Evaluations of metabolic and innate immunity profiles in subjects with familial hypercholesterolemia with or without subclinical atherosclerosis

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Aim: Familial hypercholesterolemia (FH) is a genetic condition characterized by high low-density lipoprotein cholesterol (LDL-C). The presence of risk modifiers could promote the atherosclerotic injury beyond LDLC. Our aim was to evaluate metabolic and innate immunity profiles in FH subjects with or without subclinical atherosclerosis.
Methods: In this cross-sectional observational study, we evaluated 211 genetically confirmed FH subjects on LDLC target and without cardiovascular diseases. Biochemical analyses, LDL-C burden (LCB) calculation and vascular profile evaluation were obtained from all subjects. Study population was divided into two groups according to subclinical atherosclerosis: the subclinical atherosclerosis (SA) group and non-subclinical atherosclerosis (NSA) group.
Results: SA group had higher LDL-C at diagnosis (288.35±24.52 vs 267.92±23.86, p<0.05) and LCB (13,465.84±3617.46 vs 10,872.63 ±3594.7, p<0.001) than NSA group. SA group had higher white blood cell count (WBCC, 6.9±1.66 vs 6.1±1.16), neutrophil count (NC, 4.2±1.3 vs 3.6±1.11), monocyte count (MC, 0.8±0.2 vs 0.4±0.1), triglyceride to high-density lipoprotein ratio (TG/HDL, 1.73±0.72 vs 1.45±0.69), triglyceride-glucose index (TyG, 8.29±0.35 vs 8.01±0.33) than NSA group (p value for all <0.01). Multivariate logistic regression analysis showed that LCB (p<0.01), WBCC (p<0.01), NC (p<0.05), MC (p<0.05) were associated with subclinical atherosclerosis. Simple linear regression analyses showed that LCB was associated with WBCC, NC, MC (p value for all <0.01).
Conclusion: An increased LCB and an impaired innate immunity profile were found in FH subjects with subclinical atherosclerosis and they were independently associated with atherosclerotic injury. LCB could modulate the innate immunity profile.

Role of multidisciplinary approach with nutritional counseling in MASLD patients on fibrosis and metabolic parameters

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Background and aims: Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD) is a chronic liver condition affecting approximately 30% of the global population. The burden of MASLD is significantly impacted by the rising prevalence of obesity and type 2 diabetes (T2DM). There is no specific medical therapy approved and last guidelines (2024) primarily focus on lifestyle modifications and nutritional interventions. Aims of our study are to assess the effectiveness of a multidisciplinary hepatological and nutritional approach in adult patients with MASLD, focusing on changes in key anthropometric parameters such as weight, BMI, waist circumference and fibroscan value.
Patients and Methods: We enrolled 52 consecutive patients, affiliated to MASLD multidisciplinary Clinic, Liver Unit Verona. Patients were enrolled between January 2022 and September 2024. All patients underwent a hepatological and internistic visit followed by a nutritional evaluation at baseline. Patients were evaluated based on recent laboratory tests and an initial non-invasive assessment of liver fibrosis using TE with FibroScan (Echosens). The follow-up process included one or more reassessments, both hepatological and nutritional. In particular, the hepatological follow up consists in a 6-month follow up visit for a reassessment of blood tests and TE, the dietician follow-up usually consists on a 3-month evaluation in order to obtain a better compliance to the dietetic plan.
Results: All 52 patients, median age of 53 years (IQR 13.3), male 69%, underwent after hepatological visit to nutritional approach. At the baseline visit, pharmacological treatment for arterial hypertension was optimized in 26% of patients with hypertension. Lipid lowering therapy was introduced or optimized in 60% of dyslipidemic patients. Antidiabetic therapy was adjusted in 43% of patients with T2DM. TE showed a median liver stiffness of 6.10 KPa (IQR 2,75 KPa) and a median controlled attenuation parameter (CAP) value of 282 dB/m (IQR 71 dB/m). After 6 months of follow up, we observed a median reduction of 2 Kg of body wight with a significant improvement (p<0.05) in the lipid profile with reduction in total cholesterol levels (median values: 194 to 172 mg/dL), in LDL levels (122 to 102 mg/dL), in triglyceride levels (143 to 120 mg/dL), and an increase in HDL levels (46 to 47 mg/dL at follow-up). We observed a slight decrease in HbA1c (41 to 40 mmol/mol at follow-up, p=0.07). No significant changes were found in the hepatic profile, TE at follow u 5.10 KPa (IQR 2,55 KPa) and CAP 280 dB/m (IQR 64 dB/m). Only in subgroup with higher TE value at baseline (upper third quartile) we observed a significant reduction (p<0.05).
Conclusion: The results of our study highlight that multidisciplinary approach with nutritional intervention, among patients with MASLD, reached a better biochemical profile and for those with a significant levels of liver stiffness at also an improvement in FibroScan value.