRNMB2 and miR-17-39313-3p; FERT2 and miR-7-21142-5p; GRIN2B and miR-1-1553-3p; LRP1 and miR-16-36024-3p; PRNP and miR-6775-5p; PSEN2 and miR-20-42676-3p; APP and miR-15-33256-3p; IRS1 and miR-3-7886-3p; MAPT and miR-19-33623-3p; PPARG and miR-1-2597-5p; PPARG and miR-20-45152-5p; IDE and miR-20-23817-3p; TFAM and miR-6089; INPPSD and miR-1-2121-3p; ACEH and miR-4665-3p. Ten of 20 binding sites are located in CDS and ten in 5’UTR of mRNAs. The high value of ∆G of described binding sites in CDS and 5’UTR of mRNAs can be due to guanine-cytosine rich content in binding sites. The mRNAs of several genes (CD2AP, GSK3B, MAPT, PPARGC1A, TFAM) have binding sites for four miRNAs in 5’UTR and for several miRNAs with a high free energy of interaction above -125 kJ/mole can be used as markers of Alzheimer’s disease. As miRNAs may compete for binding to cluster in target mRNA the concentration of miRNAs, mRNAs, and level of expression of miRNAs host genes should be considered in ongoing research.

Prospects for further research. In addition to the above listed associations of one miRNA with one gene, genes containing clusters for several miRNAs with a high free energy of interaction above -125 kJ/mole can be used as markers of Alzheimer’s disease. As miRNAs may compete for binding to cluster in target mRNA the concentration of miRNAs, mRNAs, and level of expression of miRNAs host genes should be taken into consideration during research.

References:

Keywords: Alzheimer’s disease, miRNA, cluster of binding sites, target genes

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AN IMPACT OF DIABETES DURATION ON SERUM ASYMMETRIC DIMETHYLARGININE CONCENTRATION

Asija Zaciragic, Amina Valjevac, Almira Hadzovic-Dzuvo, Nesina Avdagic, Nermina Babic, Orhan Lepara, Amelia Dervisevic, Jasminko Huskic

Department of Human Physiology, Faculty of Medicine University of Sarajevo, Bosnia and Herzegovina

Recent studies point to significant role of endothelial dysfunction in the pathogenesis of diabetes mellitus type 2 (DMT2) and its complications. However, an impact of diabetes duration on markers of endothelial dysfunction such as asymmetric dimethylarginine (ADMA) has not been sufficiently investigated. The aim of the present study was to assess an impact of diabetes duration on serum ADMA concentration.

Materials and Methods. Participants for this cross-sectional study were randomly selected from Out-Patient Family Medicine Clinic “Višnjik”, Sarajevo, Bosnia and Herzegovina. DMT2 was defined by American Diabetes Association criteria. Based on diabetes duration patients with DMT2 were divided into: up to 10 years diabetes duration group...
and more than 10 years diabetes duration group. ADMA concentration was determined by ELISA method and ADMA®-ELISA kit (DLD Diagnostika GmbH, Hamburg, Germany) was used as reagent. For the comparisons between groups, ANOVA test was used.

**Results.** Study included 60 DMT2 patients (30 male, 30 female) and 60 apparently healthy control subjects (30 male, 30 female). Serum ADMA concentration was significantly higher in DMT2 patients with diabetes duration more than 10 years (1.81±0.12 μmol/L) compared to serum ADMA concentration in DMT2 patients with diabetes duration up to 10 years (1.38±0.08 μmol/L; p<0.001) and compared to serum ADMA concentration in the control group of subjects (0.62±0.02 μmol/L; p<0.001).

Conclusions: Obtained results suggest an increase in serum ADMA concentration with the progression of DMT2 duration. Since ADMA is a marker of endothelial dysfunction that contributes to DMT2 vascular complications development, determination of serum ADMA levels in different stages of DMT2 duration could assist in prevention and treatment of endothelial dysfunction in DMT2.

**Cancer of ENT organs** are on the seventh place in the world in prevalence. Combined or complex treatment were given to 35% of patients and the results are considered unsatisfactory. The questions of the clinic, diagnosis, prognosis, prevention of such patients are widely represented in the literature of different years (Garyuk G.I., 1997; Popovich V.I., 1999; Timchuk S.M., 1999; J.Shah, 2000; Paches A.J., 2000; Reshetov I.V., 2005, Protsik V.S., 2006; Palamarchuk V.V., 2008; Kashirin V.O., 2009). However, thoughts about the effectiveness of different treatment methods diverge; the issue of pathogenesis of the course of the tumor process after radical treatment methods is not developed.

**Materials and Methods.** The study is based on an analysis of the treatment and monitoring results of 90 patients with squamous cell carcinoma of the oropharynx and larynx from the second to third stage of the process. The patients did not differ by sex, age, localization of the primary tumor, the form of its growth, the stage of the disease, the duration of the disease, neglect. Patients received chemo-radiotherapy according to the proposed scheme. The determination of the levels of expression of the protein bands was used as differential diagnostic criteria.

**Results.** The analysis of the results of the relapse and prognosis of the oncological process, depending on the expression of oncological markers mp53, Bcl-2, KI-67, was carried out. Analysis of the relapse of the disease depending on the expression of KI-67 oncoprotein: in year I 26 (46.43%) of patients died with expression of 56.8 ± 2.6%. II year: 22 (39.29%) patients died with an expression of 58.8 ± 2.7%. In the third year, 2 (3.57%) died with expression of 54.0%. For three years 5 patients survived [8.93%] with 45.0% expression. Summing up: with expression above 55% recurrence occurred in 1-2 years of observation. Tumor regression: a complete response in 6 (10.71%) patients with expression 54.3 ± 3.2%. Partial response was in 5 [8.93%] patients with expression 51.4 ± 5.04%. Stabilization in 8 (14.29%) patients with expression 57.6 ± 3.3%. Progression of the process in 37 (66.07%) with expression 59.9 ± 2.9%. Positive effects of treatment: complete response, partial, stabilization in patients where expression is > 55.0%, and < 60.0% is 8 (14.29%) patients with expression was 51.9 ± 3.0%. Progression at 37 (66.07%) with expression 59.9 ± 2.9%. Positive effects of treatment: complete response, partial, stabilization in patients where expression is < 55.0%, and > 60.0% is 5 (8.93%) patients with expression was 54.3 ± 3.2%. Partial response was in 5 (8.93%) patients with expression 51.4 ± 5.04%. Stabilization in 8 (14.29%) patients with expression 57.6 ± 3.3%. Progression of the process in 37 (66.07%) with expression mp53 - 62.5 ± 1.9%. Full response was in 5 (8.93%) patients with expression mp53 - 60.95%. It is assumed that the expression of mp53 changes and depending on the effectiveness of nonadjuvant treatment. Expression of Bcl-2 was studied: And the year of supervision there was a recurrence in 26 (46.43%) patients with expression of Bcl-2 18.8 ± 1.1%. The second year added relapse of 22 (39.29%) to patients with an expression of 21.3 ± 1.2%. In the 3rd year - 2 (3.57%) cases with Bcl-2 - 23.8 ± 0.5%. The expression level of Bcl-2 probably did not affect the reciprocal activity. Partial in 5 (8.93%) for expression of Bcl-2 19.8 ± 1.4%; Stabilization of 8 (14.29%) with Bcl-2 19.5 ± 1.4%; progression in 37 (66.07%) with expression in 19.6 ± 1.1%. The expression of mp53 - 20.61% is a vivid answer to the question. The indicator below this figure gives the progression of the process and the negative result of treatment. Positive Bcl-2 - the probability of development of recurrence in the first year, low sensitivity to conducting chemo-radiotherapy.

Prospects for further research: the lack of common medical protocols, the inability to predict the course of the tumor process give grounds for further work in this direction.

**References:**