

# Chronic Fatigue Syndrome and related Illnesses

## 2.1.1. CFS Introduction

Usually, patients with Chronic Fatigue Syndrome (CFS) and related illnesses require a detailed medical history, as well as a physical and laboratory evaluation. In the **Cologne Model**, laboratory tests include extensive immunological parameters, with NK-cell activity and granulocyte function essays, and lymphokine production. In addition, we establish the Th1/Th2 response of CD4+ lymphocytes by measuring intracellular lymphokine production.

After all dysfunctions and irregularities have been established, in an extensive consultation, the patient will be explained all treatment options available. Then, together with the patient, we will put together a detailed therapy plan. It is felt that changes in life style and medical interventions can only fully unfold their beneficial effects, if the patient fully understands all therapeutic interventions and consequences, and can support all of them.

Many studies in the field of Psycho-Neuro-Immunology (also called Body-Mind Medicine) have established that within each human being, there is a very delicate and intimate interaction between the psychological (emotional) functioning, the brain and its endocrine function, and the immune system at large. No wonder, that many patients with chronic illness like CFS, have become a victim of a vicious circle, spiraling downwards. Somehow, somewhere, this vicious circle has to be broken. The **Cologne Model** has many interventions to offer to give a patient a chance in doing so.

Often, in patients with CFS, chronic viral infections (CMV, Herpes, and Epstein-Barr) play a key role. Viral loads may exacerbate periodically, and might hamper a quick response to any therapeutic intervention.

Exposure to toxins like mercury, cadmium, aluminum, arsenic and lead, digestive dysfunction and poor absorption, coagulation abnormalities, food allergies, and significant endocrinal and hormonal disturbances, especially thyroid, adrenal, testosterone, DHEA, estrogen, melatonin, and growth hormone, can induce or sustain symptoms of CFS, Fibromyalgia Syndrome (FSM) and Rheumatoid Arthritis (RA).

In addition, other environmental influences, like electro smog (high voltage cables, frequent use of mobile phones, monitors, etc.) and radiation, may significantly affect health and immune function.

It goes without saying that patients with CFS and related illnesses have suffered for years, and often found little support from their health care providers. Therefore, patients often show symptoms of reactive depression. In the **Cologne Model**, the usual anti-depressants to feel good about feeling bad are not, or rarely, given. The therapeutic interventions in the **Cologne Model** are such that, usually, patients quickly improve emotionally.

## 2.1.2 New Information on the Role of Bacterial Infections

Most bacterial and viral infections are overcome by the immune system. Infections may become chronic if the immune system is not able to clear the pathogen: a good example is an infection with the Human Immunodeficiency Virus (HIV). Here, for several reasons, the immune system is not able to overcome the infection and eradicate HIV. Thus, in this way, a person becomes a carrier and is able to pass on the virus to another (uninfected) person. Other examples are chronic infections with Hepatitis B and C virus, *Herpes genitalis*, and many others.

Chronic infections are usually held in check for a while by our immune system, including by cells of the Central and Peripheral Nervous Systems (1). When such stealth viral and bacterial infections occur, they may cause many of the complex signs and symptoms seen in Chronic Fatigue Syndrome (CFS), Fibromyalgia Syndrome (FMS), Rheumatoid Arthritis (RA), and in Inflammatory Bowel Disease (GWI). On their part, these chronic infections may cause enhanced immune dysfunction and metabolic imbalances (2). Changes in environmental responses as well as increased titers to various endogenous viruses, that are commonly found to be expressed in these patients, have been seen in FMS, CFS and GWI patients. If *only* infectious agents were to be involved, very few could produce the complex chronic signs and symptoms by themselves, as found in these patients. There must be co-factors to mount to the symptomatology usually found in above mentioned patients.

One type of airborne infection, that has renewed interest as a possible cause, co-factor or opportunistic infection in various chronic disorders, is represented by some small, primitive classes of bacteria (1). These micro-organisms, principally mycoplasmas and other bacteria (*chlamydia*, *coxiella*, *brucella*, *borellia*, etc.), although not as well known as other agents in causing various diseases, are now considered important emerging pathogens in chronic illnesses. They might also be important cofactors in some illnesses, including HIV-AIDS, and other immunodeficiency disorders, skin disease and some autoimmune diseases (1).

If certain micro-organisms are associated with chronic illness, is there any evidence for micro-organism infections in CFS, FMS, RA and GWI patients? The answer is obviously yes! In about 70% of FMS, 60% of CFS and 50% of all RA and GWI patients, mycoplasmal blood infections have been found. The most common bacteria was found to be *Mycoplasma fermentans*(3-5).

New studies, using highly sensitive Polymerase Chain Reaction (PCR) and Nucleoprotein Gene Tracking (NPT), found that a vast majority of patients with CFS and FMS are infected with more than one species of Mycoplasma, namely besides *M. fermentans* also with *M. penetrans*, *M. pneumoniae*, *M.genitalium*, *M. pirum* and *M. hominis*, in their white blood cells (1). None of the healthy controls were infected with multiple Mycoplasma bacteria.

The logical therapy would be to treat these mycoplasmal infections with antibiotics like doxycycline, ciprofloxacin, clarithromycin, and azithromycin. Unfortunately, these cycles with combinations of various antibiotics must be repeated several times and may provoke many side-effects, and more than 50% of all patients still have significant symptoms and complaints. The recovery, if at all, is very slow (3-5).

Many patients with chronic fatigue syndrome have symptoms that are consistent with an underlying viral or toxic illness. Because increased neutrophil apoptosis occurs in patients with infection, the study of Kennedy et al. (6) examined whether this phenomenon also occurs in patients with CFS. In a study patients with CFS showed had higher numbers of apoptotic neutrophils, lower numbers of viable neutrophils, increased annexin V binding, and increased expression of the death receptor, tumour necrosis factor receptor-I, on their neutrophils than did the 34 healthy controls. Patients with CFS also had raised concentrations of active TGF $\beta$ 1. These findings provide new evidence that patients with CFS have an underlying detectable abnormality in their immune cells.

Recent reports have show that CFS patients display an altered cytokine production. Shin et al. (7) examined the effect of Kuibitang (KBT) (plant-material mix) on lipopolysaccharide (LPS)-induced various cytokines production in peripheral blood mononuclear cells (PBMC) of CFS patients and healthy controls. KBT (1 mg/ml) significantly inhibited LPS-induced tumor necrosis factor- $\beta$ 1, interleukin-10, and transforming growth factor-  $\beta$ 1 production in PBMC of CFS patients. However, LPS-induced interferon- $\alpha$  production was significantly increased by KBT (mg/ml). These results provide evidence of a novel activity of the KBT that regulate cytokines production related with CFS.

As many patients with CFS, FMS, RA and GWI have poor absorption of many minerals, proteins and vitamins. Usually, these patients are depleted in vitamins B, C, E and trace elements including Selene, Zinc, and Magnesium. Therefore, in the **Cologne Model**, lacks of these substances in the blood are routinely tested.

One could ponder on the question how it is possible that many people are exposed to all kinds of micro-organisms but do not necessarily get infected or become carrier?. In the **Cologne Model** , it is postulated that there must be certain forms of immunodeficiency *pre-existing* in order to allow micro-organisms to penetrate the organism and cause symptoms and disease. Practically all CFS patients we have treated so far document that they had very few fevers as a child or as an adult. Perhaps after the diagnosis CFS they might have had low-grade fevers, but they never really produce a fever of 39,5 C. or higher.

Fever is a very unspecific but powerful tool of the immune system to augment a defense against viral and bacterial infections. Also, clinical studies show, that children who were able to produce a fever (like in childhood diseases) were much less likely to have significant allergies, and adults would have less malignancies and chronic illnesses.

Therefore, in the **Cologne Model**, total-body hyperthermia is used in cases where it is clear that fever might help the organism to overcome a chronic infection (see under Oncology, chapter on the warmth organism).

Usually, patients presenting to us with CFS, PMS, GWI and RA, will undergo an extensive blood test. Here, we document *immune function* of various lymphocyte sub-populations, and the Th1/Th2 response of CD4-positive lymphocytes. These are important parameter to diagnose immunodeficiencies in a much more differentiated way, and a logic therapeutic intervention, like total-body hyperthermia, can be concluded.

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