Last studies on SEID
Systemic Exertion Intolerance Disease

Marco Harari
Dødehavstiftelsen – Dødehavsklinikken
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ME, CFS, ME/CFS

Systemic Exertion Intolerance Disease (SEID)

A new definition

But are there new treatments?

Presentation Plan

1. Sleep characteristics, exercise capacity and physical activity (Holland)

2. Plasma cytokine expression in adolescent (Norway)

3. Fecal microbiota transplantation broadening its application beyond intestinal disorders (China)

Sleep characteristics, exercise capacity and physical activity in patients with chronic fatigue syndrome

Aerenhouts D(1), Ickmans K, Clarys P, Zinzen E, Meersdom G, Lambrecht L, Nijs J.

(1)Department of Human Biometry and Biomechanics , and.

Disabil Rehabil. 2014 Dec 16:1-7.

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Sleep characteristics, exercise capacity and physical activity in patients with chronic fatigue syndrome

Purpose: Un-refreshing sleep and lowered physical activity are commonly observed in CFS patients, but how they might influence each other remains unexplored

This study simultaneously examined the exercise capacity, sleep characteristics and physical activity in CFS patients

Methods: Handgrip strength and cycle exercise capacity were assessed in 42 female CFS patients and 24 inactive control subjects

During four consecutive days and nights, energy expenditure, activity and sleep-wake pattern were objectively registered using a Sensewear Armband

Sleep characteristics, exercise capacity and physical activity in patients with chronic fatigue syndrome

Results: Exercise capacity was significantly lower in CFS patients

In both groups VO2peak correlated with the time subjects were physically active

In CFS patients only, VO2peak correlated negatively with sleeping during the day whilst physical activity level and energy expenditure correlated negatively with sleep latency and lying awake at night

Sleep characteristics, exercise capacity and physical activity in patients with chronic fatigue syndrome

Conclusions: In the present study, CFS patients with higher VO2peak tend to sleep less over day. Occupation in physical activities was negatively associated with sleep latency and lying awake at night

Increased physical activity potentially has beneficial effects on sleep quality in CFS

However, a close monitoring of the effects of increasing physical activity is essential to avoid negative effects on the health status of patients

Sleep characteristics, exercise capacity and physical activity in patients with chronic fatigue syndrome

Implications for Rehabilitation: Female patients with CFS have normal sleep latency and sleep efficiency, but sleep more and spent more time in bed as compared to healthy inactive women

Female CFS patients have lower exercise capacity, and a lower physical activity level as compared to healthy inactive women

CFS patients appear to be more sensitive for sleep quality (sleep latency and lying awake at night), which is associated with a low physical activity level

Plasma cytokine expression in adolescent chronic fatigue syndrome

Wyller VB(1), Sørensen Ø(2), Sulheim D(3), Fagermoen E(4), Ueland T(5), Mollnes TE(6).

(1)Dept. of Paediatrics, OUH; Division of Medicine and Laboratory Sciences, Medical Faculty, UiO Dept. of Paediatrics, Akershus University Hospital, Nordbyhagen,

(2)Oslo Centre for Biostatistics and Epidemiology, Department of Biostatistics, UiO

(3)Dept. of Paediatrics, OUH; Dept. of Paediatrics, Lillehammer County Hospital

(4)Institute of Medicine, Medical Faculty, UiO; Dept. of Anesthesiology and Critical Care, OUH

(5)Research Institute for Internal Medicine, OUH Rikshospitalet, and Faculty of Medicine, K.G. Jebsen IRC, UiO; K.G. Jebsen TREC, University of Tromsø

(6)Department of Immunology, OUH, and K.G. Jebsen IRC, UiO; Research Laboratory, Nordland Hospital, Bodø, and Faculty of Health Sciences, K.G. Jebsen TREC, University of Tromsø; Centre of Molecular Inflammation Research, Norwegian University of Science and Technology, Trondheim

Brain Behav Immun. 2014 Dec 31

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Plasma cytokine expression in adolescent chronic fatigue syndrome

- Chronic fatigue syndrome (CFS) is a prevalent and disabling condition among adolescents. Low-grade systemic inflammation has been suggested as an important component
- This study compared circulating levels of individual cytokines and parameters of cytokine networks in a large set of adolescent CFS patients and healthy controls, and explored associations between cytokines and symptoms in the CFS group
- CFS patients (12-18years old) were recruited nation-wide to a single referral center as part of the NorCAPITAL project

Plasma cytokine expression in adolescent chronic fatigue syndrome

- A broad case definition of CFS was applied, requiring three months of unexplained, disabling chronic/relapsing fatigue of new onset, whereas no accompanying symptoms were necessary (broader than the Fukuda-criteria)
- Healthy controls having comparable distribution of gender and age were recruited from local schools

Plasma cytokine expression in adolescent chronic fatigue syndrome

- Twenty-seven plasma cytokines, including interleukins, chemokines and growth factors were assayed using multiplex technology
- The results were subjected to network analyses using the ARACNE algorithm. Symptoms were charted by a questionnaire, and patients were sub-grouped according to the Fukuda-criteria
- A total of 120 CFS patients and 68 healthy controls were included

Plasma cytokine expression in adolescent chronic fatigue syndrome

- CFS patients had higher scores for fatigue ($p<0.001$) and inflammatory symptoms ($p<0.001$) than healthy controls
- All cytokine levels and cytokine network parameters were similar, and none of the differences were statistically different across the two groups, also when adjusting for adherence to the Fukuda criteria of CFS
- Within the CFS group, there were no associations between aggregate cytokine network parameters and symptom scores

Plasma cytokine expression in adolescent chronic fatigue syndrome

- In adolescent CFS patients plasma levels of individual cytokines as well as cytokine network measures were not different from healthy controls
- There were no associations between symptoms and cytokine expression in the CFS group
- **Low-grade systemic inflammation does not appear to be a central part of adolescent CFS patho-physiology**

Fecal microbiota transplantation broadening its application beyond intestinal disorders

Xu MQ, Cao HL, Wang WQ, Wang S, Cao XC, Yan F, Wang BM

Meng-Que Xu, Hai-Long Cao, Wei-Qiang Wang, Shan Wang, Xiao-Cang Cao, Fang Yan,

Bang-Mao Wang, Department of Gastroenterology and Hepatology, General Hospital,

Tianjin Medical University, Tianjin 300052, China

World J Gastroenterol. 2015 Jan 7;21(1):102-111.

Fecal microbiota transplantation broadening its application beyond intestinal disorders

- Intestinal dysbiosis is now known to be a complication in a myriad of diseases
- Fecal microbiota transplantation (FMT), as a microbiota-target therapy, is arguably very effective for curing Clostridium difficile infection and has good outcomes in other intestinal diseases
- This review shows that it is an exciting time in the burgeoning science of FMT application in previously unexpected areas, including metabolic diseases, neuropsychiatric disorders, autoimmune diseases, allergic disorders, and tumors

Fecal microbiota transplantation broadening its application beyond intestinal disorders

- A randomized controlled trial was conducted on FMT in metabolic syndrome by infusing microbiota from lean donors or from self-collected feces, with the resultant findings showing that the lean donor feces group displayed increased insulin sensitivity, along with increased levels of butyrate-producing intestinal microbiota

Fecal microbiota transplantation broadening its application beyond intestinal disorders

- Case reports of FMT have also shown favorable outcomes in:
  - Parkinson's disease
  - Multiple Sclerosis
  - Myoclonus dystonia
  - Chronic Fatigue Syndrome
  - Idiopathic Thrombocytopenic Purpura
- **FMT is a promising approach in the manipulation of the intestinal microbiota and has potential applications in a variety of extra-intestinal conditions associated with intestinal dysbiosis**

Summary

- **CFS patients appear to be more sensitive for sleep quality (sleep latency and lying awake at night), which is associated with a low physical activity level**
- **A close monitoring of the effects of increasing physical activity is essential to avoid negative effects on the health status of patients**
- **Low-grade systemic inflammation does not appear to be a central part of adolescent CFS patho-physiology**
- **FMT is a promising approach in the manipulation of the intestinal microbiota and has potential applications in a variety of extra-intestinal conditions associated with intestinal dysbiosis**

Thank you !