POST-VACCINATED COVID-19 OXIDATIVE STRESS IN MENOPAUSE FEMALES

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INTRODUCTION

Approximately 1.1 billion postmenopausal women, or 12% of the world’s population, will live by 2025. Just 5% of process and development organizations deal with this issue. A place where women may connect and talk about their menopause issues while avoiding the secrecy around it is urgently needed [1]. To reduce problems, enhance immunization rates, and promote self-care behavior, it is important to target women from low-income, uneducated, and impoverished communities [2]. Building a menopause meeting hotline staffed by clinical experts and providing assistance to postmenopausal women in learning how to manage side symptoms are both necessary and critical. Lee and Lee (2020) study was conducted at Tao-Yuan, Taiwan [3]. Headaches, fatigue, muscle aches, fever, and chills are some of the predicted side effects of flu-like symptoms after a COVID-19 vaccination. When comparing young vaccine users (under the age of 55) to older adults, these predicted side-affects were more prevalent in younger people [4-6]. Crist (2021) an observed blog on the https://abc7news.com/website. They noticed that Dr. Jain represents considerable authority in draining problems after receiving the outside particle. The study looks at how levels of oxidative stress and quality of life change after receiving the COVID-19 vaccination, which is used to treat HFIs associated with menopause.

Keywords: Oxidative stress, Menopause, COVID-19 vaccine.

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ABSTRACT

After 12 months of amenorrhea (absence of menses) and the irreversible termination of ovarian activity, menopause is identified. Menopause has a number of physiological implications, including increased abdominal obesity and a higher risk of cardiovascular and metabolic illness. Hot flashes (HFs), headaches, back discomfort, stiff joints, weariness, and difficulty sleeping are all signs of menopause. Menopause begins around the age of 51. Menopause occurs prematurely in 0.3–1.1% of women. During menopause, oxidant stress (hydrogen peroxide and superoxidant anion) increases the formation of free radicals. Intermediates in enzymatic reactions that occur during cell metabolism (reactive oxygen species and reactive nitrogen) sometimes leak from enzyme molecules and interact with molecular oxygen, creating free oxygen free radicals. The molecular basis of cancer, neurodegenerative and cardiovascular diseases, diabetes, and autoimmune disorders is oxidative stress caused by free oxygen radicals. HFs and irregular menses are common complaints among women, as seen in many blog entries, so there may be some research to be done. Oxidative stress causes COVID-19 post-vaccination side effects. Antioxidant supplements and menopausal hormonal treatment may lower oxidative stress and inflammation. The focus of this research is to see how oxidative stress and quality of life changes after receiving the COVID-19 vaccination, which is used to treat HFIs associated with menopause.

MENOPAUSE-RELATED OXIDATIVE STRESS

Estrogen promotes the health and happiness of the vaginal tissue. Estrogen is synthesized in different tissue-specific manners, with estrone being the major estrogen in adipose tissue, estradiol in the placenta, and 17-estradiol in cells granulosa. Estrogens have an antioxidant capacity independent of their binding to receptors. They reduce neuronal death with antioxidant activity, due to the presence of an intact hydroxysterigmatase during early menopause [11]. Age, anxiety, and (estrone glucuronide) E1G all have an important relationship with the level of abdominal pain in the menopausal transition (MT). Stress awareness, tense, testosterone, stress markers, and MT stage, on the other hand, do not [12]. Enzymatic such as superoxide dismutase, catalase, as well as vitamin anti-oxidants such as C and E, can turn free radicals into water. Under normal circumstances, intracellular defense systems presumably prevent 4-hydroxyestrogens from being harmful. 4-hydroxyestrogens are unstable, and with the creation of semiquinones as an intermediate, they may become extremely reactive quinones. This process produces oxygen free radicals, which could harm DNA by, for example, creating the mutagen 8-hydroxy-2-deoxiguanosine [13]. Women’s telomeres are longer due to increased estrogen levels, which boost telomerase activity and prevent telomere shortening. Telomeres are unstable, and with the creation of semiquinones as an intermediate, they may become extremely reactive quinones. This process produces oxygen free radicals, which could harm DNA by, for example, creating the mutagen 8-hydroxy-2-deoxiguanosine [13]. Women’s telomeres are longer due to increased estrogen levels, which boost telomerase activity and prevent telomere shortening.

ARTERIAL OXYGEN STRESS BY THE CORONAVIRUS

During the SARS-CoV-2 infection, infected neutrophils produce too much H₂O₂. Oxidative stress has been shown to activate nuclear factor-kB (NF-kB) in T cells and macrophages, resulting in the release of aggravating cytokines such as TNF-and interleukin (IL)-6.
Pre-existing oxidative stress may also contribute to coagulopathies and cardiovascular comorbidities seen in patients with COVID-19 [9,10,18,19]. Because of hormones, women may be more susceptible to SARS-CoV-2. In macrophages and T cells, oxidative stress may activate NF-κB, which causes the production of counter molecules like IL-6 as well as anti-inflammatory cytokines (IL-6). ROS is linked with virus infection, and pre-treatment with an antioxidant (such as Lipoic acid) may assist in reducing the issue [3,9]. Coronavirus infection causes oxidative stress.

**OXIDATIVE STRESS POST-COVID-19 VACCINATION**

Vaccines stimulate the protected system, which may release immune system components and inflammatory agents in the uterus. As a result, scientists should be aware of this issue and include questions about menopause in future studies. Up until now, side effects of vaccines such as discomfort, redness, swelling, fatigue, headache, muscle soreness, chills, fever, and nausea have all been acknowledged [19].

An expert at Imperial College London has suggested that a relationship between COVID-19 immunization and menstrual alterations is feasible. Anyone experiencing a change in menstruation that lasts more than a few cycles should be treated according to standard clinical guidelines [16]. Darcy Jimenez (2021) observed that after being inoculated, a few women reported experiencing thicker periods, painful difficulties, and irregular menses. 25% reported "menses volume alterations," 20% had a heavier phase, and 19% seemed to have a consistent increase. There seems to be no natural tool that can show the ovulatory cycle being disrupted after receiving the antibody [23]. Paul (2021) noted that many women experienced oxidative stress damage induced by the environmental stressors on COVID-19. Bakadia BM, Boni BO, Ahmed AA, Yang G. The impact of oxidative stress affect the outcome of COVID-19 vaccines? Lesson learned from the infection. Stresses 2021;11:19-22.

**REFERENCES**


30. Overview of COVID-19 Vaccines. CDC.