

FIBROMYALGIA RESEARCH REVIEW

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MAY 12TH

INTERNATIONAL FIBROMYALGIA AWARENESS DAY

The celebrated English nurse and pioneer of the International Red Cross movement, Florence Nightingale, was thought to have suffered from fibromyalgia/chronic fatigue syndrome, possibly caused by a chronic bacterial infection. Her birthday, May 12th, now marks international chronic fatigue syndrome and fibromyalgia awareness day, which promotes further research and public knowledge of these syndromes. But who was Florence Nightingale, did she really suffer from fibromyalgia/chronic fatigue syndrome, and how did she cope with the illness she battled for most of her adult life?

NIGHTINGALE IN SCUTARI: HER LEGACY RE-EXAMINED

Florence Nightingale trained as a nurse in Germany in 1851, believing that this was God's calling for her. In contrast, Nightingale's nursing training was strictly against her parents' wishes, who viewed such a profession as inappropriate for someone of her class. Just three years later in November 1854, Nightingale would find herself leading a team of 38 volunteer nurses at the front lines of the Crimean War (1854-56). Nightingale was sent to Turkey by war minister Sidney Herbert to manage care of troops at the British army hospital in Scutari (Istanbul). On her arrival, Nightingale is famously quoted as saying "the strongest will be wanted at the wash tub" after witnessing the appalling sanitation and crowding in the hospital wards. In fact, conditions at the barracks hospital were so grave, that infections contracted while at the hospital killed far more soldiers than bullet wounds.

Although she had no concept of the microbial transmission of disease, Nightingale understood the strong connection between the filthy conditions in the hospital and the spread of infection. The extreme crowding on the wards would have been the perfect breeding ground for the spread of typhus, typhoid fever, dysentery and respiratory infections. Nightingale introduced a number of revolutionary procedures to improve hygiene standards, which included the regular washing of soldiers and their linen, improved nutrition, and even the installation of new windows capable of opening to ventilate the pestilent stench of the wards. Many of the current health care practices that should be carried out to reduce hospital infections nowadays actually date from those introduced by Nightingale in Scutari. Although resented by the army surgeons, she earned the adoration of the soldiers by preferentially caring for patients with infectious diseases (at her own risk), who had been deemed beyond help by the army doctors. Nightingale was said to have been at her happiest while she was with her patients, and her nightly tours of the 6.4 km-long Barracks Hospital wards inspired the

popular image of Nightingale with an open flame lantern and her nickname "The Lady with the Lamp". As one soldier's ballad reads "The wounded they lover [love her] as it has been seen, She's the soldier's preserver, they call her the Queen. May heaven give her strength and her heart never fail. One of Heaven's best gifts is Miss Nightingale."

Gill, C. J. & Gill, G. C. (2005). "Nightingale in Scutari: her legacy re-examined." *Clin Infect Dis* 40, 1799-1805.

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FLORENCE NIGHTINGALE'S FEVER

Unfortunately, Nightingale had her own grave health problems to face. In early May 1855, Nightingale left Scutari to inspect hospitals some 300 miles away in Balaclava. Although she arrived safely on May 5th, she was taken ill on May 12th (her birthday), just a week after her arrival. Doctor Anderson, Chief Medical Officer at the General Hospital in Balaclava, diagnosed Nightingale with Crimean fever, remarking that she was suffering from "as bad an attack of fever as I have ever seen". Symptoms of Crimean fever (also known as Malta or Mediterranean fever), included feverous, nervous irritability and delirium, accompanied by sweats, weakness, aches and pains. The bacterium responsible for causing Crimean fever was isolated from the spleen of a soldier in 1887 by David Bruce, who thus named the bacteria *Brucella*. Although animals are the natural carriers of the *Brucella* bacteria, humans can contract this disease by contact with animals or animal products. The original name of remittent fever derives from the temporary remission from symptoms that sufferers would experience, only to succumb once more to a fresh wave of fever. In most cases the infection is cleared within a few weeks to several months, however *Brucella* may persist in a proportion of patients, leading to a condition termed chronic brucellosis.

Nightingale appeared to recover from the initial bout of *Brucella* infection, and returned to Scutari to resume her nursing in August 1855. However she appeared painfully thin and exhausted (see picture), reportedly suffering from depression and nausea at the site of food. Between her return to the UK in August 1857 and the end of 1861, Nightingale endured five further attacks of fever, which were accompanied by a range of symptoms, including palpitations, delusions, weakness and indigestion. By the end of 1861 she was bedridden, and remained so for the next 6 years, suffering so severely from spinal pain that she was said to have been unable to change position for some 48 hours at a time. Her doctors diagnosed her with "congestion of the spine, which leads straight to paralysis", although Nightingale may in fact have been suffering from *Brucella* spondylitis, a complication of chronic brucellosis, caused by bacterial infection of the spine.



Nightingale experienced no further attacks, and by the 1870s most of the specific symptoms of brucellosis disappeared. However she continued to be plagued by severe headache, insomnia and depression. Nightingale experienced feelings of worthlessness and failure, in spite of the incredible achievements in revolutionising nursing and healthcare that she had continued to accomplish throughout her illness. The work of the Nightingale School of Nursing, which dates from the first ever school of nursing opened by Nightingale at St.Thomas' hospital in 1860, still continues today. The legacy of Nightingale's work also lives on in the International Red Cross organisation, which is responsible for organising international relief for the victims of war and humanitarian crises.

Florence Nightingale suffered from chronic pain and fatigue for a large part of her life, and her battle with illness, combined with her incredible list of achievements, continue to inspire all sufferers of chronic illnesses. Interestingly, medical opinion shortly after her death favoured the idea that Nightingale had been suffering from a weakened nervous system; a condition termed "neurasthenia". Neurasthenia was discovered in 1880 by the US neurologist Beard, who described a condition prevalent among young women with a remarkable resemblance to the syndrome we now refer to as "fibromyalgia". The symptoms of neurasthenia consisted of widespread pain, fatigue, dizziness, palpitations and psychological disturbances. Accordingly, Beard termed this disease nervous exhaustion or "neurasthenia", attributing symptoms to the "enfeeblement of the nervous force". In contrast nowadays, neurasthenia patients receive a variety of diagnoses, including chronic fatigue syndrome (CFS), irritable bowel syndrome (IBS), postural orthostatic tachycardia syndrome (POTS), or fibromyalgia syndrome (FMS). Indeed, the wide range of symptoms experienced by Florence Nightingale (pain, fatigue, weakness, headaches, laryngitis, insomnia, anorexia, palpitations, nervousness and depression), has led to the suggestion that she was suffering from fibromyalgia, chronic fatigue syndrome, or even post traumatic stress disorder. Others dispute this view, claiming that Nightingale was suffering from non-specific symptoms of the chronic bacterial infection brucellosis. Although we will never be able to diagnose her condition with certainty, it is of interest that research suggests that bacterial or viral infections are risk factors for FMS and CFS. Moreover, recent findings suggest that chronic bacterial (mycoplasma) infection may in fact cause FMS/CFS.

Young, D. A. (1995). "Florence Nightingale's fever." *BMJ* 311, 1697-1700.

MYCOPLASMA INFECTIONS AND CHRONIC ILLNESS

Mycoplasmas are the smallest form of free-living bacteria. In humans, mycoplasmas are found in the mucous surfaces, i.e. of the respiratory and urogenital tracts. While some species of mycoplasma are non-pathogenic, others are able to infect major organs, leading to acute or chronic illness (i.e. *Mycoplasma pneumoniae*). They are resistant to many types of antibiotics, including penicillin, and are able to evade the immune response by "hiding" within human cells. Although definitive proof is lacking, mycoplasma infection has been implicated in disorders as diverse as rheumatoid arthritis, chronic asthma and Crohn's disease. A number of research groups have also detected the presence of mycoplasma in the blood of fibromyalgia syndrome (FMS), chronic fatigue syndrome (CFS), and Gulf War illness (GWI) sufferers. Averaging the results from several studies, mycoplasma DNA was detected in about 50% of FMS, CFS and GWI patients, compared to only 10% of healthy controls (see table). Furthermore, FMS/CFS sufferers infected with more than one mycoplasma species experienced greater symptoms than patients infected with a single species. The species most often encountered in patients with FMS, CFS or GWI were *Mycoplasma pneumoniae* and *Mycoplasma fermentans*. While it is not known whether these infections are the cause of FMS/CFS, or simply the result of a weakened immune system, it is worth noting that long-term antibiotic therapy has been reported to offer some relief from symptoms in a proportion of FMS, CFS and GWI patients. It is hoped that the experience of Florence Nightingale and many others will inspire researchers to determine whether FMS and related disorders do indeed result from chronic bacterial or viral infection, as suggested by sufferers and scientists alike.

Endresen, G. K. M. (2003). "Mycoplasma blood infection in chronic fatigue and fibromyalgia syndromes." *Rheumatol. Int.* 23, 211-215.

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Diagnosis	N patients	Percentage of patients positive for mycoplasma	N healthy controls	Percentage of controls positive for mycoplasma
CFS	100	52.0	100	15.0
CFS	100	52.0	50	14.0
CFS	100	52.0	160	2.0
FMS	40	54.0	-	-
GWI	60	55.0	-	-
GWI	30	46.6	21	0.0
GWI	170	44.7	41	4.9
CFS and/or FMS	132	62.9	32	9.3
CFS and/or FMS	91	59.3	32	2.0
CFS and/or FMS	565	53.1	71	9.9
CFS	261	68.6	36	5.6

The results of several studies on the prevalence of mycoplasma infections among fibromyalgia syndrome (FMS), chronic fatigue syndrome (CFS), and Gulf War illness (GWI) patients are summarised in the table. N refers to the number of patients.