Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Can fever alone alter sperm parameters after severe acute respiratory syndrome coronavirus 2 infection?

Despite the overwhelming amount of data published regarding coronavirus disease 2019 (COVID-19), we have discovered only the tip of the iceberg in understanding the multiple sequelae of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. This is especially true for male reproductive health and fertility, in which SARS-CoV-2 infection may not only have far-reaching consequences beyond just the affected individual and couple but also impact future offspring. Many studies have supported the absence of SARS-CoV-2 in the semen shortly after COVID-19; however, COVID-19 may lead to a temporary but profound impact on sperm quality (1).

In the current study, Donders et al. (2) present their findings regarding the detection of SARS-CoV-2 in the semen and the impact of SARS-CoV-2 infection on bulk semen parameters, sperm DNA fragmentation, and antisperm antibodies. In 120 Belgian men with a history of COVID-19, SARS-CoV-2 RNA was unable to be identified in the semen using a validated polymerase chain reaction test. The investigators also found a profound impact on sperm count, concentration, and motility and increased sperm DNA fragmentation in the group of individuals who provided a sample for semen analysis shortly after SARS-CoV-2 infection (<30 days) compared with those who provided a sample >32 days after infection.

One of the most interesting findings in this study was that fever and other systemic symptoms of COVID-19 did not correlate with abnormalities in semen parameters. Febrile illness itself has been associated with a negative impact on spermatogenesis and hypothesized as the mechanism for impaired semen parameters in men after COVID-19 (3). However, this study suggests that an alternative mechanism, other than a febrile illness alone, may contribute to the acute changes in semen parameters that may be found after COVID-19. The investigators found that higher titers of anti-spike and antisperm antibodies (immunoglobulin A and immunoglobulin G) were associated with lower sperm motility and counts. Testicular immune privilege normally protects testicular germ cells from the host inflammatory response during systemic infection. However, these findings may still suggest that at least during the acute phase of COVID-19, SARS-CoV-2 may cross the blood–testis barrier and elicit an immune response within the testis.

There are several important limitations of the study. This study did not have longitudinal, repeated measures for bulk semen parameters, although the entire cohort was prospectively enrolled. Unfortunately, this study also did not have a baseline semen analysis before SARS-CoV-2 infection for comparison.

Historically, sperm was believed to simply be a messenger of the paternal DNA to the egg without a significant contribution to embryonic development. More recently, the epigenetic modifications during spermatogenesis in response to specific preconception exposures such as smoking have been associated with various abnormalities ranging from altered sperm motility to embryo lethality (4, 5). Given the global burden of the COVID-19 pandemic, there is tremendous interest in understanding the potential health disparities in offspring of men with a history of COVID-19.

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