

Sexuality and pregnancy during the COVID-19 pandemic

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SUMMARY

Infectious diseases are nowadays a huge challenge for global medicine. It applies especially to novel, not yet known pathogens, which have an ability to spread very quickly. COVID-19 announced as a pandemic in March 2020 caused an increase in level of anxiety and stress in society. There are evidences of negative influence of stress on sexual functioning and satisfaction. Pregnant women represent a specific group in any infectious disease because of their altered physiology and susceptibility to infections.

Key words: Coronavirus disease (COVID-19); SARS-CoV-2 pandemic; sexuality; pregnancy

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INTRODUCTION

Sex life is one of the most important part of life that determines women's well-being. Many factors have an impact on maintaining satisfying sexual activity. Among its benefits listed are experiencing pleasure, relieving sexual tension and expressing emotional closeness. One of the factors that have negative impact on satisfaction in that part of human's life is stress, which accompanies many women. It has an even bigger influence when intercourse is connected with planning a pregnancy [1].

In the time of COVID-19 pandemic social distancing, loss of a permanent source of income, being unable to meet family and an apprehension about the health and life caused an increase in stress level among women. That is why every doctor should ask about those aspects of life during an examination to detect anomalies in woman's mental state.

COVID-19

Infectious diseases are nowadays a huge challenge for worlds medicine. Additionally, it may often spread very quickly, what worsens epidemiological situation. It has a big influence on human mental health and spreading the social panic. Especially pathogens that have not been known so far are the greatest challenge. First cases of SARS-CoV-2 were reported in December 2019 in Wuhan, Hubei province, China. The quick increase in new cases resulted in spreading COVID-19 also in Europe, thereupon social quarantine was implemented in almost every European country.

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is one of the pathogens in Coronaviridae family. Analysis of the viral genome revealed a big similarity, ~79% to SARS-CoV which was the causative factor of viral outbreak SARS in 2002, and ~50% to MERS-CoV which was the cause of outbreak of

Middle East respiratory syndrome in 2012. SARS-CoV-2 is a causative factor of Coronavirus Disease 2019 (COVID-19). It is now confirmed that SARS-CoV-2, similar to SARS-CoV, has its S protein, by which it binds to Angiotensin-converting enzyme 2 (ACE2) receptor on human alveolar epithelial cells. S protein of SARS-CoV-2 binds ACE2 with higher affinity than SARS-CoV S protein, which might be a cause of the greater transmission comparing to SARS outbreak in 2002 [2, 3].

SARS-CoV-2 virus is a causative factor of COVID-19 disease. Among its clinical manifestations mentioned are fever, dry cough, breathing difficulties, fatigue, less frequent myalgia, sore throat and loss of taste and smell. Disease might be completely asymptomatic or oligosymptomatic. Patients with COVID-19 might infect even 24-48 hours before the onset of symptoms, and the mean incubation period claimed by the World Health Organization is about 5-6 days. This results in spreading social panic because of being unsure who is infected. Additionally, it is not yet known what are the long-term complications of COVID-19, however there are more and more reports about the permanent changes in lungs. Moreover, social quarantine, sudden loss of jobs and incomes and impossible meetings with loved ones have a big impact on deterioration of mental health and stress level among women [4].

Researches on the use of different groups of medicines in the case of COVID-19 are being conducted. Among some potential antiviral drugs mentioned are: favipiravir, remdesivir, chloroquine/hydroxychloroquine, lopinavir or pegylated interferon. None of them has been proven effective, which also affects the spread of anxiety among people, especially women [5, 6].

FEMALE SEXUALITY DURING COVID-19 PANDEMIC

Sexuality creates a core part of individual identity of every human. It is a very important aspect of women's life, which has a huge impact on mental health and overall functioning. There are many benefits of satisfying sexual life. Among those are experiencing pleasure, strengthening of relationship with a partner or expressing emotions. Notwithstanding, there are different factors that have a huge impact on sexual functioning and are divided into internal and external, for instance stressful situations [7, 8].

It is not surprising that people during COVID-19 pandemic might experience increased stress levels and anxiety because of the health and life of relatives. Other emotions that may accompany in this situation are frustration, anger or weariness. There are evidences of a negative effect of stress on sexual functioning, among others, because of the hormonal changes in stress and lack of time and desire for sex. Moreover, women could feel anxious that SARS-CoV-2 virus transmission will occur during sexual intercourse and in that way they or their partners will become infected. There are many studies which analyze the effect of disasters on female sexuality. Liu et al. examined the impact of the Wenchuan earthquake in China in 2008 on reproductive tract infection, menstruation disorders, satisfaction of sexual life and desire of parenthood. After the volcano eruption the number of infections increased from 26,5% to 50% and oligomenorrhea from 22,4% to 51,8%. Furthermore, the satisfaction from intercourse decreased among women. Almost 90% of them declared a lack of desire for parenthood and 67,1% said that they would request pregnancy termination in case they became pregnant [9, 10].

One of the most frequently used scale to measure women's sexual functioning is FSFI (*Female Sexual Function Index*) questionnaire, which contains of 19 questions about 6 different aspects of sexual functioning. Those are: desire, arousal, lubrication, orgasm, satisfaction and pain during the last 4 weeks. Conducting the survey twice, before and after the action of some factor, gives us the possibility to check its impact on sexual functioning [11].

Yuksel and Ozgor conducted research about the impact of COVID-19 on satisfaction in sexual life among women in Turkey in 2020. They have collected *Female Sexual Function Index* (FSFI) surveys twice, before and during the pandemic. Their study shows that women taking part in research achieved lower overall score in FSFI taken for a second time, which means that their satisfaction in sexual aspects has been reduced. Despite that, number of intercourse has increased during quarantine in this group of women. Moreover, researchers noted that COVID-19 had influence on decreased desire of pregnancy about 27,6 percentage points and increased menstrual disorders from 12,1% to 27,6% [12].

An Italian study was conducted likewise Turkish one, but FSFI was not the only used scale. Researchers rated patients on a Female

Sexual Distress Scale (FSDS), which is female sexual dissatisfaction scale. Women who lived with their partners were included, so sexuality was not affected by isolation. The results explicitly showed that FSFI score decreased and FSDS score increased during COVID-19 pandemic. Moreover, researchers noticed a decrease in the number of sexual intercourse in the study group. In order to assess the quality of women's life, the Short Form Survey (SF-36) was also conducted twice and the results clearly indicated its deterioration during the pandemic. Foregoing studies explicitly shows that worldwide SARS-CoV-2 pandemic has enormous, negative impact on female sexuality. Women are not only less satisfied with their intercourse but also have reduced desire of pregnancy. Decreased satisfaction from sexual life and additional stress caused by pandemic may lead to deterioration of partners relations, mood swings or even depression development, so it is so important for the doctor to pay attention to these aspects and if necessary suggest a sex therapist or psychologist visit [9].

ARE THERE NEW INFECTION WAYS OF SARS-CoV-2 VIRUS?

The SARS-CoV-2 virus can be transmitted between humans by direct transmission, cough, sneeze, inhalation and contact with oral, nasal and eye mucous membranes. Thus far, it has not been reported to be transmitted by the sexual route, however a series of studies showed that possibility. This hypothesis is based on evidence that indicates a likely fecal-oral transmission, but the exact mechanisms are still unknown. The angiotensin-converting enzyme II (ACE 2) seems to be used by a virus to penetrate the organism cells. This enzyme is abundantly present in the glandular cells of the rectal epithelium, where the viral RNA was identified. So if the route of transmission of SARS-CoV-2 were both saliva and faeces, then a likely new route of infection would arise: the fecal-oral. It is particularly important, because now it is assumed that patient is cured if he had at least two upper respiratory tract samples negative for virus, collected at 24-hour intervals. However, it is an possibility that a patient cured according to above assumptions can still shedding the virus through the gastrointestinal tract and be an epidemiological threat. According to this, gynaecologists should ask their patients about their sexual practices [13, 14].

Some patients infected with SARS-CoV-2 had, except for respiratory tract damage, also kidney damage, which encouraged researchers to determine the impact of the virus on the genitourinary system. Results indicated that angiotensin-converting enzyme II (ACE2) was highly expressed in renal tubular cells and also in Leydig, testis, endometrium and ovaries cells, so the virus could penetrate them. To date, there is no evidence of the presence of virus in semen, however more studies are needed to determine if sexual contact is one of the SARS-CoV-2 transmission route. According to that, doctors should encourage their patients to use condoms during sexual intercourse. Due to the possibility of penetrating testis cells by the virus, an additional problem arises, which is the deterioration of sperm quality. This could become another challenge for fertility clinics. Although a fertility disorder complication has not yet been confirmed, the American Society of Reproductive Medicine and the Society for Assisted Reproductive Technology have already issued warnings to this extent. More studies are needed to determine the routes of transmission of the SARS-CoV-2 virus, because only with this knowledge the virus spreading can be effectively controlled. Moreover, the information about impact of virus on urogenital system and possible complication as fertility disorders are disturbing. Therefore, it is necessary to continue research in this area [15, 16, 17].

THE OUTCOMES OF SARS-CoV-2 INFECTION IN PREGNANCY

Hitherto, results of researches on infected women give hope that COVID-19 is to a lesser extent dangerous for mother compared to MERS and SARS. The gravid mortality rate is estimated at 0%, whereas as regards MERS and SERS were sequentially 18% and 25%. These patients (MERS/SARS) needed more frequently mechanical ventilation compared to patients with COVID-19. The most common complications in pregnancy are preterm birth (39%), intrauterine growth restriction (IUGR; 10%) and even miscarriage (2%) [18].

There were no reports of increased susceptibility to SARS-CoV-2 in pregnant women, even though similar studies conducted on other severe coronavirus infections (SARS or MERS) did not show that. However, all pregnant women are more prone to respiratory tract infections. It is related to the fact, that they are at an immunosuppressive state, and due to

physiological changes during pregnancy (e.g. diaphragm elevation, increased oxygen consumption, oedema of respiratory tract mucosa), which may lead to decreased hypoxia tolerance by pregnant women [19, 20].

Principles regarding management of COVID-19 during pregnancy include early isolation, testing for SARS-CoV-2 and coinfection, alternatively oxygen therapy, empiric antibiotics (there is a risk of secondary bacterial infection) and early mechanical ventilation (in case of appearance of progressive respiratory failure). It is crucial to each patient has individualized delivery plan, because of high risk of premature birth. Furthermore, it is essential that cardiotocography (CTG) is done, not only due to uterine contraction monitoring but also because of during similar infections changes in fetal heart rate pattern spell maternal respiratory deterioration. Decisions about the use of corticosteroids in order that fetal lung maturity increased should be made in consultation with infectious disease specialists and neonatologist [19].

Despite information appearing on media about neonates infected SARS-CoV-2, there are no researches corroborating prospect of vertical transmission. Moreover, studies performed on pregnant women infected with other coronavirus did not demonstrate that. Chen et al. and Zhu et al. examined 19 infants in total, whose mothers have been infected in their third trimester. In none of these cases it has been demonstrated by vertical transmission. Interestingly, in the report by Zhu et al. several neonates had shortness of breath, cyanosis, gastric bleeding and one infant died of multiple organ failure and disseminated intravascular coagulation (DIC). However, throat swab tests of all neonates were negative for SARS-CoV-2 [19,21].

Micelli et al. evaluated the impact of changes in lifestyle connected with COVID-19 on the desire for parenthood in Italian people of reproductive age. This study revealed that a large amount (37.3%) of couples who were planning to have a child before pandemic, decided to interrupt the pursuit during that time. The main reason of this decision was lack of sufficient knowledge about impact of SARS-CoV-2 on pregnancy. The available data are limited and studies involve only women infected in their third trimester. Couples were terrified of their economic situation in the future. Interestingly, up to 11,5% of couple from among who did not intend to conceive, made

a decision of start trying for a baby. The main reasons of this intention in most cases were desire to change and the need for positivity [22].

Moreover, there are evidence that maternal fever in early pregnancy is associated with increased risk of inattention problems and attention-deficit hyperactivity disorder (ADHD) in their children. Research of Gustavson et al. revealed that children of mothers who suffered from fever two times or more in the first trimester, had more than doubled odds of suffer from ADHD compared to the group of unexposed children. One of the main symptoms of COVID-19 is high temperature, however there is no studies conducted of women, whose have been infected in their first trimester [23].

CONCLUSION

COVID-19 pandemic has a significant impact on every woman's life, including decreasing satisfaction from sexual life. Pregnant women are a special group at this time, because they are especially scared about their own and unborn child's health and life. However, until now it has not been confirmed that virus can be transmitted from mother to fetus. Also, further studies are needed to explicitly determine whether sexual contact is one of the SARS-CoV-2 transmission route.

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