ASSOCIATION BETWEEN BILIRUBIN AND LIPID PROFILE IN PORTUGUESE ELDERLY INDIVIDUALS

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INTRODUTION

Several studies showed that mildly elevated bilirubin blood concentration is associated to low prevalence of cardiovascular diseases (CVD)[1,2]. The most common mechanism that explains CVD prevention is the bilirubin antioxidant effect, protecting several macromolecules from oxidation. Recently, other studies have found that higher serum bilirubin levels (BL) are associated with beneficial effects by improving lipid profile and that might contribute to decrease cholesterol and triacylglycerol[3]. A consistently negative association between BL and body mass index (BMI) was also observed.

The aim of this study was to analyze the association between bilirubin levels and lipid profile in a elderly population.

2. MATERIAL AND METHODS

Subjects and assays

Clinical data, anthropometric measurements (BMI, Visceral Fat and Body Fat Percentage), lipid profile (total cholesterol-TC; triglycerides-TG; high-density lipoprotein cholesterol-HDL; low-density lipoprotein cholesterol-LDL; apoliprotein A-Apo-A; apoliprotein B-Apo-B) were evaluated in 70 elderly, 43 females and 27 males. Anthropometric measurements were obtained by bioimpedance, using specific scale (Tanita BC Model: 545). The lipid parameters were performed in autoanalyzer (Cobas Mira S, Roche, Switzerland) using available commercial kits.

Data analysis

For statistical analysis, we used the Statistical Package. Spearman´s rank correlation coefficient was used to evaluate relationships between sets of data. Significance was accepted at $p<0.05$.

References

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3. RESULTS

Table 1. Age, anthropometric measures and biochemical clinical parameters of the 70 study patients.

VARIABLE	FEMALE (N=43)	MALE (N=27)	*p*
Age (years)	88.5±5.5	88,1±7.2	0.729
BMI	26.6±5.3	26.5±4.4	0.807
Metabolic Age (years)	71.3±5.1	73.2±7.9	0.973
Total Bilirubin (mg/dL)	0.54±0.3	0.76±0.6	0.057
Direct Bilirubin (mg/dL)	0.12±0.06	0.15±0.1	0.019
Indirect Bilirubin (mg/dL)	0.41±0.2	0.55±0.5	0.013
Lipid Profile			
Total Cholesterol (mg/dL)	148.5±37	145±42.6	0.746
Triglycerides (mg/dL)	113.2±50.1	102±48,2	0.411
LDL (mg/dL)	100.3±39.7	95.42±35.9	0.611
HDL (mg/dL)	28.1±10.1	30.2±12.6	0.435
APO-A (g/L)	1.02±0.26	1.02±0.3	0.967
APO-B (g/L)	0.87±0.24	0.85±0.2	0.710

Table 2. Spearman's correlation between serum bilirubin levels and Lipid Profile (r/p).

	FEMALE						MALE					
Variables	Total C.	TRIG.	HDL	LDL	APO-A	APO-B	Total C.	TRIGL.	HDL	LDL	APO-A	APO-B
Total Bilirubin	0.110 0.480	-0.11 0.241	0.290 0.052	0.160 0.309	0.270 0.013	0.150 0.280	0.100 0.643	-0.130 0.540	0.510 0.007*	0.160 0.441	0.400 0.050*	0.110 0.516
Direct Bilirubin	0.101 0.216	-0.11 0.480	0.49* <0.000	0.350* 0.002	0.290 0.052	0.180 0.430	0.180 0.390	-0.030 0.867	0.640* <0.000	0.220 0.282	0. 530* 0.040	0.150 0.474
Indirect Bilirubin	0.08 0.261	-0.11 0.482	0.390* 0.001	0.26 0.097	0.250 0.022	0.120 0.158	0.07 0.721	-0.150 0.471	0.470 0.014	0.140 0.493	0.360 0.079	0.100 0.620

Correlation analysis revealed positive associations between total BL and the HDL-c in males (total bilirubin: $r=0.51$; $p<0.007$) and a trend to association in females ($r=0.290$; $p<0.62$). Positive associations were also found between Direct BL levels and Apo-A in males: $r=0.053$; $p<0.040$. The conjugated bilirubin (direct fraction) presented a stronger positive association with this two parameters.

4. CONCLUSION

- No associations were found between bilirubin and triglycerides; total cholesterol and anthropometric measures.
- High levels of HDL is well known as protective marker and is positively associated with bilirubin levels. A similar association has been found for Apo-A.
- As observed in other studies, the association between low direct bilirubin concentration with these serum lipid components seems to be more significant than with the other two bilirubin fractions[4,5].
- These results suggest higher bilirubin is associated with higher cardioprotective agents, which indicates that the determination of total bilirubin should be included for more accurate cardiovascular disease risk assessment.
- Further investigation should be carried out in order to explain the possible mechanism for this observation. Until now BL was described as a potent antioxidant but results suggests that it could also interfere in lipid profile.