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Possible Treatments for COVID Vaccine Induced Prion Disease

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ABSTRACT

Many COVID-19 "vaccines" are considered bioweapons and are known to have the ability to cause prion disease. Prion inducing agents have been researched extensively as potential bioweapons and the field of prion research is infiltrated by clandestine bioweapons operatives. In order for prion disease inducers to be an ideal bioweapon the target population needs to believe there is no cure while the attacker knows of an treatment/ antidote to save its own population if there is "blowback", where the attackers' population gets exposed to the bioweapon. The narrative in the prion field is that there is no effective treatment for prion disease. However false narratives are the norm in the current COVID-19 related bioweapons attack. The author performed a literature search to determine if any effective treatments to COVID "vaccine" induced prion disease may exist but hidden from the public. The author believes several such candidates may exist and their use for treating COVID "vaccine" induced prion disease needs to be explored. These agents include doxycycline and related minocycline, quinacrine and ivermectin. The nature of this paper is speculative in large part because of the use of bioweapons in the current civil war. It is of no surprise to many that people working in government, medicine, science, and the pharmaceutical industry are deliberately trying to cause harm while pretending to help humanity. One only has to read the long list of influential people associated with Mossad operative Jeffrey Epstein to realize the extent of evil in today's world.

Keywords

COVID, Bioweapons, Vaccines, Prion Disease.

Introduction

Many so called COVID "vaccines" are believed to be bioweapons [1]. The late noble laureate Luc Montagnier has been credited with calling the "vaccines" poisons. While COVID "vaccines" are known to cause many ill effects the most concerning effects relate to their ability to induce abnormal folding of self-proteins leading to central nervous system degeneration from prion and prion like diseases [1]. COVID "vaccines" have also been implicated in causing related protein diseases, amyloid diseases, resulting from protein aggregation [2].

There is some disagreement on which diseases are actually prion diseases and which are prion like. Some experts refer to prion disease narrowly and include only transmissible spongiform encephalopathies (TSE) disease related to Prion Scrapie (PrPsc), a mutation of a brain tissue protein called Normal Cellular Prion (PrPc) [3]. Diseases related to this protein include Kuru, Gerstmann-Straussler-Scheinker syndrome (SSG), Creutzfeldt-Jakob disease (CJD) and Fatal Familial Insomnia. Others refer to prion disease more broadly to include diseases caused by several different abnormally folded proteins. This broader definition can include several oligomeropathies including Alzheimer's disease, synucleinopathies (Parkinson's disease, Lewy Body disease), and tauopathies [3]. The later more inclusive definition is employed here as it best incorporates the spectrum of disease that can be caused by COVID "vaccines". There is little doubt that the COVID "vaccines" cause prion disease. Both the "vaccine" mRNA sequence [1] and the "vaccine" induced spike protein [2,4,5] have the ability to induce prion disease. A number of groups have reported prion disease in patients after receiving the COVID "vaccine". Parkinson's disease has been linked to COVID "vaccines" [6] as have a novel form of CJD [7,8].

The current bioweapon attack with COVID-19 infections and more importantly COVID “vaccines" has definitively been linked to Israel’s Mossad [9]. The COVID-19 associated spike protein found in the virus and produced by the mRNA vaccines is a race specific bioweapon, having low affinity for the ACE2 receptor variant K26R which predominates in Ashkenazi Jews [10]. The bioweapon attack is part of a civil war as many American and European citizens are aiding Israel’s Mossad in killing their fellow citizens. Prion research used to develop bioweapons is ongoing in many European and North American universities. The foundations associated with Bill Gates, who is linked to Mossad operative Jeffrey Epstein, and Larry Ellison, who is also linked to Mossad, have funded prion research for example [9].

The Author realized Mossad was interested in prion bioweapons while in his training fellowship program at the United States’ NIH, NIAID. The Author realized that Mossad had highly infiltrated the NIH [9] and had likely infiltrated the FDA and CDC. While working at NIH, many he knew to be associated with Mossad talked regularly about the toxicity of prions, much more than was typical in a medical school or university hospital for example. It was the murder of Suzanne Eaton, wife of an Israeli born prion researcher, in July of 2019 [9] that made the Author believe that the bioweapon attack causing COVID-19 was likely to involve prions. This has been discussed in detail in a previous paper [9].

In order for prions to be an ideal bioweapon the target population needs to believe there is no cure while the attackers know of an treatment/ antidote to save their own population if there is “blowback” where the attacking groups gets exposed to the bioweapon. The attackers need to employ false narratives to hide the treatment/antidote and maintain the effectiveness of their weapon. The COVID “vaccine” bioweapon attack has been surrounded by false narratives and psyops. The false narratives have included the exaggerated mortality rate of infections with COVID, the benefits of masks, the benefits of lock downs, the favorable risk/benefit of the COVID-19 "vaccines" [11]. Other false narratives include blaming bats, lab leaks, corporate greed, and China for the attack [9]. More recently, US Congressional hearings have taken place to convince the public that the blame for the attack should be placed on every one but the culprit [9], Israel’s Mossad.

Because of the fact that the field of prion research is infiltrated by clandestine bioweapons operatives, the narrative that there is no effective treatment for prion disease is suspect. The current paper explores whether a readily available antidote to COVID “vaccine" induced prion disease exists.

Case Study: MMR Vaccine as Protection against COVID-19

The uncovering of Mossad’s plan to use measles mumps rubella vaccine to protect their constituents against their bioweapon attack with COVID-19 is a case study on how the Author’s analysis has been used in the past to help thwart the current bioweapon attack. The sequences of events related to Mossad’s development of MMR vaccine as prevention of COVID-19 and Mossad’s psyops related to use of the MMR vaccine to prevent COVID-19 have previously been described in detail [9,12]. This timeline of events may provide clues related to any work by Mossad to develop an antidote to the prion forming COVID “vaccine” and spike protein. It’s possible the same people/labs working on blocking viral infection with the causative agent of COVID-19, SARS-CoV-2, may have been working on stopping prion formation induced by the COVID ‘vaccine”.

There are several notable points on the timeline of Mossad’s activities leading to their COVID-19 related bioweapon attack [9,12]. Mossad’s strategy of weaponizing flu vaccines was revealed by Joseph Moshe in 2009. COVID-19 presents with flu like symptoms and some believe that the H1N1 (swine/bird/influenza) pandemic (plandemic) of 2009 was the dry run for the COVID-19 attack. The measles vaccine was tested in part by the US CDC (infiltrated by Mossad) for its ability to prevent the coronavirus infection SARS in 2006 or earlier [13]. Mossad linked individuals aggressively attacked the credibility of Andrew Wakefield starting no later than 2010 in order persuade the public to take MMR vaccines. Mossad employed an aggressive campaign to have all their population freshly immunized with MMR in 2018 [9,12]. In 2020, the CROWN CORONATION trial was initiated to test MMR vaccine for its ability to protect against COVID-19 [14]. The study was funded in part by the Bill and Melinda Gates Foundation, which is linked to Mossad operative Jeffrey Epstein.

Potential Treatments

The intent of this review was to identify potential cures/antidotes for COVID “vaccine” induced prion disease that may have been deliberately obscured by physicians and scientists working for Mossad. There is a false narrative set forth by individuals linked to Mossad to convince people not to use certain drugs for treating COVID-19. The Mossad narrative has been to avoid taking hydroxychloroquine and ivermectin. This false narrative has been reiterated by Mossad controlled government officials, Mossad controlled media, and Mossad controlled social media. Because of this narrative, hydroxychloroquine and ivermectin were explored as possible treatments for prion disease. Other agents were reviewed based on published contrasting reports of efficacy. It was hypothesized that a group may have found a benefit leading to a Mossad affiliated group publishing a negative report to obscure the benefit. These agents include doxycycline/minocycline and quinacrine.

A patient’s genes are an important factor when selecting a potential treatment. Some individuals may have little harm from the COVID “vaccines” because of their genes. In these cases, the benefit from pharmaceutical treatment may be low. As previously stated the spike protein, a component or product of COVID “vaccines”, is a race specific bioweapon. The spike protein has very low affinity for ACE2 variant predominantly found in Ashkenazi Jews, the K26R variant. The spike protein has high affinity to ACE2 variants G211R and D206G found in Western Europeans [10]. The ACE2 gene is however highly unlikely to be the only gene that affects toxicity of the COVID “vaccines” or the benefit of potential antidotes. Some patients may have genes or pre-existing conditions that put them at risk for drug adverse events.

Some drugs may have a benefit inhibiting prion formation in a lab flask but may be ineffective in animal models because the drugs can not penetrate the blood brain barrier. Several different proteins have the ability to form prion aggregates. Prion Scrapie (PrPsc) protein may be inhibited by a drug while other prion like proteins TDP-43, FUS, and alpha synuclein may be unaffected by the drug. There are genetic variations of these same proteins that can affect drug sensitivity [3,15]. Furthermore drug resistant prions have emerged [16,17] suggesting that combination drug therapy may be best, as is used in HIV treatments. It is more than possible that a drug that inhibits prions in a rodent model will exacerbate prion replication in a different species [18].

Specific criteria were chosen in helping to identify drug candidates. Ideally, a drug would be readily available, produced by multiple manufactures, inexpensive, and have a low toxicity profile. Given that, approximately 70% of the world's population have been exposed to a COVID "vaccine" one needs an antidote that is readily available as an off label use. Patients would need to take the agent potentially for the rest of their lives so the agent needs to be inexpensive and safe. The COVID "vaccines" likely cause many types of prion disease so an antidote would need to be broad spectrum. The agent would need to cross the blood brain barrier to work in brain. A number of review papers were utilized to help identify potential antidotes to COVID "vaccine" induced prion disease [19-23].

Doxycycline and Minocycline

Two closely related tetracycline antibiotics, doxycycline and minocycline, have shown signs of efficacy against prion disease. Doxycycline can penetrate the blood brain barrier [24]. This antibiotic blocks tau amyloid aggregation and its associated neuronal toxicity in vitro [25,26]. Doxycycline can inhibit the aggregation of Aβ42 amyloid fibrils and disassemble mature amyloid fibrils [27]. Doxycycline blocks alpha synuclein aggregation in cell culture [28] and benefits were seen in a mouse model [29]. Doxycycline is effective in a mouse model of Huntington's disease [30] as well as a mouse model of insomnia [31].

The clinical trial results with doxycycline have been mixed. In a clinical trial reported by Varges [32] doxycycline was administered to early stage patients with CJD and showed a benefit in survival. Not unexpectedly when doxycycline was administered in a clinical trial to patients with late stage disease, there was no benefit [33].

Minocycline is a tetracycline antibiotic like doxycycline with many similar properties. There are however, some reports that minocycline has special neuroprotective activity not seen with doxycycline [34]. Minocycline has been shown to have multiple effects that inhibit neurodegeneration [35]. These include effects on protein misfolding, inhibiting neuroinflammation, scavenging free radicals, mitochondrial cytoprotection, as well as altering both proteolysis and apoptosis [36]. The effect of minocycline on prion diseases [37] and Parkinson's disease has been reviewed [38].

The author believes there is sufficient positive data in prion disease related to doxycycline/minocycline to warrant further investigations in high functioning recipients of COVID "vaccines". Mixed results in the literature may in fact be partially or completely related to the fact that prion research is highly infiltrated by bioweapons experts who create false narratives to further their murderous agenda.

Quinacrine

Quinacrine, an antimalarial drug similar to hydroxychloroquine, has been shown to have some efficacy in prion disease as discussed below. There is also data it is efficacious in treating COVID-19 [39] in part due to binding to the RNA of the coronavirus causing COVID-19. This mechanism would also be expected to prevent the development of some prion diseases caused directly by the mRNA sequence in the COVID "vaccines" [1]. Mossad linked groups, the World Health Organization (WHO) for example, have promoted a false narrative attempting to dissuade people with COVID-19 from using related antimalarial drugs, hydroxychloroquine and chloroquine, for treating COVID-19. This narrative raises suspicions that quinacrine may also be useful in COVID-19 "vaccine" induced prion disease.

Quinacrine crosses the blood brain barrier at least in mice [40]. Quinacrine has been shown in vitro to have properties that may be beneficial in prion disease. Quinacrine binds to some prion proteins. According to one paper [14] "These results confirm that quinacrine almost exclusively reacts with the thiol groups present in proteins and peptides. The chemical reaction alters the prion properties and increases the concentration of the acridine moiety in the prion protein." Furthermore, quinacrine directly dissociated amyloid plaques in brains of transgenic mice [42]. Quinacrine may inhibit stimuli from causing proteins from moving into their prion formation [43].

Like doxycycline, published clinical trial literature on quinacrine has mixed results. Quinacrine showed some benefit in an mostly open label study of prion patients in the UK [44]. Quinacrine failed a 2 month randomized study of 54 CJD patients [45]. However, those trial participants who received quinacrine for two months during the randomized phase and received prolonged quinacrine as an open label extension had impressively increased survival than those who did not receive the extended treatment of quinacrine. Taken together the combined studies [44,45] indicate that quinacrine may have substantial benefit if given early in disease and taken for a prolonged period of time. However, the drug is not considered as safe as doxycycline.

Ivermectin

There is little data on the use of ivermectin to treat prion disease per se. There is however data on its efficacy to treat COVID-19 infections [46,47]. The author's interest in this drug relates to the loud false narrative from Mossad associated organizations to dissuade people from using ivermectin for COVID-19 infections [48]. Ivermectin has the ability to bind the prion inducing spike protein at its receptor-binding domain, preventing the spike protein from entering a cell [49] and inducing prion disease.

This could be beneficial to patients who have received an RNA based COVID “vaccine” and continue to make spike protein for a prolonged period. One way this could happen if the “vaccine” RNA incorporates into recipient’s DNA by reverse transcriptase.

Conclusion

This paper identified several drugs that may be helpful in people at risk for COVID “vaccines” induced prion disease. While results are mostly speculative, this paper provides a starting point for developing a treatment for the roughly 70% of the world’s population who have been exposed to a COVID “vaccine" bioweapon. The treatments reviewed in this paper are not expected to rejuvenate dead neurons. Treatments if they are to have any benefit must be given very early, possibly before any symptoms have developed. At best, they may slow the progression of prion disease until an even better treatment can be found. Clinical trials will need to be performed under the strictest supervision due to large number of conspirators in the medical field who wish harm on the general populous yet pretend to help humanity.

Given that this attack is being run by Mossad, the Author will initially review research from people linked to Mossad. The author plans to review publications by prion experts Stanley B. Prusiner, who is mentioned in a July 03, 2012, press release pertaining to funding from Mossad operative Jeffrey Epstein’s “foundation”, and Leroy Hood who has received extensive funding from Epstein associate Bill Gates. Both Prusiner and Hood received awards from then president Obama, as did many linked to Jeffrey Epstein.

We live in a time of great evil and the Author prays for the world’s population.

References

1. Classen JB. COVID-19 RNA based vaccines and the risk of prion disease. Microbiol Infect Dis. 2021; 5: 1-3.
2. Idrees D, Kumar V. SARS-CoV-2 spike protein interactions with amyloidogenic proteins Potential clues to neurodegeneration. Biochemical and biophysical research communications. 2021; 554: 94-98.
3. Holec SA, Block AJ, Bartz JC. The role of prion strain diversity in the development of successful therapeutic treatments. Progress in molecular biology and translational science. 2020; 175: 77-119.
4. Seneff S, Kyriakopoulos AM, Nigh G, et al. SARS-CoV-2 Spike Protein in the Pathogenesis of Prion-like Diseases. Authorea Preprints. 2022.
5. Tetz G, Tetz V. Prion-like domains in spike protein of SARS-CoV-2 differ across its variants and enable changes in affinity to ACE2. Microorganisms. 2022; 10: 280.
6. Classen JB. COVID-19 Vaccine Associated Parkinsons Disease A Prion Disease Signal in the UK Yellow Card Adverse Event Database. J Med-Clin Res Rev. 2021; 5: 1-6.
7. Folds AJ, Ullrich MB, Htoo S, et al. Sporadic Creutzfeldt-Jakob Disease After Receiving the Second Dose of Pfizer-BioNTech COVID-19 Vaccine. InternalMedicine. 2022; 420.
8. Perez JC, Moret-Chalmin C, Montagnier L. Emergence of a New Creutzfeldt-Jakob Disease 26 Cases of the Human Version of Mad-Cow Disease Days After a COVID-19 Injection. International Journal of Vaccine Theory Practice and Research. 2023; 3: 727-770.
9. Classen JB. COVID-19 and Illegal US Bioweapons Activity an Insiders Revelations. Trends Int. Med. 2022; 2: 1-1.
10. Ali F, Elserafy M, Alkordi MH, et al. ACE2 coding variants in different populations and their potential impact on SARS-CoV-2 binding affinity. Biochemistry and biophysics reports. 2020; 24: 100798.
11. Classen JB. US COVID-19 Vaccines Proven to Cause More Harm than Good Based on Pivotal Clinical Trial Data Analyzed Using the Proper Scientific Endpoint All Cause Severe Morbidity. Trends Int Med. 2021; 1: 1-6.
12. Classen JB. COVID-19 MMR vaccine and bioweapons. Diabetes its Complications. 2020; 4: 1-8.
13. Liniger M, Zuniga A, Tamin A, et al. Induction of neutralising antibodies and cellular immune responses against SARS coronavirus by recombinant measles viruses. Vaccine. 2008; 26: 2164-2174.
14. Jim Dryden. Global trial to test whether MMR vaccineprotects front-line health-care workers againstCOVID-19. Washington University School of Medicine Press Release. 2020.
15. Ghaemmaghami S. Biology and genetics of PrP prion strains. Cold Spring Harbor Perspectives in Medicine. 2017; 7: a026922.
16. Ghaemmaghami S, Ahn M, Lessard P, et al. Continuous quinacrine treatment results in the formation of drug-resistant prions. PLoS pathogens. 2009; 5: e1000673.
17. Berry DB, Lu D, Geva M, et al. Drug resistance confounding prion therapeutics. Proceedings of the National Academy of Sciences. 2013; 110: E4160-E4169.
18. Bian J, Kang HE, Telling GC. Quinacrine promotes replication and conformational mutation of chronic wasting disease prions. Proceedings of the National Academy of Sciences. 2014; 111: 6028-6033.
19. S Appleby B, L Cummings J. Discovering new treatments for Alzheimers disease by repurposing approved medications. Current Topics in Medicinal Chemistry. 2013; 13: 2306-2327.
20. Forloni G, Roiter I, Artuso V, et al. Preventive pharmacological treatment in subjects at risk for fatal familial insomnia science and public engagement. Prion. 2022; 16: 66-77.
21. Shim KH, Sharma N, An SS. Prion therapeutics Lessons from the past. Prion. 2022; 16: 265-294.
22. Miranda LH, Oliveira AF, Carvalho DM, et al. Systematic review of pharmacological management in Creutzfeldt-Jakob disease no options so far. Arquivos de NeuroPsiquiatria. 2022; 80: 837-844.
23. Dos Santos AG, Huszcz GB, dos Santos HG, et al. Possible treatments for sporadic Creutzfeldt-Jakob disease a systematic review. Revista de Medicina. 2023; 102.
24. Lucchetti J, Fracasso C, Balducci C, et al. Plasma and brain concentrations of doxycycline after single and repeated doses in wild-type and APP23 mice. Journal of Pharmacology and Experimental Therapeutics. 2019; 368: 32-40.

25. Medina L, González-Lizárraga F, Dominguez-Meijide A, et al. Doxycycline interferes with tau amyloid aggregation abolishing its associated neuronal toxicity. bioRxiv. 2020.
26. Balducci C, Forloni G. Doxycycline for Alzheimers disease fighting β-amyloid oligomers and neuroinflammation. Frontiers in Pharmacology. 2019; 10: 738.
27. Gautieri A, Beeg M, Gobbi M, et al. The anti-amyloidogenic action of doxycycline a molecular dynamics study on the interaction with Aβ42. International Journal of Molecular Sciences. 2019; 20: 4641.
28. Dominguez-Meijide A, Parrales V, Vasili E, et al. Doxycycline inhibits α-synuclein-associated pathologies in vitro and in vivo. Neurobiology of Disease. 2021; 151: 105256.
29. La Vitola P, Artioli L, Cerovic M, et al. Repositioning doxycycline for treating synucleinopathies Evidence from a pre-clinical mouse model. Parkinsonism Related Disorders. 2023; 106: 105229.
30. Paldino E, Balducci C, La Vitola P, et al. Neuroprotective effects of doxycycline in the R6/2 mouse model of Huntingtons disease. Molecular neurobiology. 2020; 57: 1889-1903.
31. Lavigna G, Masone A, Bouybayoune I, et al. Doxycycline rescues recognition memory and circadian motor rhythmicity but does not prevent terminal disease in fatal familial insomnia mice. Neurobiology of Disease. 2021; 158: 105455.
32. Varges D, Manthey H, Heinemann U, et al. Doxycycline in early CJD a double-blinded randomised phase II and observational study. Journal of Neurology Neurosurgery Psychiatry. 2017; 88: 119-125.
33. Haïk S, Marcon G, Mallet A, et al. Doxycycline in Creutzfeldt-Jakob disease a phase 2 randomised double-blind placebo-controlled trial. The Lancet Neurology. 2014; 13: 150-158.
34. Lu Y, Yang Y, Chen W, et al. Minocycline but not doxycycline attenuates NMDA-induced Ca2+i and excitotoxicity. NeuroReport. 2020; 32: 38-43.
35. Noble W, Garwood CJ, Hanger DP. Minocycline as a potential therapeutic agent in neurodegenerative disorders characterized by protein misfolding. Prion. 2009; 3: 78-83.
36. Karachitos A, Solis Garcia del Pozo J, WJ de Groot P, et al. Minocycline mediated mitochondrial cytoprotection premises for therapy of cerebrovascular and neurodegenerative diseases. Current drug targets. 2013; 14: 47-55.
37. Leite CQ. Minocycline in neurological disorders treatment. 2020.
38. Cankaya S, Cankaya B, Kilic U, et al. The therapeutic role of minocycline in Parkinsons disease. Drugs in context. 2019; 8: 212553.
39. Sun D. Patent application WO2023023651-Quinacrine And Derivatives Thereof For Treatment Of Viral Infections. 2023.
40. Yung L, Huang Y, Lessard P, et al. Pharmacokinetics of quinacrine in the treatment of prion disease. BMC infectious diseases. 2004; 4: 1-7.
41. Zawada Z, Šafařík M, Dvořáková E, et al. Quinacrine reactivity with prion proteins and prion-derived peptides. Amino Acids. 2013; 44: 1279-1292.
42. Park S, Kim HY, Oh HA, et al. Quinacrine directly dissociates amyloid plaques in the brain of 5XFAD transgenic mouse model of Alzheimers disease. Scientific reports. 2021; 11: 12043.
43. Villa V, Corsaro A, Thellung S, et al. Molecular mechanisms mediating the neuroproyective effects of quinacrine and minocycline on cell death induced by the prion protein fragment 90-231 hPrP90-231. Journal of Biological Research Pavia. 2011; 84.
44. Collinge J, Gorham M, Hudson F, et al. Safety and efficacy of quinacrine in human prion disease PRION-1 study a patient-preference trial. The Lancet Neurology. 2009; 8: 334-344.
45. Geschwind MD, Kuo AL, Wong KS, et al. Quinacrine treatment trial for sporadic Creutzfeldt-Jakob disease. Neurology. 2013; 81: 2015-2023.
46. Kerr L, Baldi F, Lobo R, et al. Regular Use of Ivermectin as Prophylaxis for COVID-19 Led Up to a 92% Reduction in COVID-19 Mortality Rate in a Dose-Response Manner Results of a Prospective Observational Study of a Strictly Controlled Population of 88,012 Subjects. Cureus. 2022; 14: e28624.
47. Bryant A, Lawrie TA, Dowswell T, et al. Ivermectin for prevention and treatment of COVID-19 infection a systematic review meta-analysis and trial sequential analysis to inform clinical guidelines. American journal of therapeutics. 2021; 28: e434.
48. https://www.fda.gov/consumers/consumer-updates/why-you-should-not-use-ivermectin-treat-or-prevent-covid-19
49. Lehrer S, Rheinstein PH. Ivermectin docks to the SARS-CoV-2 spike receptor-binding domain attached to ACE2. *In vivo*. 2020; 34: 3023-3026.