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Features of T2DM in adolescents with low titer of ICA and IAA

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Purpose.

To assess the prevalence of pancreatic autoantibodies (Ab) and their impact on the course of type 2 diabetes mellitus (T2DM) in adolescents.

Subjects and Methods:

ICA, GADA, IA-2 and IAA were measured in 66 patients with T2DM. Depending on the presence of autoantibodies (Ab) patients were divided into 2 groups: Ab^- and Ab^+. HLA-typing was carried out in 45 patients. The secretion of C-peptide in the standard carbohydrate breakfast test (50 g carbohydrates) in the debut of the disease and after 1 year was studied.

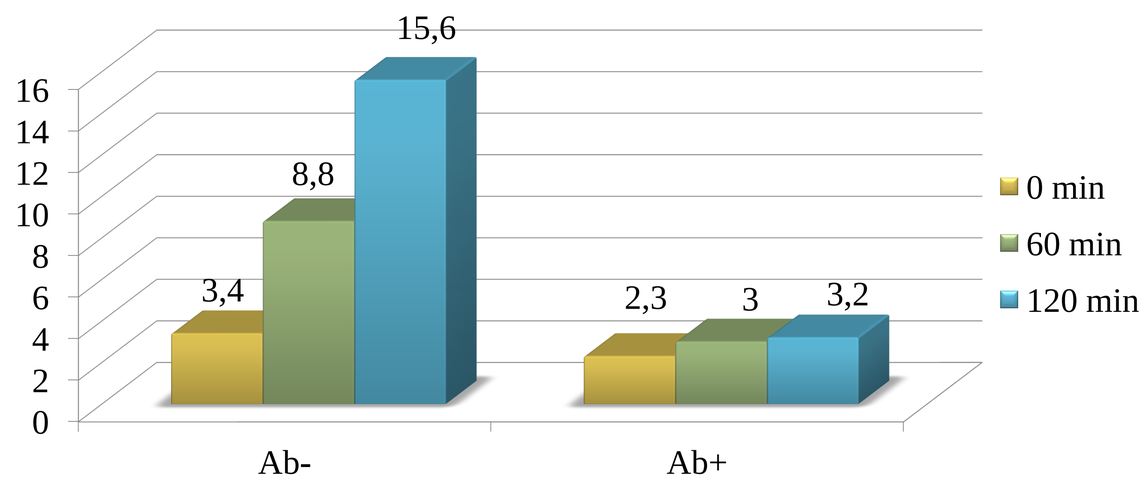
Results:

Specific Ab were detected in 15.2% (ICA - 9.1% and IAA – 6.1% in low titer (up to 20 IU/ml); GADA and IA-2 were not detected). Patients of 2 groups (Ab^-, n=56, and Ab^+, n=10) did not differ significantly in age of diagnosis, sex ratio, obesity degree, frequency of "acanthosis nigricans“ (Table 1). The frequency of HLA-haplotypes of high risk T1DM in Ab^+ was higher (77.8% against 36.1%, $p<0.05$), but the frequency of HLA-genotypes of high risk T1DM in the two groups did not differ significantly. The level of HbA1c in the debut of DM was higher in Ab^+ (7.4% (7.0; 10.6) against 6.75% (6.1; 7.9), $p<0.05$), after 1 year HbA1c did not differ (6.4% (5.9; 7.8) and 6.1% (5.7; 6.8)). Basal level of C-peptide in the disease debut did not differ significantly (2,3 ng/ml (1,8; 4,0) in Ab^+ and 3.4 ng/ml (1.9; 4.4) in Ab^-), the stimulated C-peptide level was higher by 120 min in Ab^- (3.2 ng/ml (3.0; 8.4) versus 15.6 ng/ml (5.1; 17.2), $p<0.05$). After 1 year the secretion did not differ. Insulin therapy in the debut of the disease received 40% of Ab^+ and 25% - of Ab^-, p=0.3. Insulin therapy was not needed in any patient minimum 1 year from the diagnosis.

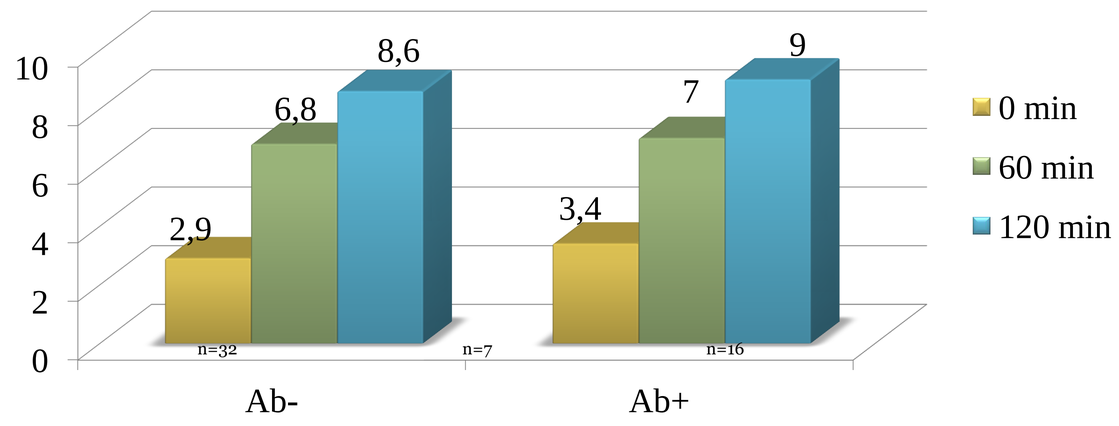
Table 1 – Characteristics of T2DM with and without Ab

	Ab- (n=56)	Ab+ (n=10)
Age of diagnosis, year	13,5 (11,5; 15,5)	12,7 (11; 14)
Males/females	0,7:1	1:1
Family history of T2DM	62,7	90
SDS BMI	2,7 (1,6; 3,4)	2,4 (1,2; 3,2)
Acantosis nigricans, %	52,2	37,5
HbA1c, %	6,75 (6,1; 7,9)	7,4 (7,0; 10,6)
Total cholesterol, mmol/l	4,4 (3,5;4,9)	4,5 (4,4; 4,8)
triglyceride, mmol/l	1,1 (0,97; 1,58)	1,5 (1,1; 1,6)
LDL, ммоль/л	2,5 (2,1; 3,11)	2,7 (2,5; 3,3)
HDL, ммоль/л	1,12 (0,98;1,3)	1,0 (0,8; 1,1)

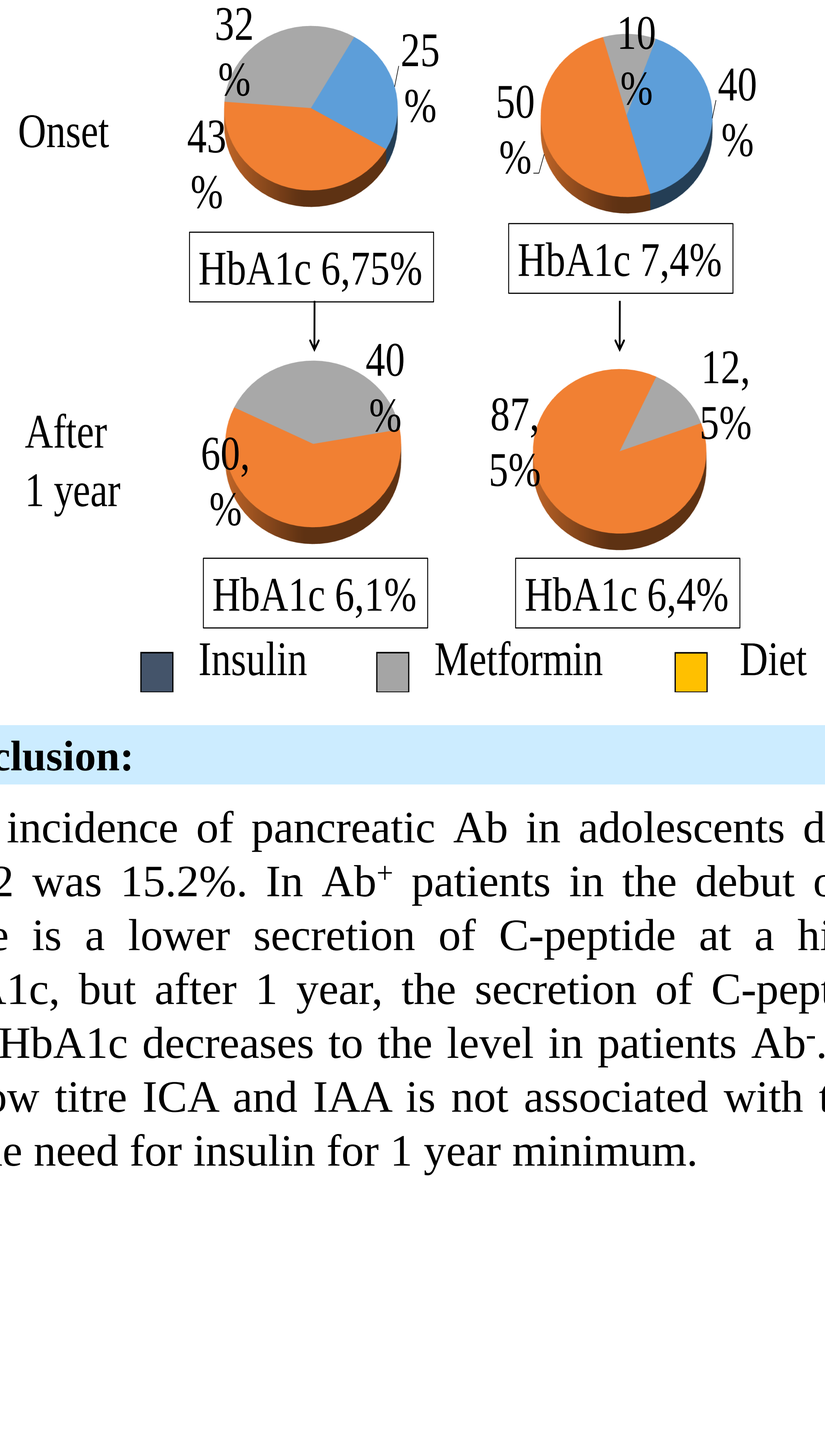
Pic.1 Secretion of C-peptide in onset of the disease



Pic.2. Secretion of C-peptide in a year from diagnosis



Pic.3 Therapeutic tactics



Conclusion:

The incidence of pancreatic Ab in adolescents diagnosed with DM2 was 15.2%. In Ab^+ patients in the debut of the disease, there is a lower secretion of C-peptide at a higher level of HbA1c, but after 1 year, the secretion of C-peptide increases, and HbA1c decreases to the level in patients Ab^-. The presence of low titre ICA and IAA is not associated with the emergence of the need for insulin for 1 year minimum.