A diagnostic test for the identification of metabolic dysfunction.

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BACKGROUND:

The cyclical nature of CFS symptoms,
the waxing and waning of symptoms,
makes clear characterization of CFS difficult
depending on
what state
a patient is in
when they are assessed.

Additionally,
the post-exertional malaise (PEM)
that is a common symptom of CFS
is difficult to
characterize and quantify.

The problem of PEM
for patients with CFS/ME
may make gainful employment difficult and
significantly interrupt routine activities of daily living.

Metabolic dysfunction
could be
a mechanism
that produces or contributes
to PEM.

OBJECTIVE:

We propose a method
to reliably and accurately measure
the presence and
severity of metabolic dysfunction
using serial exercise tests.

Serial exercise testing normally shows
high reproducibility among cardiopulmonary variables,
even among patients with significant pathology.

METHODS:

Two graded exercise tests with cardiopulmonary analysis
were **performed to volitional fatigue**
within 24 hours of each other.

Several groups of subjects were tested;

- a group of women with CFS (n=20)
- and an age- and gender-matched control group (n=12),
- a physically active group of women (n=8), and
- a group of patients with high EBV/HHV-6 viral levels (n=27).

RESULTS:

Only exercise tests where criteria for maximal effort were met
are included in the results.

- Peak oxygen consumption for the first series of tests was as follows:
- CFS patients= 22.5±1.2 ml/kg/min;
- sedentary controls=26.0±5.1 ml/kg/min;
- physically active=41.2±1.6 ml/kg/min;
- EBV/HHV-6 group=23.6±0.9 ml/kg/min).

The sedentary control subjects and
the physically active women
demonstrated high reproducibility between the two exercise tests.

The cardiopulmonary values between test 1 and test 2
among the CFS and
high viral group
displayed unusually high degrees of variability.

Previous studies have indicated that test-retest declines in
peak oxygen consumption and/or
oxygen consumption at anaerobic threshold
of at least 8%
are indicative of metabolic dysfunction.

Subjects that displayed metabolic dysfunction in the test-retest comparison
were sub-grouped and
group means calculated separately.

Of the **20 women with CFS**,
10 displayed **metabolic dysfunction**, and
in the **EBV/HHV-6** group
15 out of 27 patients
displayed **at least an 8% reduction in oxygen consumption values**.

CONCLUSIONS:

The reduction in
peak oxygen consumption and/or
oxygen consumption at anaerobic threshold
in a subgroup of CFS patients and
patients with high viral levels
provide objective evidence and quantifiable measure of metabolic dysfunction.

This "fatigue-effect" of prior physical activity
on physiological function
is an abnormal response
that is not characteristic in other illnesses
but is observed in many of these patients.

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