LIPIDOMIC ANALYSIS REVEALS SERUM DECREASED LEVEL OF SEVERAL SPECIES OF PHOSPHATIDYLINOSITOL IN *Schistosoma mansoni* HIGH BURDEN-INFECTED PATIENTS

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ABSTRACT

INTRODUCTION: Schistosomiasis is a parasitic infection present in several tropical countries, in which the liver is one of the main organs affected during the infection. In mild to severe infections liver function is compromised, which may lead to granuloma formation, periportal fibrosis and cirrhosis. Since the liver is an important organ for lipid metabolism, it is important to determine which lipid species are altered in more severe infections. **METHODS**: This study was carried out at the municipality of Conde-BA, Bahia, Brazil. All participants provided stool and peripheral blood. Two slides of Kato-Katz (KK) were performed to each sample and serum were obtained by centrifugation. The concentration of AST, ALT, GGT, cholesterol, HDl, LDL and triglycerides were determined by a semi-automatic biochemistry device. Serum lipid extraction and lipidomic analysis were performed on the platform of the Center of Excellence for Quantification and Identification of Lipids (CEQIL, USP), using the global lipidomic method, which allowed the identification of 5 classes of lipids: phospholipids, sphingolipids, cholesteryl ester, glycerols and free fatty acids. **RESULTS**: A total of 272 individuals were included in this study. The overall positivity of KK for *S. mansoni* was 54.4%, of which 74.3% had low parasite burden (1-99 epg), 22.3% intermediate (100-399 epg) and only 3.4% had high parasite burden (≥ 400 epg). Although no significant difference was observed in the concentration of biochemical markers between individuals negative for *S. mansoni* or with low, intermediate, and high parasite load, we observed a positive correlation between GGT and parasite load (r=0.3453). Then we randomly selected 15 individuals with KK negative for *S. mansoni* (NEG), 15 with low parasite burden (LB) and 15 individuals with the highest parasite burden (HB) (range 204-576 epg) for the lipidomic analysis. Nor parasite burden neither infectious status altered the relative proportion of the lipid subclasses among sera of NEG, LB and HB groups. However, the univariate fold-change analysis revealed significantly changes in the levels of 39, 9 and 22 lipid species belonging to, respectively, phospholipid, sphingolipid or cholesteryl ester and glycerol or free fatty acid classes in HB relative to NEG or LB. The main phospholipids subclass that was altered in the HB group was phosphatidylinositol (PI). **CONCLUSIONS**: High burden infection by *S. mansoni* causes serum depletion of several species of phosphatidylinositol, suggesting a lipid metabolism disturbance, probably in the liver during the infection. This knowledge can be further used for the development of new biomarkers for disease progression, or even to assist in a better understanding of the pathogenesis and altered metabolic pathways during schistosomiasis.

Financial Support: FIOCRUZ IGM PIAP 001/2017; FIOCRUZ IGM-002-FIO-20-2-24; FIOCRUZ VPPCB-007-FIO-18-2-87; CNPq 433141/2018-2
Category: P