Biotin - deficiency in patients with fibromyalgia syndrome combined with small fiber pathology

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OBJECTIVE

In the present study we tested the hypothesis, if decreased biotin levels are more frequent in patients with fibromyalgia syndrome combined with small fiber pathology.

BACKGROUND

Lower biotin levels in MS (Anangnostouli 1999, Maier Janson 2017) and the function of biotin as an important cofactor for four biotin dependent carboxylases in mitochondria lead to the question, if biotin deficiency is a frequent condition in patients with fibromyalgia syndrome (FMS), combined with small fiber pathology (SFP). Üceyler 2013 first reported SFP in FMS pointing to a relevant neuropathic nature of wide spread pain.
Low biotin levels are uncommon. It could be argued, that biotin deficiency is a risk factor for fibromyalgia sufferers due to the fact, that biotin is an important limiting coenzyme in mitochondrial function and fatty acid synthesis.

METHODS

Blood serum can be tested easily to evaluate biotin deficiency. Levels above 200 ng/l are optimal, 100-200 ng/l suboptimal, those lower than 100 ng/l require substitution. 18 patients (17 females/1 male), average age 56.4, with clinical diagnosed FMS in combination with skin punched biopsies diagnosed small fiber pathology were checked for biotin serum levels.

RESULTS

In only 4 cases we found optimal ranges, in 10 cases suboptimal ranges, 4 cases had treatment estimated ranges under 100 ng/l .The average biotin range with 180 ng/l, median 157 was significantly lower compared to a control group with 82 patients (335 ng/l, median 278) and 146 MS patients (260.9 ng/l, median 222.5) in a former study.

CONCLUSIONS

These findings suggest a high probability of frequent biotin deficiency in FMS patients. As a limiting coenzyme for fatty acid synthesis and mitochondrial function, biotin deficiency might be risk factor for FMS and a possible key player for disease outcome. As biotin substitution is a simple, safe and low cost procedure, further investigations could prove the therapeutic potential of biotin supplementation in diagnosed fibromyalgia syndrome.

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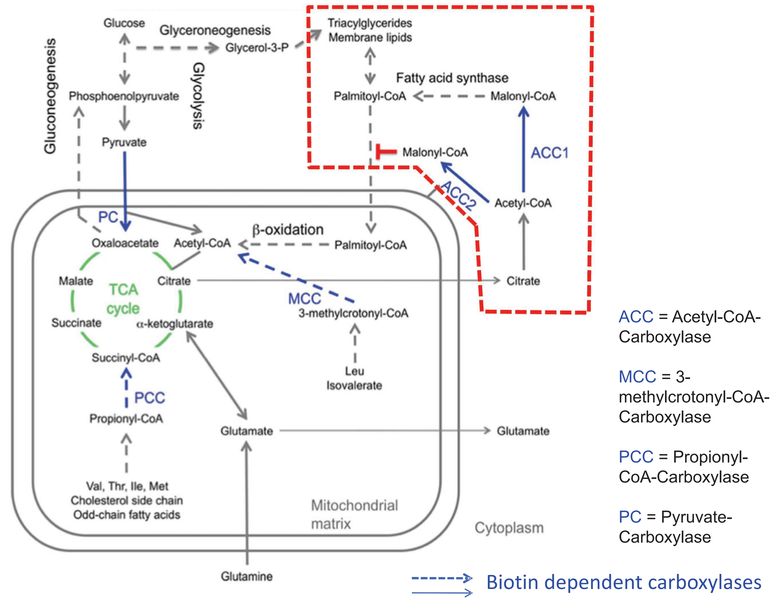
ILLUSTRATION

Biotin-dependent carboxylases: overview



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