



Letter

Covid-19 and impairment of spermatogenesis: What if fever was the only cause?

M. Bendayan^{a,b,c}, F. Boitrelle^{a,b,c,*}^a Service de Biologie de la Reproduction-Préservation de la Fertilité-Andrologie, Hôpital de Poissy Saint Germain en Laye, 78300 Poissy, France^b Université Paris-Saclay, INRAE, UVSQ, BREED, 78350, Jouy-en-Josas, France^c Ecole Nationale Vétérinaire d'Alfort, BREED, 94700, Maisons-Alfort, France

ARTICLE INFO

Article history:

Received 7 November 2020

Accepted 17 November 2020

Available online 29 November 2020

Keywords:

Covid-19

SARS-CoV-2

Spermatogenesis

Semen

Fever

Testis

Sir,—We would like to congratulate you for the original research recently published in EclinicalMedicine entitled 'Impaired spermatogenesis in COVID-19 patients' [1]. The authors found an increased concentration of CD3+ and CD68+ cells and apoptotic cells in the testicles/epidymes of men who died from Covid-19. In some patients cured of COVID-19, they noted oligozoospermia, leukocytospermia and increased seminal levels of IL-6 and MCP-1. All of these signs would be, for the authors, due to an autoimmune orchitis.

First, the presence of CD3+ and CD68+ cells is physiological in epididymides [2]; they play a role in physiological sperm phagocytosis. Fever is a symptom observed in more than 80% of patients infected with COVID-19. This fever, even of limited duration, can, on its own, induce oligozoospermia and the appearance of apoptotic cells [3]. Thus, COVID-19-induced fever can alter semen parameters even in the absence of testicular immune response. The return to basal state of semen parameters may take up to three months [4].

In addition, leukocytospermia (also called pyospermia) is defined by the WHO as the presence of $>1.10^6$ granulocytes (not lymphocytes) /ml. This leukocytospermia is traditionally accompanied by an increase in IL-6 and MCP-1 [5]. Leukocytospermia can be a sign of a bacterial or viral infection, systemic inflammation or simply an

infrequent ejaculation. Leukocytospermia is not evidence of inflammation of the testicles.

In conclusion, the question of SARS-CoV-2 tropism for the testicles remains unresolved. Moreover, the ability of this novel coronavirus to induce an autoimmune orchitis is not proven to date.

Declaration of Interests

None.

Funding

None.

Availability of data and material (data transparency)

Not applicable.

Authors' contributions

Both authors help to write this manuscript.

References

- [1] Li H, Xiao X, Zhang J, Zafar MI, Wu C, Long Y, Lu W, Pan F, Meng T, Zhao K, Zhou L, Shen S, Liu L, Liu Q, Xiong C. Impaired spermatogenesis in COVID-19 patients. EclinicalMedicine 2020 in press. doi: [10.1016/j.eclinm.2020.100604](https://doi.org/10.1016/j.eclinm.2020.100604).

DOI of original article: <http://dx.doi.org/10.1016/j.eclinm.2020.100671>, <http://dx.doi.org/10.1016/j.eclinm.2020.100604>.

* Corresponding author at: Université Paris-Saclay, INRAE, UVSQ, BREED, 78350, Jouy-en-Josas, France.

E-mail address: florenceboitrelle@yahoo.fr (F. Boitrelle).

<https://doi.org/10.1016/j.eclinm.2020.100670>

2589-5370/© 2020 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

- [2] Marchlewicz M. Localization of immunocompetent cells in the human epididymis. *Folia Histochem Cytobiol* 2001;39(2):173–4.
- [3] Sergerie M, Miesusset R, Croute F, Daudin M, Bujan L. High risk of temporary alteration of semen parameters after recent acute febrile illness. *Fertil Steril* 2007;88(4):970. doi: [10.1016/j.fertnstert.2006.12.045](https://doi.org/10.1016/j.fertnstert.2006.12.045).
- [4] Carlsen E, Andersson AM, Petersen JH, Skakkebaek NE. (2003). History of febrile illness and variation in semen quality. *Human Reprod* 2003;18(10):2089–92. doi: [10.1093/humrep/deg412](https://doi.org/10.1093/humrep/deg412).
- [5] Shimoya K, Matsuzaki N, Ida N, Okada T, Taniguchi T, Sawai K, Itoh S, Ohashi K, Saji F, Tanizawa O. Detection of monocyte chemotactic and activating factor (MCAF) and interleukin (IL)-6 in human seminal plasma and effect of leukospermia on these cytokine levels. *Am J Reprod Immunol* 1995;34(5):311–6. doi: [10.1111/j.1600-0897.1995.tb00957.x](https://doi.org/10.1111/j.1600-0897.1995.tb00957.x).