Evaluating the Effectiveness of COVID-19 Vaccination for over 13-Weeks Pregnant Women: Among the First to Vaccinate Against Covid-19 in Vietnam

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ABSTRACT

Objective: Evaluating the effectiveness of COVID-19 Vaccination for over 13-week pregnant women, where were among the first to vaccinate against COVID-19.

Method: Study on the Women who are pregnant over 13 weeks have not received the Covid-19 vaccine. Using Prizer's Covid-19 Vaccine for women who are pregnant over 13 weeks. This pregnant woman needs to be thoroughly screened before the injection. The subjects were given pregnancy ultrasound, pregnancy heartbeat measurements before and after the vaccine injection. Study duration from 11/2021 - 12/2022 divided into three stages.

Result: 230 pregnancy women were injected with Prizer's Covid-19 vaccine, the average pregnancy age was 22.97 ± 11.55 weeks, the rate of premature pregnancy weeks showed that the number of pre-born babies accounted for 1.74%, there were no babies (0%) in 22-28 weeks and in 28-32 weeks, child in 32-35 weeks 0.43%, and babies in 35-37 week account for 1.3%. There were no newborns weighing < 2500 g (0%) for the weight of the pre-natal child, young borns with a weight of between 2500 and 3000 g accounted for 0.87%, and babies with a mass of > 3000 g and above accounted also for 0.87%. An anaphylactic history accounted for 2.61% having an allergic history, of which 0.87% women had a history of allergies to weather, changing environment; history of each drug allergy accounting for 1.74%, with an allergia to an analgesic of degree I (0.43%).

Conclusion: It's reasonable, safe, scientifically based, and safe for both mother and child to inject COVID-19 into pregnant women over 13 weeks.

Keywords: Evaluating the effectiveness, Covid-19 Vaccination, 13-week pregnant

INTRODUCTION

A new coronavirus (COVID-19) strain of acute respiratory infection appeared in December 2019 and on January 31, 2020, the World Health Organization (WHO) had declared a global medical emergency [1], [2], [3]. Until the period from the middle of the year to the end of 2021, the epidemic was going on very fast, serious, complex, unpredictable, and no one can predict the epidemic's peak, end time, scale, and extent. In the fight against the Covid-19 pandemic, the world and Vietnam have deployed many solutions to control the epidemic

[4], [5], [6]. From the initiation, many countries around the world, including Vietnam, have identified the Covid-19 vaccine as the most effective response to the pandemic.

As a result, the Vietnamese government has initiated a plan to expedite the Covid-19 vaccination campaign nationwide, with a focus on high-risk population like the elderly, pregnant women, and those with pre-existing illnesses.

Following the vaccination of adults aged 18 and over, Vietnam has planned and prepared conditions for continues injection of the Covid-19 vaccine to children and pregnant women [4], [5], [6]. Vietnam has planned and prepared the environment for the ongoing injection of the Covid-19 vaccine to children and pregnant women after the vaccination of people 18 years of age and older. The World Health Organization (WHO) recommends the Comirnaty vaccine, produced in the United States by Pfizer-BioNTech, as a safe vaccination option for children and expectant mothers [4], [5]. Vietnam initiated a nationwide immunization program against COVID-19 for children in November 2021. Additionally, the country started injecting the vaccine into pregnant women in several regions. The HaiPhong City has designated the Haiphong-Vinhbao international General Hospital as the site for the COVID-19 vaccination rollout, validating the diagnosis and preparing for COVID-19 therapy for hospitalized patients. As a result, we were among the first to vaccinate against COVID-19 in women who are more than 13 weeks pregnant. The findings will be a valuable source of information for the development of practical and scientific knowledge for illness prevention and policy-making.

METHOD

Subjects: Women who are pregnant over 13 weeks have not received the Covid-19 vaccine.

Conducting research: Using Prizer's Covid-19 Vaccine for women who are pregnant over 13 weeks. This pregnant woman needs to be thoroughly screened before the injection [4], [5], [6], [7]. We exploited the prehistory, pathology history, and pregnancy allergy history, evaluation of temperature, blood pressure, heart rate before the Covid-19 vaccine. The subjects were given pregnancy ultrasound before and after the vaccine injection, pregnancy heartbeat measurements before and after the injection, blood pressure and heart rate after the injection of COVID-19 [8], [9]. We continued with the second injection and waited for the pregnant woman's health after six months to find out the results of the 19 vaccine (after the date of the pregnancy) to evaluate the parameters of the study: allergies, blood pressure, heart rate, Covid-19 infection rate, hospitalization rate, premature birth rate, full-month birth rates, fertility rate, surgical rate, incidence of chest pain symptoms, difficulty breathing [8], [9]. Study duration: From 11/2021 - 12/2022 divided into three stages:

Stage 1 is a cross-sectional description of the first injection with the characteristics of the Covid-19 vaccination ensuring safety for mother and child, conduction the second infections, the situation characteristic of the infection with COVID-19 during the unborn period. *Stage 2:* is evaluation of pregnant women's birth results. *Stage 3:* is evaluation of results after 6 months of pregnancy.

This pregnant woman needs to be thoroughly screened before the injection. We exploited pre-history, pathology history, and pregnancy allergy history, evaluation of temperature, blood pressure, heart rate before the Covid-19 vaccine.

The subjects were given pregnancy ultrasound before the vaccine injection, pregnancy heartbeat measurements before and after the injection, blood pressure and heart rate after the injection of COVID-19.

We continued with the second injection and waited for the pregnant woman's health after six months to find out the results of the 19 vaccine (after the date of the pregnancy) to evaluate the parameters of the study: allergies, blood pressure, heart rate, Covid-19 infection rate, hospitalization rate, premature birth rate, full-month birth rates, fertility rate, surgical rate, incidence of chest pain symptoms, difficulty breathing.

RESULT

In the study, 230 pregnant women were injected with Prizer's Covid-19 vaccine at Haiphong-Vinhbao the International General Hospital, the average age of the group was 29.11 ± 14.64 [18:41] years, the average pregnancy age was 22.97 ± 11.55 [13:34] weeks.

An anaphylactic history of 6/230 cases accounted for 2.61% having an allergic history, of which 2 women (female-28 year old-pregnant 23 weeks and female-25 year old-pregnant 16 weeks) had a history of allergies to weather, changing environment (counting 0.87%), history of each drug allergy there were 4 cases accounting for 1.74%, namely a 37 year-old pregnant woman 15 weeks of an allergy history to grade I medication unknown name allergy (counted 0.43%), a woman in 32 year-old with a pregnancy of 23 weeks who was allergy to paracetamol, with a degree of itching I (about 0.43%), a woman who was 15 weeks pregnant with an allergy to an anesthetic accounted for 0.43%, and one women in 25 year-old with a stage of 30 weeks who had an allergia to an analgesic of degree I accounted also for 0,43%.

There's no history of immunodeficiency. Current screening prior to vaccination consultation has not found any dysfunctional, cognitive dysbiosis, no other abnormalities (0%). The average tempature 36.91 $^{\circ}$ C, average systolic and diastolic blood pressure are 115.76 ± 58.17 mmHg and 72.98 ± 36.68 mmHg respectively, the average heart rate is 79.56 ± 39.98 [55:128], average breathing rate is 18.39/per minute [16:29], average SpO2 rate is 99.16%, and the average fetal heart rates is 146.43 ± 73.58 cycles per minute.

After the Covid-19 vaccine, give the pregnant woman a rest and follow up 30 minutes, no allergic reactions (0%), re-pregnancy ultrasound and fetal heart measurements have not detected any abnormalities, the average systolic and diastolic blood pressure of the mother is 116.18 ± 58.38 and 72.98 ± 36.67 mmHg respectively, the average heart rate is 78.03/per minute [58:122], the average SpO2 rate is 99.12%, and the average fetal heart rates is 146.65 ± 73.69 cycles per minute.

Some of the somewhat anxious cases, with a slightly nauseous dizziness, low blood pressure, low heart rate, were monitored and handled in a timely manner.

Following 6-12 months after the first injection of the Covid-19 vaccine, there is no specific health in these pregnant women, only a few cases (4 cases) sometimes appear mild allergic itching, self-exhausting or taking the medication immediately, exploitation appears favourable factors such as environmental changes, weather changes, eating protein-rich foods, etc.



Figure 1: Fetal ultrasound image after vaccine injection (A case of 28-year-old pregnant 18 weeks 5 days)

DISCUSION

Overall, the epidemic has affected the world, disrupting the supply chain of many of the world's commodities, stalling production and business; the response to demand in many countries for goods and services has declined and has led to global growth as well as the health and life of human beings worldwide.

Vietnam's economy is open to numerous international nations. China is the one that is closest to Vietnam geographically. It's also the world's first country where COVID-19 is spreading [2]. Thus, the epidemic will have a comprehensive impact on all sectors of Vietnam's economy, society, education and medicine. In addition, it also affects people's health, psychology, business, trade, and tourism...That has serious consequences that directly affect the people of Vietnam and the international community living in Vietnam.

During this initial stage, Vietnam faced significant challenges due to restricted vaccine supplies and challenging accessibility. Despite this, Vietnam has quickly taken very important and timely decisions to overcome the challenges. That's the Vaccine fund, the vaccine diplomacy with your countries on all the continents. And by October, July, 2021, a free nationwide vaccination campaign was officially launched, the largest in the history of vaccination in Vietnam. Finally, Vietnam has planned and prepared conditions for continues injection of adults (aged 18 and over 18 years) and then following the Covid-19 vaccine to children and pregnant women [10], [11], [12], [13], [14].

Adverse outcomes for infants, including 5/230 premature births (2.17%) may be a random rate in conventional physiology, while a number of studies such as Shimabukuro TT et al in the United States (2019) [15] horizontally show that the rate here is 9.5%, with no newborn deaths. Although there is no direct comparison data, as well as a calculated rate of adverse outcomes during pregnancy, it is completely similar to the rate in studies involving pregnant women conducted prior to the Covid-19 pandemic.

The results on the rate of premature pregnancy weeks showed that there were no babies (0%) in 22-28 weeks and in 28-32 weeks, the number of pre-born babies in 4/230 accounted for 1.74%, whereas there was 1 child in 32-35 weeks 0.43%, and three babies in 35-37 week account for 1.3%. There were no newborns weighing < 2500 g (0%) for the weight of the pre-natal child, two young borns with a weight of between 2500 and 3000 g accounted for 0.87%, and the number of premature survivors is four who make up 100 percent [16], [17].

An anaphylactic history of 6/230 cases accounted for 2.61% having an allergic history, of which 2 women (female 28-year-old pregnant 23 weeks and female 25-year-old pregnant 16 weeks) had a history of allergies to weather, changing environment (counting 0.87%); history of each drug allergy there were 4 cases accounting for 1.74%, namely a 37 year-old pregnant woman 15 weeks of an allergy history to grade I medication unknown name allergy (counted 0.43%), a woman in 32 year-old with a pregnancy of 23 weeks who was allergic to paracetamol, with a degree of itching I (about 0.43%), a woman who was 15 weeks pregnant with an allergy to an anesthetic accounted for 0.43%, and one woman in 25 year-old with a stage of 30 weeks who had an allergia to an analgesic of degree I accounted also for 0.43% [16], [17].

Global research indicated that pregnant women, non-pregnant women and other people have the same risk of developing Covid-19. However, pregnant women are very vulnerable to Covid-19 because they also have certain immunodeficiencies during pregnancy. This is the risk factor because the woman has to feed a fetus in the womb so the uterus of the pregnant woman will be bigger, push up the pulmonary muscle, push the volume of the lungs to reduce to prevent breathing so the oxygen needs of pregnant women higher than normal people during pregnancy.

Additionally, women who are pregnant have swelling, water retention, and inflammation of the upper respiratory mucosa, all of which increase their susceptibility to upper airway injuries. For this reason, when subjects are diagnosed with Covid-19, their risk is higher than ordinary. In addition, when a pregnant woman

has a background disease or conditions such as blood pressure, diabetes, cardiovascular disease, obesity, chronic lung disease, or over 35 years of pregnancy, it is likely to cause complications during pregnancies.

Therefore, if pregnant women are more likely to develop COVID-19, the risk of severe complications increases rapidly. Pregnant women infected with COVID-19 with signs of rapid transition will have to lie in recovery, respiratory intervention, ecmo... with high rates, possibly even maternal death, risk for the fetus. So, scientists and managers suggest that pregnancy care, preventing the risk of pregnant women from the COVID-19 pandemic is the Vaccine for Pregnant Women.

In the case of a pregnant woman infected with the COVID-19 virus, we need to ask the question of whether the COVID-19 virus is transmitted to the fetus of the virus is causing a serious disease to the mother and thus affects the fetus.

Studies around the world that took amniotic fluid samples of postpartum women, blood from the veins, the mother's throat, and the pathological anatomy of the placenta did not detect the SARS-CoV2 virus in it. That confirms the SARS-CoV2 virus doesn't enter the amniotic sac. In short, the SARS-CoV-2 virus doesn't pass through the placenta, so if you're infected, the virus won't get into your fetus.

Physiologically, during the first 12 weeks, the mother-to-child cycle is low, so the chance of transmission of SARS-CoV-2 virus from mothers to child is very low, however, if the infection situation occurs at this stage, the risk for the fetus is very high, potentially causing abnormality in pregnancy. Because this is the phase of the formation and development of the vital organs of the fetus. What about the next stage (13 weeks or so)? Many classical studies of medicine suggest that the possibility of transmission between mother and child is strong, but the risk of fetal deformity is low because the vital organs of the fetus are already formed.

Another important benefit is that when injected into a pregnant woman, it will produce antibodies, which will pass through the fetus to protect the fetus as well as protect the baby in the first few months after birth from the environmental risk factors of infection.

IV. CONCLUSION

The results of 230 pregnancy on the rate of premature pregnancy weeks showed that the number of pre-born babies accounted for 1.74%, there were no babies (0%) in 22-28 weeks and in 28-32 weeks, child in 32-35 weeks 0.43%, and babies in 35-37 week account for 1.3%. There were no newborns weighing < 2500 g (0%) for the weight of the pre-natal child, young borns with a weight of between 2500 and 3000 g accounted for 0.87%, and babies with a mass of > 3000 g and above accounted also for 0.87%. An anaphylactic history accounted for 2.61% having an allergic history, of which 0.87% women had a history of allergies to weather, changing environment; history of each drug allergy accounting for 1.74%, with an allergia to an analgesic of degree I (0.43%)

It's reasonable, safe, scientifically based, and safe for both mother and child to inject COVID-19 into pregnant women over 13 weeks. This will create a green zone to protect an important population, in line with the COVID-19 prevention trend in the world.

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