





potential effects of covid-19 on fertility

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Infertility fellowship

the SARS-CoV-2 employs the angiotensin converting enzyme 2 (ACE2) receptor in the renin angiotensin system (RAS) for viral entry.

the ACE2 receptor is present in the reproductive system

reports of multi-organ involvement have led to uncertainty regarding COVID-19's effects on the reproductive system and fertility.

SARS-COV-2 found in blood, stools, urine, saliva



infection with SARS-COV-2 causes reduced ACE2 activity and down regulation. this increases circulating Ang II in patients with SARS-COV-2 infection.

Ang II:

Pro inflammatory

Pro fibrotic

Pro apoptotic

EXPLAIN the inflammatory and fibrotic effects seen in covid 19



Influence of coronavirus on female reproductive system
Ovarian and follicular development

angiotensin II, found predominantly in granulosa cells, regulates follicular development, oocyte maturation, and ovulation

Oxidative stress is also increased by ang II as it exerts pro-inflammatory effects. this may be detrimental to reproductive ability.

Further investigations



The RAS is present in the uterus, mostly confined to the epithelial and stromal cells of the endometrium.

endometrium is more susceptible to SARS-COV-2 during the secretory phase.

Disruption of Ang II levels has been found to be related to dysfunctional uterine bleeding associated with hyperplastic endometrium.

In the fallopian tubes, Ang II has been found in the endothelium and stroma.

Stimulates the ciliary beat frequency in epithelial cells.

Placenta and pregnancy

vertical transmission, it still cannot be ruled out

There is insufficient DATA about Transplacental COVID-19 infection

POSSIBLE CONTAMINATION SOURCES

maternal blood

vaginal secretions

amniotic fluid

maternal decidua

umbilical cord

RAS alterations cause Abnormal Uteroplacental Perfusion

Miscarriage ?

Preeclampsia ?

FURTHER RESEARCH

Influence of coronavirus on male reproductive system

the SARA-CoV-2 employs the angiotensin converting enzyme 2 : down regulation

impaired spermatogenesis → male infertility



In male patients; fever *transiently* impairs spermatogenesis and sperm parameters

(*count, motility and DNA integrity*) for **50-70 days**.

Influence of coronavirus on male reproductive system

Presence of SARA-CoV-2 RNA in SEMEN Not identified (CONTROVERSIAL)

SARA-CoV-2 Not identified in the testis

*BUT immune mediated response
(IgG) → TESTICULAR DAMAGE*

ORCHITIS LIKE SYMPTOMS:

Focal testicular atrophy
Germ cell destruction
Decrease spermatozoa
Inflammatory cell infiltration



INFERTILITY

Cytokinin Release

auto immune response: ANTISPERM ANTIBODIES
ADVERSE REPRODUCTIVE EFFECTS

There is concern about sexual transmission

Recommended Barrier method until more evidence is available



HORMONAL CHANGE

Significant increase in:

LH
AND
PROLACTIN

Due to decrease in testosterone production

CLINICAL HYPOGONADISM

Fertility patients under COVID-19: attitudes, perceptions and psychological reactions

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Guidelines on ART

infertility is a time-sensitive disease. specific protocols local guidelines individualised approach
COVID19 testing valid for 72hours.

Infection control in assisted reproductive technology centers and laboratories
Strict protective protocols should be implemented in specimen handling to avoid spillage/exposure
Identification of '*time-sensitive*' patients for ART

male patients who undergo medical treatment to improve sperm quality and quantity, their '*fertility window*' is short and transient.

fertility preservation in autoimmune diseases, cancer
(during the '*remission window*' after temporary discontinuation of therapy for 3 to 4 months)



Considerations

lack of data and
knowledge about SARS-COV-2

discuss the uncertainty
of COVID-19's effects on fertility and ART with patients

QUALITY AND QUANTITY OF OOCYTES AFTER RECOVERY

INFORMED CONSENT

ALL THE RISKS

The unknown effects of COVID19 on pregnancy outcomes must also be discussed



shared decisions

allows them to decide whether to resume or postpone treatment

Individualisation of patients' ART treatment is the key to safe practice during this ongoing pandemic

until now : women's fertility is unaffected by COVID vaccine

References:

[1. Up-to-date](#)

[2. WY Lee, Alex Mok, Jacqueline PW Chung](#) Potential effects of COVID-19 on reproductive systems and fertility; assisted reproductive technology guidelines and considerations
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[3. Denis A.Vaughan](#) Infertility remains a top stressor despite the COVID-19 pandemic
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