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v.2.0

Bo Hembæk Svensson,
Toxoplasma Research
bohembraeksvensson@gmail.com

To: Sundhedsministeriet, Sundhedsstyrelsen and Statens Serum Institut
cc: Workinggroup for Tg (FVST)
cc: **Whom it may concern.**

CALL TO ACTION.

Highly probable that Covid-19 provokes the onset of acute toxoplasmosis. Pathways and further overlap elucidated.

This document is a supplement to our previous documents on “Covid/Toxoplasma correlations” of March 13th and April 20th. Both documents can be found on the homepage of the Parliament of Denmark as exhibit 333 - [here](#). **Please refer to these for a comprehensive list of overlaps between Toxoplasma and Covid-19.**

For further information on Toxoplasma, please see [this](#) overview article.

Covid-19 keeps surprising as the Coronavirus family usually is related to “common cold”. However Covid-19 displays a set of completely new symptoms for this type of virus and its general pathology;

“..a clear picture is elusive, as the **virus acts like no pathogen humanity has ever seen**”
([Science](#), April 2020)

There is an almost perfect overlap between the symptoms presented in Covid and in acute toxoplasmosis. This overlap extends to outcomes, suggested treatments, and pathways for activation of acute toxoplasmosis. This could explain the “anomalies” of Covid-19.

Toxoplasma is – by far – the most prevalent infection among humans, and its distribution and proliferation are clearly mirrored in Covid-19 cases, pathology and fatalities.

	Covid-19
Asymptomatic	Same as toxoplasmosis
Light symptoms	Same as toxoplasmosis
Severe symptoms	Same as toxoplasmosis
Treatments	All suggested Covid-19 treatments has effects on toxoplasmosis
Pathways/triggers (ie. can Covid-19 trigger acute toxoplasmosis?)	Yes - Covid can trigger toxoplasmosis

Several billion people carry the Toxoplasma parasite in their brains, hearts, kidneys, tissue, etc. Toxoplasma is an important factor in morbidity:

“All 72 lung cancer patients were infected with T.gondii (prevalence 100%). Of these, 95.8% of patients showed evidence of active parasite stages. Infection prevalence in the controls (10%) was significantly lower.”

Possible pathway for Covid-19 activation of acute toxoplasmosis (i.e provoked egress)

“Covid-19 seems to create a high concentration of Ca²⁺, which is the trigger for synchronous egress of Toxoplasma tachyzoites which leads to acute toxoplasmosis.”

1. Ca²⁺ pathway for Covid-19 activation of acute toxoplasmosis

- a. Covid-19: Lysosomal and plasma membrane TRPM2, **cause Ca²⁺ influx across the plasma membrane** and release of lysosomal Ca²⁺, **providing high concentration of Ca²⁺** in the cytosol. The overload of cytosolic Ca²⁺ initiates apoptosis and probably necrosis”
- b. Toxoplasma: “Egress can be artificially induced by Ca²⁺ ionophores” and **“Synchronous egress can be triggered by Ca²⁺”**

(Please note that Hydroxychloroquine slows Ca²⁺, hence slows down the development of acute toxoplasmosis: “treatment with hydroxychloroquine is associated with a dose-dependent downregulation of the co-stimulatory molecule CD154 on CD4+ T cells, which is accompanied by a decrease in intracellular Ca²⁺ mobilization “)

Examples of further indications on the correlation between Covid-19 and Toxoplasma keeps emerging:

2. Kawasaki-disease among children

- a. Covid-19: “New York warns of children's illness linked to Covid-19 after three deaths”
- b. Toxoplasma: “Juvenile polyarteritis nodosa associated with **toxoplasmosis presenting as Kawasaki disease.**”

3. Overrepresentation of patients that are obese

- a. Covid-19: “COVID-19 can cause more severe symptoms and complications in some people living with obesity (WHO)”
- b. Toxoplasma: **“Toxoplasmosis is associated with obesity** by alteration of inflammatory fat distribution as organisms alter and reside in fatty tissues “

4. Endothelial disease

- a. Covid-19: “Severe COVID-19 infection associated with endothelial activation” and “The symptoms most commonly reported by patients affected by coronavirus disease 2019 (COVID-19) include cough, fever, and shortness of breath. However, other major events usually observed in COVID-19 patients (e.g. high blood pressure, thrombosis, pulmonary embolism) seem to suggest that the virus is targeting the endothelium, one of the largest organs in the human body.”

- b. Toxoplasma: “Acute toxoplasmosis is associated with significant oxidative stress and pro-inflammatory changes which contribute to development of **endothelial dysfunction.**” and “Infection with Toxoplasma gondii leads to activation of T-helper cells (Th-1 and Th-2) which are involved in the synthesis and release of different cytokines which may lead to endothelial dysfunction.”

5. Olfactory dysfunction/anosmia

- a. Covid-19: “..anosmia, with or without dysgeusia, are symptoms frequently associated with severe Covid-19..”
- b. Toxoplasma: “..chronic latent neuroinflammation caused by the parasite may be responsible for the development of several neurodegenerative diseases **manifesting with the loss of smell.** Studies (..) revealed cysts in various regions of the brain, including **olfactory bulb.**”

6. Lowered levels of estrogen/estrogen therapy

- a. Covid-19: “Estrogen therapy could be used to treat male coronavirus patients”
- b. Toxoplasma: “..results also showed that the acute toxoplasmosis always related with low concentration of both progesterone and estrogen”

7. Vitamin D deficiency

- a. Covid-19: “there is a potential association between mean levels of vitamin D in various countries with cases and mortality caused by COVID-19”
- b. Toxoplasma: “..the difference in prevalence of T. gondii infection in two groups of vitamin D sufficient and deficient individuals was noticeable and **Toxoplasma infection was associated with vitamin D deficiency.**”

8. Psychosis & skizophrenia

- a. Covid-19: “...researchers are investigating a potential secondary, long-term impact of COVID-19 exposure — greater susceptibility to psychosis” and “COVID-19 outbreak increased risk of schizophrenia in aged adults”
- b. Toxoplasma: “If there is one thing that Toxoplasma correlates to, it is schizophrenia and psychosis”

It is so that virtually every time we see something “novel” in relation to Covid-19, it is mirrored in acute toxoplasmosis.

There is no protocol in place that tests patients and/or deceased for the presence of Toxoplasma tachyzoites/acute toxoplasmosis. This means that the above is not yet being investigated/accepted as part of Covid-19 pathology.

All quotes above are from peer-reviewed material. We will be happy to share this with anyone willing to assist in the elucidation of the above correlations.