Salivary cortisol concentrations in children suffering from depression treated with omega-3 fatty acids

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INTRODUCTION

Mood disorders are highly prevalent among children and adolescents and they represent a serious problem for health care and society. The stress hormone cortisol is thought to be involved in the pathophysiology of depressive disorders. The supplementation of omega-3 fatty acids can be helpful in the prevention and treatment of these disorders as shown by previous studies.

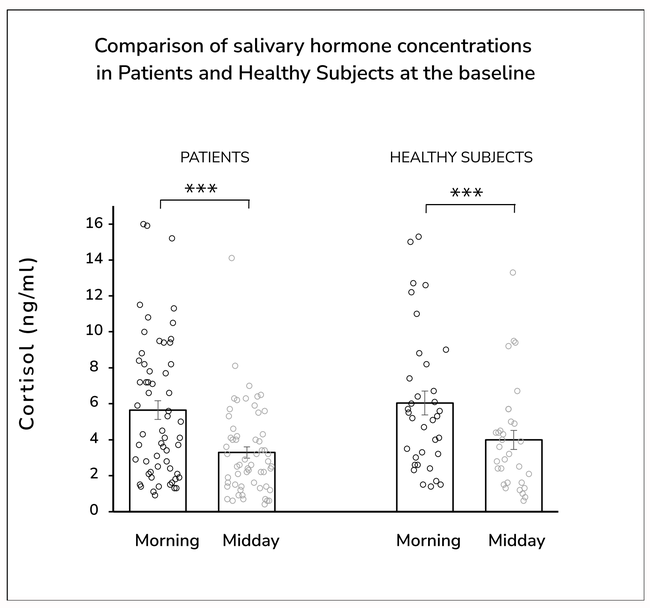
AIMS

The aim of the study was to test the hypothesis that long-term (12 weeks) food supplementation with omega-3 fatty acids in adolescent children with depression results in the attenuation of salivary cortisol concentrations. In addition we investigated circadian variation of cortisol secretion.

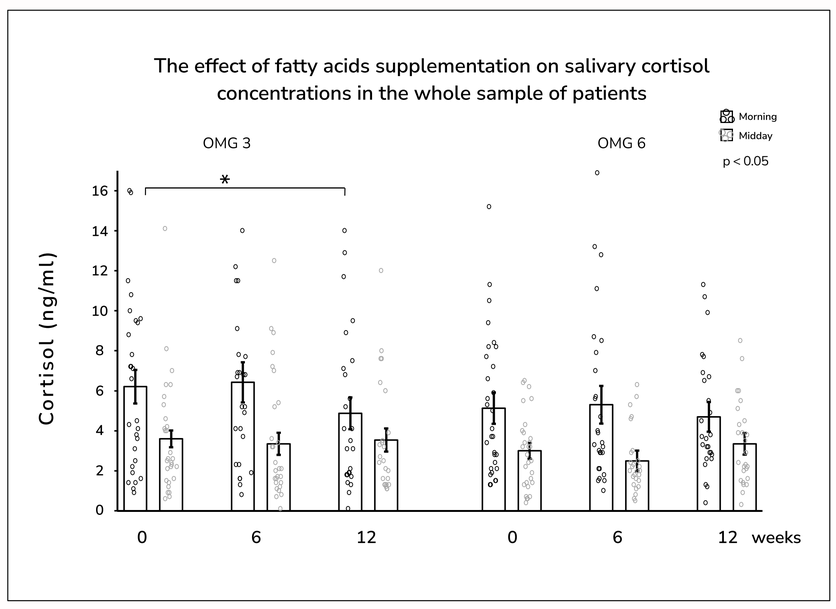
METHODS

- Sample of 60 patients suffering from either mixed anxiety and depressive disorder (MADD) or depressive disorder (DD) and 20 healthy controls. Participants were children, boys and girls between the age of 11-18 years.
- Patients treated:
  - either omega-3 fatty acids in addition to their standard antidepressant therapy (study group)
  - or omega-6 fatty acids (active comparator) in addition to their standard antidepressant therapy (control group)
- Source of omega-3 fatty acids – fish oil emulsion.
  Source of omega-6 fatty acids – sunflower oil emulsion.
- A daily dose of 20 mL of oil for 12 weeks.
- The samples of saliva collected in the morning and the midday before the treatment and following six weeks as well as twelve weeks of the intervention.
- Cortisol concentrations measured using commercial ELISA kits.

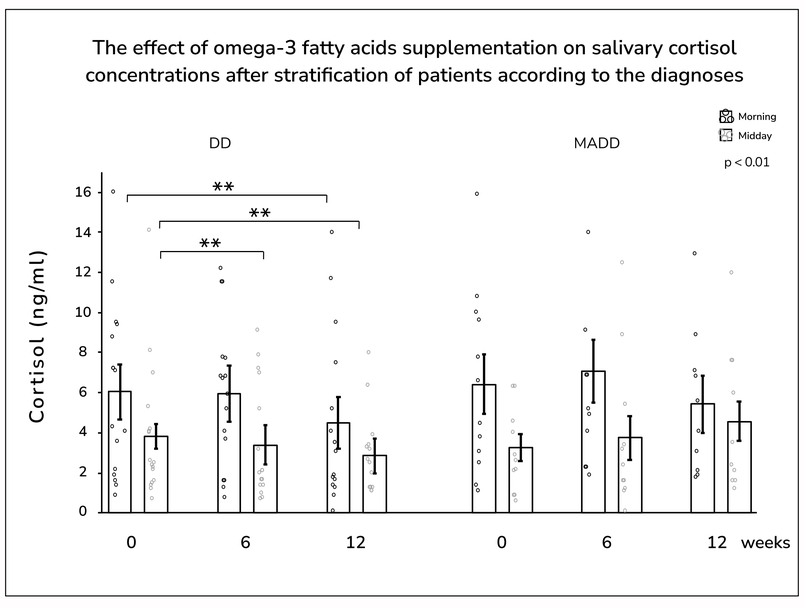
RESULTS



At the baseline, there were no differences in cortisol concentrations between patients and healthy children. Cortisol concentrations in both groups were lower at midday compared to the morning values. Results are expressed as dot plots with each dot representing an individual subject with means ± SEM represented by horizontal lines.



Morning cortisol concentrations decreased in response to omega-3 fatty acids supplementation at the time of 12 weeks of the intervention. Results are expressed as dot plots with each dot representing an individual subject with means ± SEM represented by horizontal lines.



Following the stratification according to the diagnosis, the decrease in morning salivary cortisol concentrations was evident in patients with DD and was not observed in patients with MADD. Results are expressed as dot plots with each dot representing an individual subject with means ± SEM represented by horizontal lines.

CONCLUSIONS

- **Long-term food supplementation with omega-3 fatty acids in the present sample of adolescent children led to a reduction in morning salivary cortisol concentrations, which was particularly strong in children with DD.**
- **Attenuation of stress hormone cortisol may have a positive influence on children's mood.**
- **Adolescent children with depression have preserved daily rhythm of cortisol secretion.**

The study was supported by the Slovak Research and Development Agency (grant number APVV-18-0283)