BACKGROUND INFORMATION
Although the exact cause of chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME) is unknown, several underlying and sometimes characteristic states of physiological function have been identified, in particular, abnormalities of the immune and central nervous system. These findings have led some researchers to suggest that looking for the cause of CFS/ME is a self-defeating exercise; they suggest that focusing on rehabilitation and improvement of functional status is more important. This notion leads to the possibility of creating an integrative management approach that is grounded in the hypothesis that CFS/ME is the manifestation of a complex state of physiological dysfunction unique to an individual.

KEY CONSIDERATIONS IN CFS
Leaky Gut
- A study examined the effects of a clinical intervention aimed at reducing intestinal permeability and circulating endotoxin in CFS/ME.
- Dietary change and treatment with anti-inflammatory and antioxidant nutrients (e.g. glutamine, N-acetyl cysteine, zinc) over 12 months significantly reduced antibody responses to endotoxin.
- Over 50% of participants showed significant clinical improvement or remission.

Chronic Infection
- Onset of CFS/ME symptoms after infectious-like illness frequently reported.
- Immune dysfunction decreases resistance to viral pathogens.
- Long term antibiotic treatment further impairs immune function.

Mitochondrial Dysfunction
- Reduced availability of ATP and inefficient oxidative phosphorylation has been shown in CFS patients.
- Degree of mitochondrial dysfunction correlates with severity of illness.

TREATMENT STRATEGIES
Coenzyme Q10
- Evidence of CoQ10 deficiency in CFS/ME provides further support for mitochondrial involvement, as CoQ10 status has been proposed as a measure of mitochondrial function.
- CoQ10 deficiency has been shown to decrease expression of proteins involved in mitochondrial energy metabolism, reduce mitochondrial membrane potential, increase production of reactive oxygen species, and result in the degradation of dysfunctional CoQ10-deficient mitochondria.

Magnesium
- Low magnesium status has been described in CFS/ME.
- Evidence suggests that magnesium supplementation may be helpful to individuals with CFS/ME.

Essential Fatty Acids
- A functional impairment of EFA metabolism may in part explain functional changes in the central nervous system as well as clinical symptoms for individuals with CFS/ME.
- The findings of a randomised, controlled clinical trial lend support to this hypothesis. In this trial researchers observed that treatment with EFAs improved the symptoms of CFS/ME.

CONCLUSIONS
Currently accepted treatments for CFS/ME have modest clinical benefits and for most patients the disease prognosis remains poor. Because CFS/ME is a heterogeneous disorder with diverse aetiological factors and pathological features, a patient-centred integrative framework based on modifiable physiological and environmental factors may offer hope for more effective management and better clinical outcomes.

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