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Mid-Ocean Outbreaks of COVID-19 with Tell-Tale Signs of Aerial Incidence

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Abstract

Outbreaks of COVID-19 in passengers and crew in ships at sea continue to pose a problem for conventional epidemiology. In one instance the crew of an Argentinian fishing trawler, who were quarantined and tested negative before sailing, contracted the disease after 35 days at sea. In another instance a livestock ship had crew that was isolated and confined becoming sick with presumed COVID-19 whilst sailing in mid-ocean.

Keywords: Pathogen • Virus • Bacterium • Airborne

Introduction

The conventional belief in epidemiology is that epidemics start and end with animals and humans on Earth, and that transmission occurs only by one infected individual transferring the infective pathogen – virus or bacterium – to another person. Airborne transfers are admitted to take place but these instances are universally believed to have a human or animal as an immediate aerosol source. These assumptions have been challenged for 40 years but the idea of a primary significant non-human or non-animal reservoir has been difficult for orthodox science to embrace.

Hoyle and Wickramasinghe's 1979 provocative classic "Diseases from Space" cited many examples of pandemics where person-to-person infection as the sole mode of origin and spread was shown difficult to defend [1,2]. The sudden onset of a pandemic, the speed and patchiness of its spread, and sudden termination were factors that were satisfactorily interpreted by atmospheric transfers of a viral or bacterial pathogen. The 1979 analysis documented the distribution of influenza in the 1977 H1N1 pandemic in boarding houses in schools in England and Wales; and the study of earlier epidemics as were reported in medical as well as media sources were also discussed [1]. An atmospheric mode of transport and transfer of the influenza virus was clearly described as the most parsimonious and arguably the only suitable interpretation of all the facts. In the 1918/1919 influenza pandemic the incidence was found to be both temporally and geographically patchy, strongly suggesting an atmospheric reservoir, albeit a transient one. For instance, communities in the most remote Alaskan regions succumbed to the virus -- as did ships at sea. Passenger liners arriving in Australia following weeks sailing in the high seas recorded attack rates that varied between four and forty-three percent.

Discussion of COVID-19

In the case of the current COVID--19 pandemic we have argued the case for an initial introduction of the virus from a non-terrestrial reservoir into the troposphere/stratosphere, and subsequent windborne spread and re-distribution across the globe [3-6]. Although

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spread in local areas was certainly the result of person-to-person transmission, large-scale initial deposition and distribution of the virus across the globe was postulated to occur mainly through the entrainment of micro-dust particles with embedded viruses in a circum-global jet-stream [5]. The arrival of the pandemic in Brazil and South America is explained in this way - the deposition from the mid-latitude jet stream over Portugal in early March, followed by transport *via* winds across the Atlantic [6].

In this context it should be recalled that recent counts of ambient viruses in the oceans as well as in the atmosphere is truly mind boggling [7,8]. Some 10 million virions are present in a single drop of surface ocean water and approximately 800 million are documented to settle on each square meter of terrestrial earth each day [8]. If this virus population included a recent fall of novel viruses such as COVID-19, then sea spray in mid ocean may be expected to be an anticipated route of infection for seagoing vessels.

Ships at Sea

There are currently several reports of COVID-19 outbreaks on ships at sea and most of these are rather poorly or incompletely explained by invoking contaminated materials/provisions that had been delivered to the ships.

One striking example is the livestock ship Al Kuwait that docked in Fremantle harbor on May 22, 2020, with 21 of its 48 crews testing positive for COVID-19. One of us (Herbert Rebhan, HR) who was the Veterinary surgeon on board, found nearly all of the ill crew members had displayed symptoms of a viral/bacterial infection (sore throat and sinusitis) whilst at sea. No ill crew member had complained of any problems with breathing or any other COVID indicative symptoms. HR did not expect a viral agent to be at work as all or crew who were ill improved 48 hours after starting antibiotic medication, with most being deemed fit for duty 96 hours after the start of antibiotics. HR was as surprised as anyone else when these crew members tested positive for COVID upon reaching Freemantle, as the crew had no outside contact since early March. The source of the infection and or the infecting agent still remains a mystery.

Although it is possible the virus could have entered the ship on supplies obtained from shore, the explanation of exposure whilst sailing through a "viral cloud" or several such clouds is more plausible in our view for several reasons. One is that the crew members who tested positive -- all fell ill within 48 hours of one another – a clear indication of near simultaneous exposure. There was no evidence of person-to-person transmission. The second is the well attested nature of the virus itself. Studies have shown that when this virus is exposed to environmental temperatures greater than 30 degrees C, viral viability is greatly reduced. The supplies taken aboard the Al Kuwait were exposed for many hours to environmental temperatures much greater than 30 degrees C. We find it hard to accept that the goods would have been contaminated with a great enough viral load to infect four people at the same time. Indeed, the crew members who tested positive for COVID were all deck workers and would not have any contact with the goods (provisions) brought on the ship. The chef and galley help who did handle the goods brought onto the ship, and would have had maximum exposure to any viral contaminated supplies, all subsequently tested negative for COVID.

An equally strong case or even stronger case of direct incidence in mid-ocean has been reported for Argentinian fishing trawler Echizen Maru on which 57 sailors came down with the coronavirus after 35 days of isolation at sea. The reports of this event provide, in our view, a real-life proxy for a controlled clinical experiment of direct atmospheric transmission. The bare facts are as follows: The entire crew of the trawler was quarantined for two weeks in Ushuaia and tested negative before sailing. After 35 days at sea the trawler returned to port when 57 out of 61 crew members were diagnosed as infected with the virus.

Conclusion

All existing understanding concerning the incubation of COVID-19 is challenged by the length of the time between the initial negative test and symptoms appearing for the crew of the Echizen Maru. However, when examined against the predictions of the Hoyle-Wickramasinghe theory of over four decades ago they are entirely understandable. The incidents on both Al Kuwait and Echizen Maru could arguably be regarded as compelling a confirmation of atmospheric transport/survival of the virus that we might hope to get without a deliberately controlled investigation.

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