

INFLUENCE ON CONVERSION RATIOS OF THYROID HORMONES IN HYPOTHYROIDISM AND REPLACEMENT THERAPY IN HEMODIALYSIS (HD) PATIENTS

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INTRODUCTION AND AIMS:

Influence on conversion ratios of thyroid hormones in co-existing hypothyroidism and replacement therapy in hemodialysis (HD) patients.

METHODS

The study included 110 patients (F-67, M-43, an average age of 58.5 16.2 (19-87)). 2 groups of patients were examined; I-63 HD patients divided into 3 groups: G1- 14 with newly diagnosed hypothyroidism, G2-22 with hypothyroidism treated with substitution therapy, G3-27 without thyroid diseases and II- 47 patients without renal failure: G4a- 14 with newly diagnosed hypothyroidism, G4b-13 with hypothyroidism treated with replacement therapy, G5-20 healthy subjects. In all patients the following tests were performed: TT4, FT4, TT3, FT3, TSH and FT3 calculating the ratios fT3/TT3, fT4/TT4, rT3/fT3, rT3/fT4, TT3/TT4, fT3/fT4.

RESULTS

The results in Tab.1 Replacement therapy of hypothyroidism increases the production of rT3 more in patients without renal failure and the conversion ratios of thyroid hormones (fT3/fT4) are more impaired in HD patients.

Tab. 1 - Results

Legend: p-values in Kruskal-Wallis test (multiple comparisons); x - NS in overall Kruskal-Wallis test		Newly diagnosed hypothyroidism (1)	Treated hypothyroidism (2)	No hypothyroidism (3)			
		Mean±SD (Median)	Mean±SD (Median)	Mean±SD (Median)	p - value [(1) vs (2)]	p - value [(1) vs (3)]	p - value [(2) vs (3)]
fT3/TT3	HD patients	2.46±1.14 (2.21)	2.70±1.30 (2.38)	2.46±0.40 (2.40)	x	x	x
fT3/TT3	patients without renal failure	2.31±0.33 (2.28)	2.44±0.47 (2.59)	2.01±0.54 (1.79)	x	x	x
fT3/TT3	p-value	x	x	x			
fT4/TT4	HD patients	0.173±0.075 (0.151)	0.178±0.045 (0.164)	0.154±0.029 (0.153)	x	x	x
fT4/TT4	patients without renal failure	0.139±0.026 (0.135)	0.164±0.043 (0.154)	0.165±0.020 (0.163)	x	x	x
fT4/TT4	p-value	x	x	x			
rT3/fT3	HD patients	97.46±97.12 (68.85)	63.64±29.34 (57.26)	73.76±62.89 (44.34)	NS	NS	NS
rT3/fT3	patients without renal failure	95.99±52.23 (105.69)	122.42±49.14 (131.68)	104.96±54.47 (102.88)	NS	NS	NS
rT3/fT3	p-value	NS	0.031	NS			
rT3/fT4	HD patients	17.19±15.52 (12.02)	12.53±5.75 (12.59)	19.85±14.24 (12.97)	NS	NS	NS
rT3/fT4	patients without renal failure	29.22±15.76 (32.08)	30.24±10.6 (31.59)	21.07±8.86 (21.25)	NS	NS	NS
rT3/fT4	p-value	NS	0.001	NS			
TT3/TT4	HD patients	0.0136±0.0045 (0.0126)	0.0142±0.0043 (0.0133)	0.0179±0.0051 (0.0181)	NS	NS	NS
TT3/TT4	patients without renal failure	0.0183±0.0053 (0.0172)	0.0164±0.0027 (0.0160)	0.0182±0.0032 (0.0177)	NS	NS	NS
TT3/TT4	p-value	NS	NS	NS			
fT3/fT4	HD patients	0.204±0.085 (0.192)	0.208±0.086 (0.182)	0.289±0.096 (0.265)	NS	NS	NS
fT3/fT4	patients without renal failure	0.320±0.086 (0.317)	0.251±0.066 (0.244)	0.225±0.072 (0.213)	NS	NS	NS
fT3/fT4	p-value	0.011	NS	NS			

CONCLUSIONS

- Renal failure interferes with conversion ratios more than hypothyroidism
- Renal failure and treated hypothyroidism decreases the conversion ratios rT3/fT4, rT3/fT3, replacement therapy increases the production of rT3 more in patients without renal failure
- Newly diagnosed hypothyroidism in patients without renal failure impairs the activity of deiodinases less than newly diagnosed hypothyroidism in HD patients

