The prognostic role of non-alcoholic fatty liver disease in children with type 1 diabetes mellitus with and without dyslipidemias

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Objectives:

Recently it is shown that the clinical manifestation of non-alcoholic fatty liver disease (NAFLD) is not related only to liver, but also to cardiovascular complications and mortality. Nowadays there is growing evidence that dyslipidemia and NAFLD association is multisystemic disease, affecting other systems and regulatory pathways. Furthermore, diabetes mellitus worsens the risk of later chronic cardiovascular and atherogenic complications. The aim of current work is to reveal the potential connection between dyslipidemias and NAFLD.

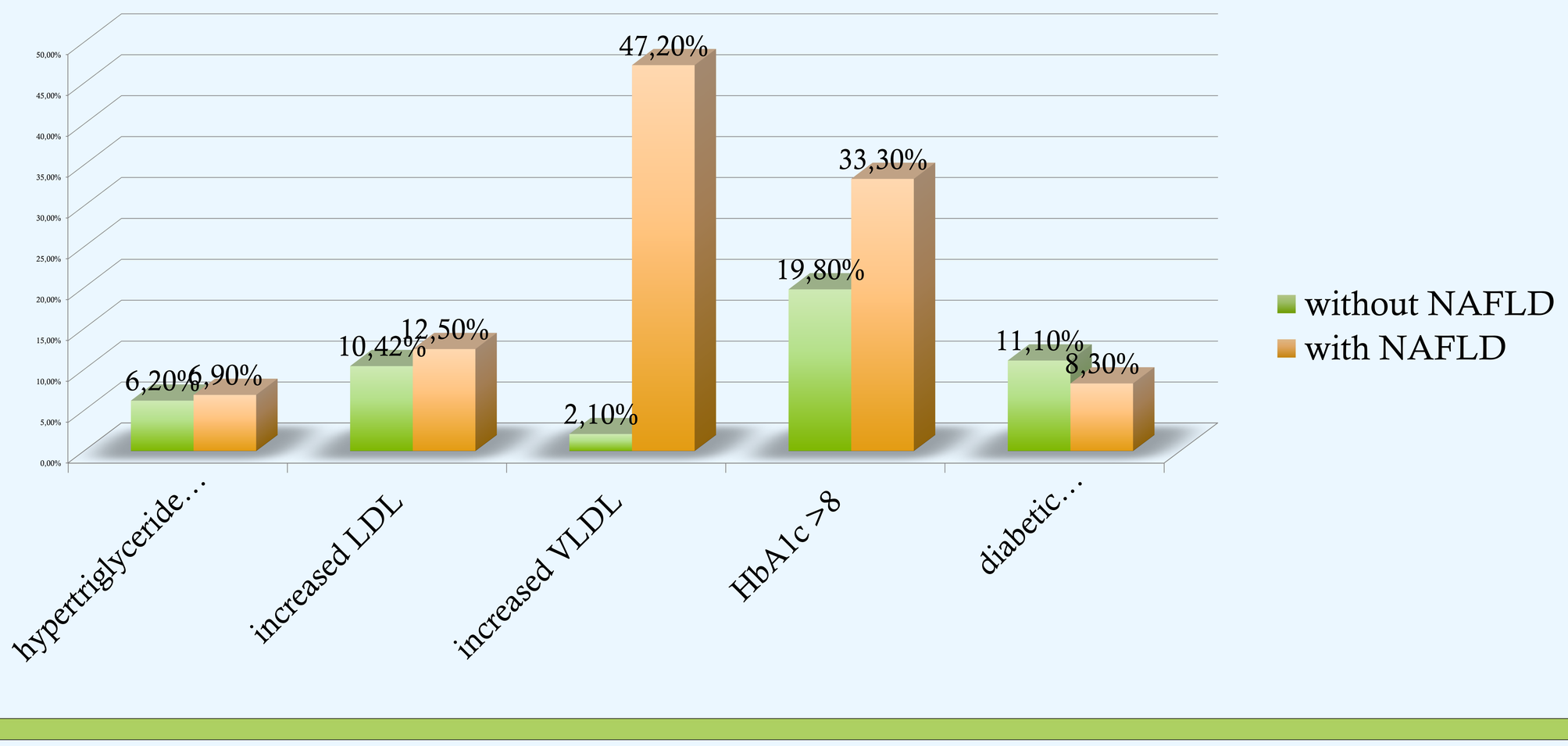
Methods:

120 type 1 diabetic children were included in the investigation with mean age-11.5±1.4, male/female ratio-64/56. Total cholesterol, triglycerides, very-low-density-lipoproteins (VLDL), low-density-lipoproteins (LDL), high-density-lipoproteins (HDL), HbA1c levels were measured, and USG examination was performed.

Results:

60% of children found to have NAFLD or steatohepatosis, only 6.9% from which developed hypertriglyceridemia, 12.5%- increased LDL levels. No significant connection has been found between quantitative dyslipidemias and NAFLD ($p>0.05$). But, interestingly, in 47.2% of diabetic patients with NAFLD increase in VLDL was found versus to 2.1% of patients without NAFLD ($p<0.05$). Dyslipidemias and NAFLD exhibited not significant connection with HbA1c>8%– 19.8% and 33.3%, respectively in the comparing groups ($p>0.05$). Angioretinopathy as a microvascular complication of diabetes has been found to be more associated with NAFLD than with qualitative or quantitative dyslipidemias ($p<0.05$).

Figure 1. Comparing characteristics of type 1 diabetic patients with and without NAFLD



Conclusions:

It is assumed that poor glycemic control probably has impact on dyslipidemia and NAFLD development, but is not the only pathway. Some qualitative abnormalities of potentially atherogenic lipoproteins are found in diabetic children. Thus, measurement of only HDL, LDL, cholesterol and triglycerides is not enough informative for early prognosis of later atherogenic and cardiovascular risks. NAFLD seems to have higher predicting role in development of qualitative but not quantitative dyslipidemias. However, the precise consequences of these qualitative lipid changes and NAFLD on the duration and complications of type 1 diabetes should be evaluated profoundly.

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Diabetes

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