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## Changes of sperm parameters in men recovered from COVID-19: A comparison between pre-COVID and post-COVID period

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Yıldırım O.<sup>1</sup>, Gultekin M.H.<sup>1</sup>, Aygun G.<sup>2</sup>, Akkus E.<sup>1</sup>, Ozkara H.<sup>1</sup><sup>1</sup>Cerrahpasa Medical Faculty, Dept. of Urology, Istanbul, Turkey, <sup>2</sup>Cerrahpasa Medical Faculty, Dept. of Clinical Microbiology, Istanbul, Turkey

**Introduction & Objectives:** The Coronavirus disease 2019 (COVID-19), which is cause of a global pandemic, is thought to damage the male reproductive system via both direct and indirect pathways, according to several hypotheses. However, there are very limited studies in the literature examining the changes in male sperm parameters before and after COVID-19. The aim of this study is to evaluate the effect of COVID-19 on male reproductive health.

**Materials & Methods:** The men included in the male sexual health cohort of our clinic within the last 6 months were screened, retrospectively. 25 individuals with a history of COVID-19 following the first clinical evaluation who did not have active symptoms at the present were invited to be examined in the 3rd month after COVID-19. The spermiogram parameters of the subjects in the last 6 months before COVID-19 and in the 3rd month after COVID-19 were compared. In addition, SARS CoV-2 PCR analysis was performed on semen samples of all participants.

**Results:** The study group had a mean age of 34.8±7.7, a mean BMI of 26.82±5.3, a Charlson comorbidity index score of 0.16±0.37, and a paternity ratio of 8/25 (32%). COVID-19 severity was mild in 19/25 (76%) of the participants and moderate in 6/25 (24%), with a mean COVID-19 duration of 9.2±5.42 days. The SARS CoV-2 PCR test was negative in the semen samples of all subjects. Although the sperm morphology did not alter, there was a statistically significant decrease in semen volume and sperm concentration, as well as progressive and total sperm motility in the post-COVID period compared to the pre-COVID period of the same subject (p<0.05; p<0.05; p<0.01; p<0.01, respectively).

Characteristics	Pre-COVID period	Post-COVID period	p-Value
Abstinence before spermiogram, day (mean ± sd)	3,48 ± 0,96	3,16 ± 0,62	0,107
Semen volume (mL) (mean ± sd)	4,31 ± 1,74	3,7 ± 1,72	<u>0,04</u>
Sperm concentration (10 <sup>6</sup> /mL) (mean ± sd)	27,84 ± 20,92	20 ± 14,94	<u>0,029</u>
<b>Sperm Motility</b>			
Progressive motility (A+B) (%) (mean ± sd)	48,23 ± 14,45	40,95 ± 20,51	<u>0,007</u>
Total motility (A+B+C) (%) (mean ± sd)	51,36 ± 13,63	44,32 ± 20,1	<u>0,006</u>
<b>Sperm Morphology</b>			1
Teratozoospermia n(%)	14 (63,64)	15 (68,18)	
Normal n(%)	8 (36,36)	7 (31,82)	

**Conclusions:** In males who recovered from COVID-19, no SARS CoV-2 positive was seen in the postcovid period semen, and all spermiogram parameters except sperm morphology were impaired. Long-term cohort studies in larger populations are required to determine whether this deterioration is permanent.