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Positive association between blood natural killer T cells and liver enzymes ALT, AST and GGT levels

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Introduction

Obesity is associated to a pro-inflammatory state with a different pattern of response from the classical response. Also, obesity is associated to non-alcoholic fatty liver disease (NAFLD). In this sense, natural killer T (NKT) cells are a subset of innate immune cells that abundantly reside within the liver and are readily activated by lipid antigens. However, the phenotype and functional characteristics of these cells are no clear in the immune homeostasis in obesity.

Desing & Methods

Peripheral blood mononuclear cell (PBMC) from 17 lean controls and 20 morbidly obese (MO) patients with normal levels of liver enzymes ALT, AST and GGT were isolated to address the association between iNKT cells and ALT, AST and GGT. PBMC were analyzed by FACS CANTO II flow cytometry.

Results

In PBMC, no differences were observed in the frequency of NKT cells of MO and lean subjects. However, into MO group, we found a significant correlation between NKT cells and ALT levels (r=0.611, p=0.015) (Figure 1).

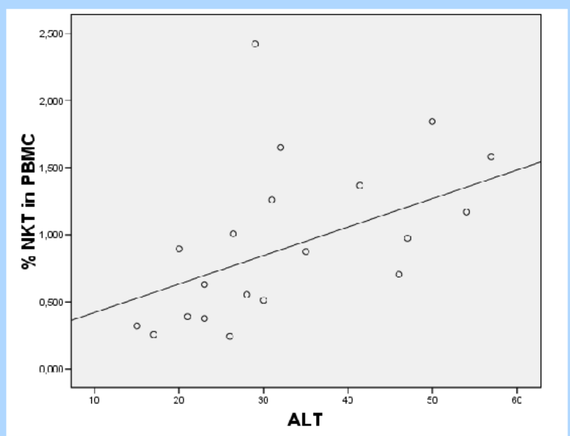

Figure 1. Correlation between NKT cells and ALT levels .

No differences were observed in CD4+ and CD8+iNKT cells in PBMC from MO compared with lean subjects, but a positive correlation between CD4+iNKT cells with ALT (r=0.476, p=0.043) and GGT (r=0.581, p=0.029) was found (Figure 2).

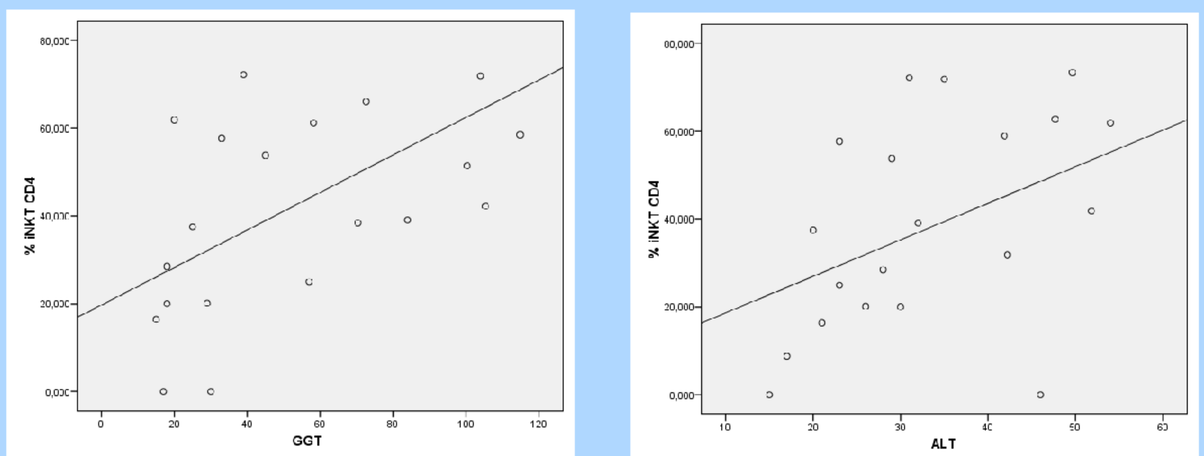

Figure 2. Correlation between CD4+iNKT cells with GGT and ALT levels.

CD56+NKT and CD56+iNKT cells were increased in PBMC of MO subjects (p<0.001) (Figure 3). The frequency of CD69+CD25+ iNKT cells (early and later activated iNKT) was significantly increased in PBMC from MO subjects (p<0.001) (Figure 3). These activated iNKT cells presented a significantly and positive correlation with AST (r=0.677, p=0.006) and ALT (r=0.693, p=0.004) (Figure 4).

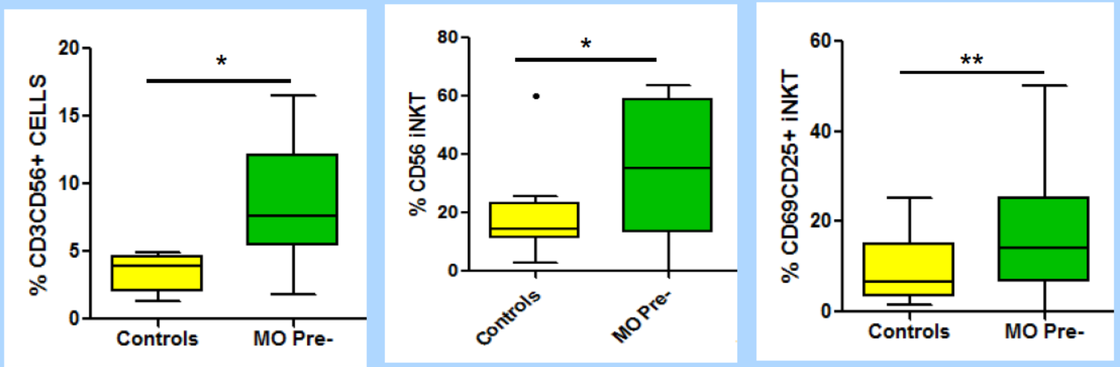

Figure 3. CD56+NKT and CD56+iNKT and CD69+CD25+ iNKT cells were increased in PBMC of MO subjects.

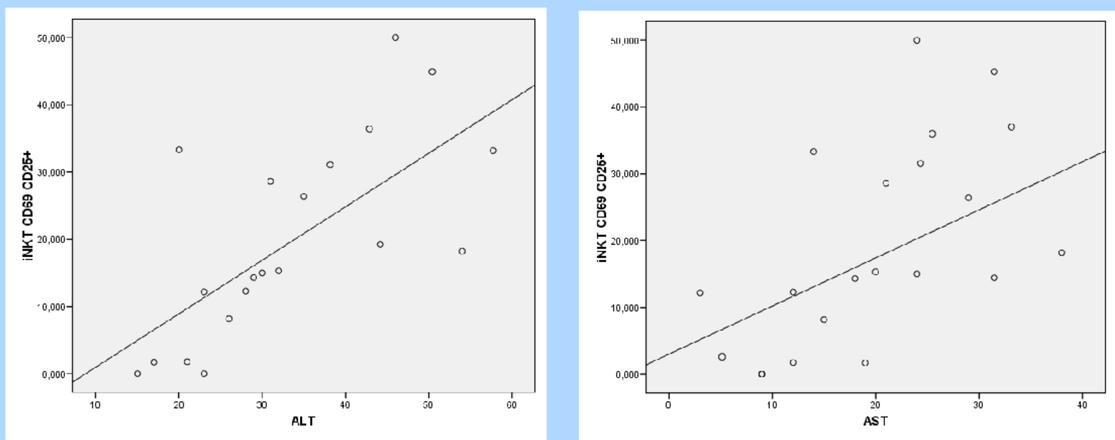

Figure 4. The frequency of CD69+CD25+ iNKT cells (early and later activated iNKT) was significantly and positive correlated with AST and ALT levels .

Conclusions

MO subjects presented early and later activated lymphocytes and iNKT in PBMC. The direct association found between iNKT cells, both total and activated, in PBMC and serum levels of liver enzymes ALT and AST suggests that this type of cells might play an essential role in fatty liver disease associated to obesity.

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