MANAGEMENT OF SUBCLINICAL THYROID DYSFUNCTION CAN REDUCE CARDIOVASCULAR EVENTS IN PATIENTS WITH END STAGE RENAL DISEASE ON HEMODIALYSIS

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BACKGROUND

- Thyroid dysfunction is often associated with dyslipidemia in general population.
- It is known that about 25% of patients with end-stage renal disease(ESRD) on hemodialysis had subclinical thyroid dysfunction.
- We investigated that overt and subclinical hypothyroidism associate with dyslipidemia in hemodialysis patients.
- Hence, we conducted our study to elucidate whether subclinical thyroid dysfunction treated or not for management of dyslipidemia in ESRD patients.

METHODS

Study population

- All hemodialysis patients in Red Cross Hospital within a period of one year were included in the study.
- Participants were divided into two groups based on the thyroid function.
  - ✓Euthryoid group
  - ✓Hypothroid group including subclinical and overt hypothyrodism

Colleting data

- Thyroid function test : thyroxine-3 (T3), free thyroxine-4 (fT4), and thyroid stimulating hormone (TSH)
- Lipid profiles in the serum : total cholresterol, low density lipoprotein cholesterol(LDL-chol), high density lipoprotein cholesterol(HDL-chol), triglyceride(TG), and phospholipid

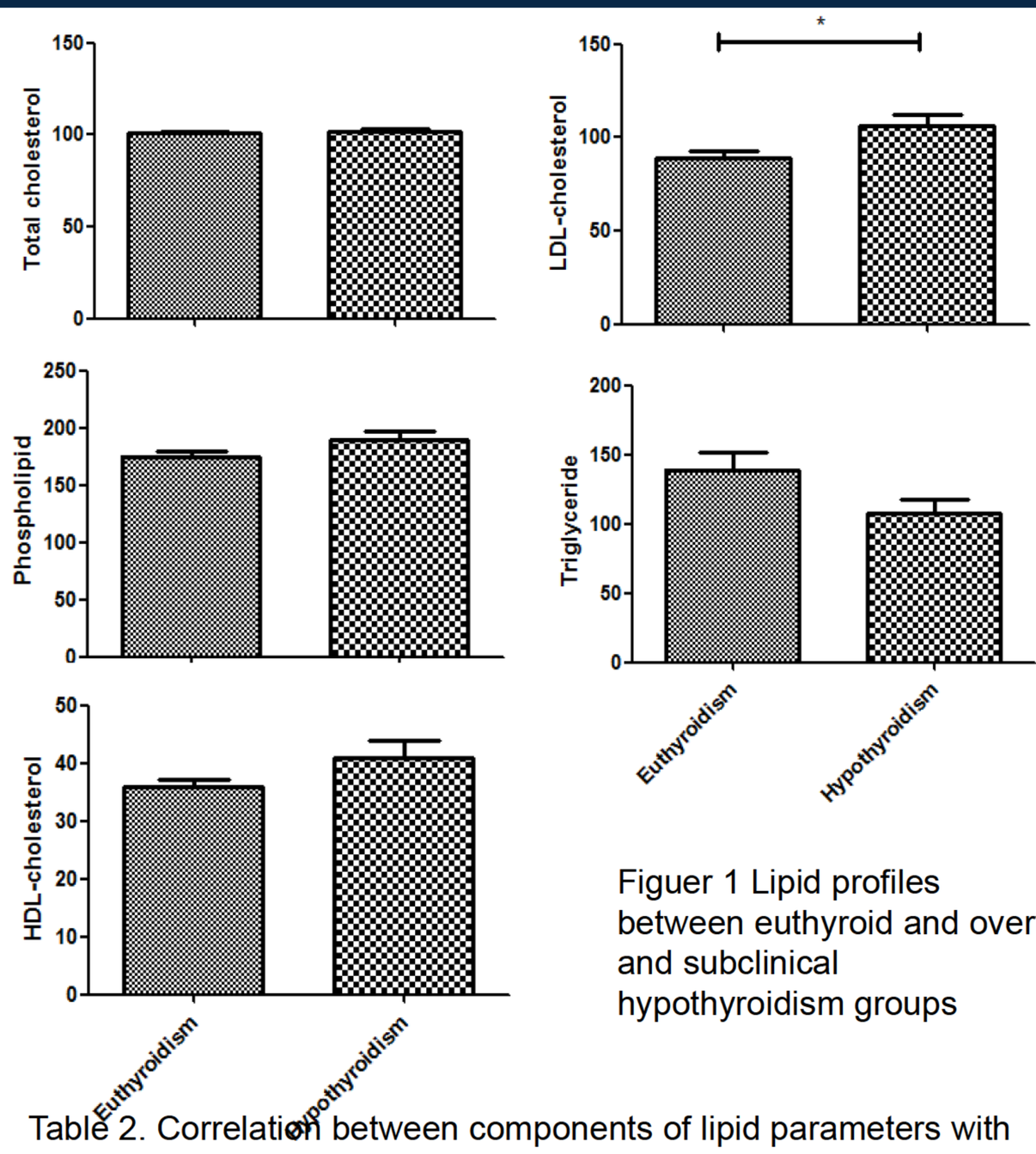
Statistical Analysis

- all data are expressed as mean ± SD
- Student's t-test and the chi-square test
- Pearson correlation coefficients with linear regression analysis
- SPSS version 15.0 (SPSS Inc., Chicago, IL, USA).
- $p < 0.05$ was considered statistically significant

RESULTS

Table 1. Anthropometric and biochemical parameters for ESRD patient on hemodialysis with the euthyroid and hypothyroid groups.

Parameter	Overall (n=68)	Euthyroid group (n=51)	Hypothyroid group (n=16)	*P* value
Age (years)	63.8 ± 13.8	64.8 ± 13.5	60.6 ± 14.4	0.28
Gender(male, %)	45 (66%)	36 (71%)	8 (50%)	0.14
Body mass index (kg/m^2)	23.0 ± 8.2	23.6 ± 8.3	21.3 ± 8.1	0.35
Laboratory parameters				
Hemoglobin(g/dL)	10.5 ± 1.4	10.6 ± 1.5	10.2 ± 1.4	0.18
Albumin(g/dL)	3.7 ± 0.3	3.7 ± 0.3	3.7 ± 0.4	0.56
Creatinine(mg/dL)	7.8 ± 3.3	7.7 ± 3.4	8.1 ± 3.1	0.23
Thyroid function				
TSH(mIU/L)	2.7 ± 1.9	2.1 ± 0.9	4.8 ± 2.6	**0.00**
fT4(pmol/L)	1.1 ± 0.2	1.1 ± 0.2	1.0 ± 0.1	**0.01**
T3	76.5 ± 15.1	75.8 ± 14.0	78.5 ± 18.5	0.54



Figuer 1 Lipid profiles between euthyroid and overt and subclinical hypothyroidism groups

Table 2. Correlation between components of lipid parameters with levels of fT4 and TSH among patients with ESRD on hemodialysis

	TSH		fT4		T3	
	Beta	p	Beta	p	Beta	p
Cholesterol(mmol/L)	0.010	0.936	-0.112	0.363	0.146	0.234
TG(mmol/L)	0.014	0.907	0.056	0.649	0.258	0.034
LDL-c(mmol/L)	0.016	0.900	-0.135	0.274	0.000	0.998
HDL-c(mmol/L)	0.019	0.878	-0.105	0.394	-0.378	0.001
Phospholipid(mmol/L)	0.057	0.647	-0.080	0.519	-0.065	0.600

SUMMARY

- Among the 68 cases, 23.5% of the patients were having thyroid disorder. including 7.4% of over hypothyroidism and16.2% of subclinical hypothyroidism.
- Patients with over and subclinical hypothyroidism had higher LDL cholesterol than euthyroid patients.
- However, over and subclinical hyperthyroidism was not associated meaningfully with the level of other lipid profiles including total cholesterol, HDL-cholesterol, triglyceride and phospholipid.
- We observed negative correlation between total cholesterol and the level of T3.
- However, HDL cholesterol related with the level of T3, positively.

CONCLUSION

- Our results show that the level of LDL cholesterol may be influenced by overt and subclinical hypothyroidism
- Futhermore, lipid profile such as total cholesterol and HDL cholesterol may be associated with T3 level.
- Therefore, the management of subclinical hypothyroidism may have advantage for control lipid level in hemodialysis patients.

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