AstraZeneca Vaccination and Blood Clotting

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ABSTRACT

Covid-19 vaccinations include AstraZeneca, Pfizer/BioNtech, and Moderna among others. Recently, blood clots have been reported after AstraZeneca vaccinations, and although a small fraction of those vaccinated, the question remains as to the cause of blood clotting. In this regard, cytokines are known to induce blood clots and EM radiation is a potent cytokine activator, but a source of EM radiation at the cellular level is required. In simple QED, EM radiation depending on nanostructure dimensions is proposed to conserve heat at the nanoscale because the Planck law precludes the atom the necessary heat capacity to conserve heat by a change in temperature. Simple QED applied to the AstraZeneca vaccine shows UVB radiation is emitted from ~ 100 nm Ads vectors that suggests the Ad vector is the source of cytokine activation and blood clots. However, the quality control of Ads sizes is difficult because AstraZeneca uses different manufacturers. Since only specific countries like Norway have reported serious blood clotting, perhaps the Ad size in the batch delivered to Norway is the problem. Regardless, the FDA should impose tight controls on Ad size in AstraZeneca vaccines. Further, the CDC is requested to perform UV-VIS spectrometry tests on Ads vectors suspended in water contained in UV transparent cuvettes to experimentally confirm the theoretical UVB emission predicted

INTRODUCTION

In March 2021, the AstraZeneca Covid-19 vaccine has been linked to blood clotting and brain hemorrhaging and death. Countries [1-3] that have paused AstraZeneca inoculation campaigns include Austria, Denmark, Estonia, Lithuania Norway, Iceland and Thailand. Later, the use of AstraZeneca was approved safe, but Norway has yet to resume use.

Although, the fraction of vaccinations leading to death are very small, the question remains as to the cause of blood clotting. The WHO has stated [4] that "A causal relationship … has not been shown." Consistent with the WHO, Pharmacovigilance - the European Union medical agency risk assessment committee - concluded the vaccine's benefits outweigh the risks. Similar arguments [5,6] in support of the AstraZeneca vaccine have been reported.

But blood clots have been a frequent complication of COVID-19. Since mid-2020, researchers have tried [7] to untangle the blood clotting mechanism with emphasis on pulmonary mechanisms in the lung. However, brain hemorrhaging suggests the Covid-19 is neurological entering the brain through the nasal path and not through the lungs. Indeed, mouse models [8] with genetically engineered human ACE2 receptors in the nose exposed to SARS-CoV virus were found in the brain and not in the lung, suggesting ACE2 receptors are not necessary for the virus to reach the brain. Absent ACE2 receptors, the nasal path to the brain requires the Covid-19 express a mechanism to burrow through the cell wall and subsequent blood-brain barrier.

In this regard, point sources of EM radiation are known to burrow through cell walls by ionization, but cannot be translated to burrowing through nose cells unless the virus itself is the source of EM radiation. Indeed, a source of EM radiation is available because the Covid-19 virus is nanoscale having a diameter d < 100 nm. Unlike the conservation of heat in classical physics by a change in temperature, the Planck law of quantum mechanics denies atoms the heat capacity to conserve heat by temperature. Instead, the theory of simple QED based [9] on the Planck law conserves heat by emitting EM radiation, the wavelength λ of which depend on the diameter d and refractive index n of the Covid-19 virus, $\lambda = 2nd$. For Covid-19 having body diameter d ~ 100 nm, UVB radiation is emitted as illustrated in Fig. 1.

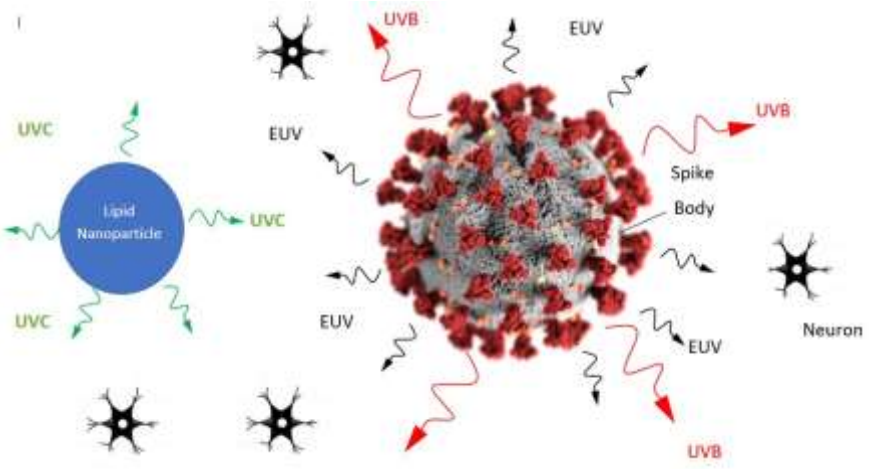

Figure 1. Coronavirus emitting simple QED induced EM radiation

In Fig. 1, nanoparticles (NPs) and Covid-19 spikes are shown emitting UVC and EUV radiation, but only UVB from the Covid-19 is of interest in blood clotting from UVB immunosuppression and inflammation leading to sepsis and coagulation similar to disseminated intravascular coagulation (DIC).

Of note, the Covid-19 virus itself is emitting UVB radiation.

UVB immunosuppression [10] is both local and systemic. Local UVB radiation inhibits the immunologic rejection of transplanted tumors. In mice, rejection was prevented when exposed to local UVB radiation. In contrast, systemic immunosuppression is the immune response at a distant location caused by UVB radiation exciting interleukin IL-10 which enters the blood circulation to suppress the immune system in a systemic manner. UVB radiation suppresses protective immune responses against viral infections and can compromise an immune response both in a local and a systemic fashion. Indeed, UVB radiation at rather low doses suppresses an immune response.

In COVID-19 infections, the thrombosis [11] is a coagulopathy similar, but not identical to DIC. Instead, there is strong local thrombotic or microvascular disease of blood vessels. Some features mimic cytokine release syndromes suggesting UVB activation. The dramatic increase in vascular complications and specific coagulation changes [12] suggest specific endothelial cell involvement in direct viral infection of endothelial cells. Indeed, the presence of ~ 150 nm viral elements within endothelial cells and an accumulation of inflammatory cells, with evidence of induced endothelial and inflammatory cell death. Fig, 2 shows the 100 nm Covid-19 body inside the spiked periphery emitting UVB.

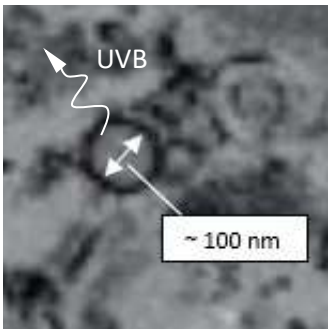

Figure 2. Covid-19 in Endothelial Cell

In sepsis characterized by the presence of infection and host inflammation, the coagulation system becomes diffusely activated as in DIC. Endothelial cellular apoptosis exacerbates inflammation and induces thrombosis leading [12] to microvascular thrombosis. COVID-19 coagulopathy differs from sepsis as hemorrhagic complications [11] are not common.

PURPOSE

Given UVB radiation from the Covid-19 virus itself is consistent with direct contact with endothelial cells in small vessels and activating cytokines.

But can the AstraZeneca vaccination cause blood clotting?

The purpose here is to show how the AstraZeneca vaccination could cause blood clotting by emitting UVB radiation from the adenovirus Ad vectors used to carry the DNA into the cell.

ANALYSIS

The AstraZeneca Covid-19 vaccine supplies DNA to the cell in nanoscale adeno vector carriers, herein designated as Ads having an approximate spherical diameter d ~ 100 nm as shown in Fig. 3.

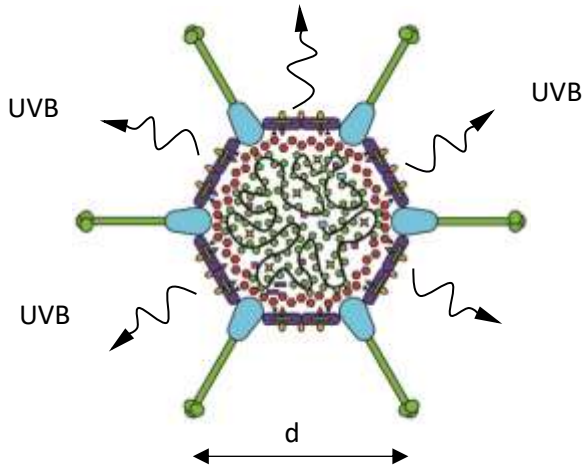

Figure 3. Adenovirus Vector- Ad

By simple QED, the Ad conserves heat from the ambient surroundings by emitting EM radiation at wavelength $\lambda = 2nd$. For adenovirus, the refractive index n = 1.4 reported [13] as n ~ 1.4 giving a simple QED wavelength λ - 280 nm which is in the UVB (280 to 320 nm). In comparison, the Moderna vaccine uses lipid NP to carry mRNA having average spherical diameter d ~ 80 nm. Lipids having n = 1.55 emit EM radiation [9] at λ = 248 nm in the UVC (200 to 280 nm). In effect, both AstraZeneca and Moderna emit in the UVC at 248 nm, but it should be noted that actual average diameters are proprietary and not published. Pfizer/BioNtech vaccine data is not available, but is expected to be similar to Moderna.

Setting aside the uncertainty of NP size, the AstraZeneca vaccine having the larger size is expected to emit more UVB than Pfizer/BioNtech and Moderna. In DNA damage, the UVC is far more damaging than UVB, but in COVID-19 the systemic levels of pro-inflammatory cytokines [11,14] interleukins IL-1 and IL-6 are markedly increased by UVB.

Cytokines are glyco-proteins transiently produced that initiate biologic activities though specific cell-surface receptors. What this means is UVB light is a very potent [15] inducer of epidermal cytokine release initiating local and systemic inflammatory reactions and altering immune response.

Importantly, UVB does not directly cause blood clotting. The UVB releases cytokines from epidermal tissue, the cytokines activating the immune system to cause clotting. In this way, cytokines act as necessary intermediaries between UVB and blood clotting. However, UVB radiation is also used to remove and not induce blood clots. Indeed, UVB activation of plasminogen to form plasmin is used [16] to dissolve blood clots at 280 nm. Absent cytokines, blood clots might not be a problem in Covid-19.

In Covid-19, the cytokines activated by UVB emission can initiate systemic blood clotting. In Fig. 2, the local UVB emission from a Covid-19 virion can activate cytokines including interleukin IL-10 which enter blood circulation [10] and initiate blood clotting at distant locations.

CONCLUSIONS

The nanoscale Covid-19 virus emits EM radiation at a wavelength depending on its diameter and refractive index. Similarly, Covid-19 vaccines deliver mRNA and DNA to the cell in nanoscale carriers of NPs and Ads that also emit EM radiation.

The AstraZeneca Ad vector that delivers DNA to the cell is predicted by simple QED to emit UVB radiation which is well known to activate cytokines to induce blood clots. But the UVB emission depends on the size distribution of Ads which is not available in the public domain. Moreover, the quality control of Ads sizes is required as AstraZeneca uses different manufacturers. Since only specific countries like Norway and Finland have reported serious blood clotting, perhaps the Ad size distribution in the batch delivered is the problem with reported clotting. The FDA should impose tight controls on both Ad and NP size in vaccines.

The CDC is requested to confirm the simple QED prediction of UVB emission from Covid-19 virions, lipid NPs, and adenovirus Ad virions. Spectroscopy is suggested for each entity in water. The samples are placed in UV transparent cuvettes and EM radiation measured with a UV-VIS spectrometer. The only heat required is that of the water at ambient temperature.

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