

**POST-VACCINATED COVID-19 OXIDATIVE STRESS IN MENOPAUSE FEMALES****VIVECHANA DEORA, RUCHI KANT\*, NAVNEET KUMAR**

Department of Teerthankar Mahaveer University, Moradabad, Uttar Pradesh, India.

\*Corresponding author: Ruchi Kant; Email: [ruchi.paramedical@tmu.ac.in](mailto:ruchi.paramedical@tmu.ac.in)

Received: 26 May 2023, Revised and Accepted: 06 July 2023

**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 levels change after receiving the COVID-19 vaccination, which is used to treat HFs associated with menopause.

**Keywords:** Oxidative stress, Menopause, COVID-19 vaccine.© 2023 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ajpcr.2023v16i12.48433>. Journal homepage: <https://innovareacademics.in/journals/index.php/ajpcr>**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-effects were more prevalent in younger people [4-6]. Crist (2021) an observed blog, there were found estrogen, for example, can make immune cells produce more antibodies, and testosterone can smother the creation of resistant synthetic substances in the body [7]. Kate Larsen (2021) an observed blog on the <https://abc7news.com/website>. They noticed that Dr. Jain represents considerable authority in draining problems in young adult women and clarified that incendiary cells set off by the antibody [8]. Vaccine, suspension of weakened, dead, or fragmented germs or poisons, or other biological preparation, such as antibodies, lymphocytes, or messenger RNA (mRNA), given to prevent disease. Vaccination is the administration of jab to help the immune system develop protection from a disease. The COVID-19 vaccines are created to elicit a transmission response that is both bloods and mitochondrial. In people who were overweight or obese, the body's immune reaction was much more effective in participants who were underweight or healthy weight. To observe a possible unique as well as protracted cell and humoral activity following administration of contained mRNA or viral vector against COVID-19 inoculation, more clinical research is required [6,9,10]. More detailed molecular knowledge regarding the function of mitochondria may be obtained by reviewing the role of mitochondria in aging and the symptoms of age-related diseases. This

study looks at how levels of oxidative stress and quality of life change after receiving the outside particle.

**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, estriol 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 hydroxy aromatase 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-deoxyguanosine [13]. Women's telomeres are longer due to increased estrogen levels, which boost telomerase activity and provide antioxidant benefits [13-16]. Thyroid problems can cause or enhance the formation of reactive oxygen species (ROS) and oxidative stress, leading to an increase in oxidative damage [17]. "Oxidative stress in chronic and age-related diseases" – Special Issue. Pre-clinical and clinical data demonstrating the essential role of oxidative stress in the course of certain illnesses is examined. The "bench to bedside" method has been used to a variety of issues.

**ARTERIAL OXYGEN STRESS BY THE CORONAVIRUS**

During the SARS-CoV-2 infection, infected neutrophils produce too much H<sub>2</sub>O<sub>2</sub>. 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 co-morbidities 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- $\kappa$ B, 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 menses 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) an observed blog COVID-19 vaccines and periods: What do we know so far? They found a lot of these tools depend on inflammatory and mitigating cycles to manage this tissue building [21]. Olga Robinson and Rachel Schraer (2021) who updated a blog. They found holistic regenerative professionals "cautioning clients that" women' periods and their menstrual cycles are by and large essentially influenced, regardless of whether they haven [22] Korin Miller (2021) has a blog. 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) is an observed blog the effects of COVID-19 vaccines on women and a rising vaccine hesitancy. It was tracked down that 72% did not encounter any adjustment of their period; notwithstanding, the rest saw differed instances of the drawn- out cycle, abbreviated cycle, and cycle problems [24,25].

Hamid Merchant 2021 is a response April 18, 2021 on thrombosis after COVID-19 vaccination article. Significant emotional and psychological distress, or post-menopausal drainage, as well as the possible danger after immunizations, triggered neutropenia in female patients, according to Dr Nafiseh Hamid, a professor of women's health at the University of Manchester. According to the MHRA's unfriendly occasion reports, there were 958 cases of post-immunization menstruation abnormalities, such as vulvar ruptures, as of April 15, 2021. AstraZeneca's COVID-19 vaccine had multiple times as many cases of irregular periods as Pfizer's (643 vs. 315 individually). The true number of phases is likely to be greater, as many women in various social settings may have felt uncomfortable discussing it and may not have realized it is due to immunization [26]. 22 of the 28 individuals who endured blood clumps perhaps connected with the Johnson and Jo [27-31]. Post-vaccinated females have been experiencing a few issues of menopause similarly as menses unpredictable, temperature changing, anorexia, nausea, over-bleeding, hot flashes (HFs), obese people, so on. Blood clots with low platelets are discovered on the blog (thrombosis with thrombocytopenia syndrome). HF, heavy bleeding, vasomotor symptoms, and pathophysiological conditions are all symptoms of estrogen-induced oxidative stress. Aging and vaccination, respectively, cause oxidative stress.

#### CONCLUSION

Menopause caused by vaccination is linked to abnormalities in oxidative stress tests. An inflammatory and procoagulant state has been detected in this situation. In vaccine-induced menstruation, however, there is a link between estrogen levels and other oxidative stress tests.

Humans think that menstruation caused by vaccinations has a different pathogenesis. This may be a valid reason to review the immunization dose in cases of vaccine-induced menstrual cycle abnormalities. Prepare vaccines for various diseases based on menopausal needs in the future.

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