

CURRENT TRENDS IN MEDICAL AND CLINICAL CASE REPORTS



Relationship Between COVID-19 and Polio-virus (Hypothesis)

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INTRODUCTION

According to the World Health Organization (WHO), viral diseases continue to emerge and represent a serious issue to public health. In the last twenty years, several viral epidemics such as the severe acute respiratory syndrome coronavirus (SARS-CoV) in 2002 to 2003, and H1N1 influenza in 2009, have been recorded. Most recently, the Middle East respiratory syndrome coronavirus (MERS-CoV) was first identified in Saudi Arabia in 2012 [1-5].

In a timeline that reaches the present day, an epidemic of cases with unexplained low respiratory infections detected in Wuhan, the largest metropolitan area in China's Hubei province, was first reported to the WHO Country Office in China, on December 31, 2019. Published literature can trace the beginning of symptomatic individuals back to the beginning of December 2019. As they were unable to identify the causative agent, these first cases were classified as "pneumonia of unknown etiology [6-10]." The Chinese Center for Disease Control and Prevention (CDC) and local CDCs organized an intensive outbreak investigation program. The etiology of this illness was attributed to a novel virus belonging to the coronavirus (CoV) family.

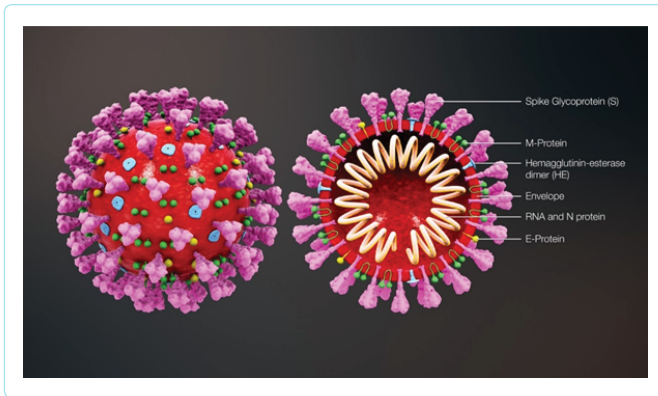
On February 11, 2020, the WHO Director-General, Dr. Tedros Adhanom Ghebreyesus, announced that the disease caused by this new CoV was a "COVID-19," which is the acronym of "coronavirus disease 2019". In the past twenty years, two additional CoVs epidemics have occurred [9-16]. SARS-CoV provoked a large-scale epidemic beginning in China and involving two dozen countries with approximately 8000 cases and 800 deaths, and the MERS-CoV that began in Saudi Arabia and has approximately 2,500 cases and 800 deaths and still causes as sporadic cases [13-29].

This new virus seems to be very contagious and has quickly spread globally. In a meeting on January 30, 2020, per the International Health Regulations (IHR, 2005), the outbreak was declared by the WHO a Public Health Emergency of International Concern (PHEIC) as it had spread to 18 countries with four countries reporting human-to-human transmission. An additional landmark occurred on February 26, 2020, as the first case of the disease, not imported from China, was recorded in the United States (US) [25-35].

What is coronavirus?

In December 2019, pneumonia cases began to appear in China, the cause of which could not be explained suddenly. Research has revealed that these cases of pneumonia are a new type of coronavirus (coronavirus) that has not been previously described. This form of the virus was called Coronavirus 2019, COVID-19, since it appeared in 2019. Coronavirus is actually a virus that is abundant in animals. The source of the virus that caused the disease recently is thought to be the Huanan seafood market in Wuhan, China. It was understood in time that the virus, which is transmitted from animal to human, can spread from person to person.

Here you can see structure of corona virus



What is Polio?

- Polio, or poliomyelitis, is a disabling and life-threatening disease caused by the polio virus.
- The virus spreads from person to person and can infect a person's spinal cord, causing paralysis (can't move parts of the body).

Post-Polio Syndrome

Post-polio syndrome (PPS) is a condition that can affect polio survivors decades after they recover from their initial polio virus infection. Most people who get infected with poliovirus (about 72 out of 100) will not have any visible symptoms. About 1 out of 4 people with polio virus infection will have flu-like symptoms that may include:

- Sore throat
- Fever
- Tiredness
- Nausea
- Headache
- Stomach pain

Jonas Edward Salk kept researching on the project for a continuous period of seven years. In 1955, he came up with a vaccine that became the first successful polio vaccine. A field trial was set to test the Salk's vaccine. The testing involved 20,000 medical physicians and practitioners, 64,000 school staff, and over 1.8 million school children. The field test was largely successful. On April 12, 1955, it was announced to the public that a polio vaccine had been successfully developed.

Why am I talking about Polio here because I have a theory. The reason why the corona virus does not make a lot of impact on children

is that most children and teens and other people that born after 1980 because after invited the polio vaccine . People who have had a polio vaccine are less affected by the corona virus. As I said this, I just don't have a lab to prove this theory for now.

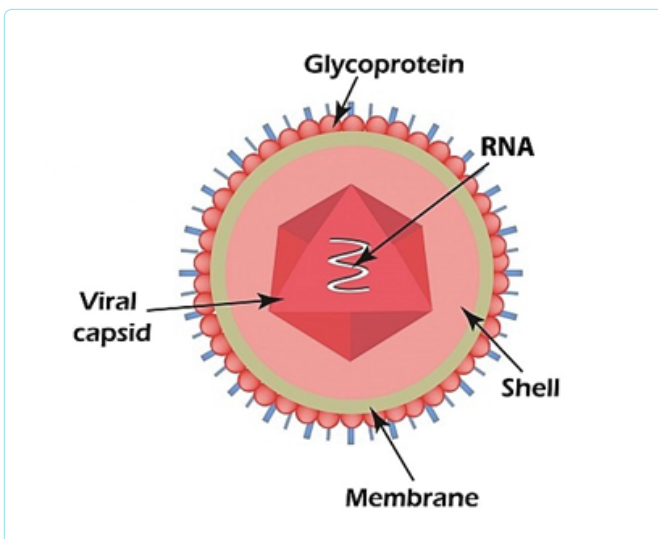
The first was developed by Jonas Salk in 1952; the second was an oral vaccine developed by Albert Sabin. These 2 vaccines have eradicated polio from most countries and have reduced the worldwide incidence of polio from 350,000 cases in 1988 to just 1300 cases in 2007.

The National Center for Health Statistics estimates that more than 440,000 polio survivors in the United States may be at risk for post-polio syndrome (PPS), a condition that strikes polio survivors decades after they've recovered from an attack of the poliomyelitis virus. Various researchers estimate that PPS affects from 40 to 80 percent of polio survivors.

Common PPS symptoms include: muscle and joint weakness, fatigue, pain, muscle atrophy, difficulty breathing or swallowing, skeletal deformities, cold intolerance, and temporary interruptions of breathing while sleeping.

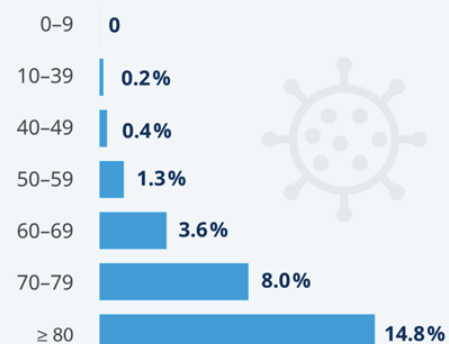
And this is explain Most people will get a mild infection with low symptoms

People with polio vaccine have stronger immune systems against corona virus, this is just my opinion. Perhaps polio vaccine may be effective against corona virus, scientists should research about it again .



COVID-19 mortality rate by age

Data from 72.314 patients



Source: Chinese Center for Disease Control and Prevention.

If we based on the year when the polio vaccine was invented, this graph supports our theory.

CONCLUSION

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BIBLIOGRAPHY

1. Perlman S, Netland J. Coronaviruses post-SARS: update on replication and pathogenesis. *Nat. Rev. Microbiol.* 2009 Jun;7(6):439-50. [PMC free article] [PubMed]

2. Chan JF, To KK, Tse H, Jin DY, Yuen KY. Interspecies transmission and emergence of novel viruses: lessons from bats and birds. *Trends Microbiol.* 2013 Oct;21(10):544-55. [PMC free article] [PubMed]
3. Chen Y, Liu Q, Guo D. Emerging coronaviruses: Genome structure, replication, and pathogenesis. *J. Med. Virol.* 2020 Apr;92(4):418-423. [PMC free article] [PubMed]
4. Chan JF, Kok KH, Zhu Z, Chu H, To KK, Yuan S, Yuen KY. Genomic characterization of the 2019 novel human-pathogenic coronavirus isolated from a patient with atypical pneumonia after visiting Wuhan. *Emerg Microbes Infect.* 2020;9(1):221-236. [PMC free article] [PubMed]
5. Guo ZD, Wang ZY, Zhang SF, Li X, Li L, Li C, Cui Y, Fu RB, Dong YZ, Chi XY, Zhang MY, Liu K, Cao C, Liu B, Zhang K, Gao YW, Lu B, Chen W. Aerosol and Surface Distribution of Severe Acute Respiratory Syndrome Coronavirus 2 in Hospital Wards, Wuhan, China, 2020. *Emerging Infect. Dis.* 2020 Apr 10;26(7) [PMC free article] [PubMed]
6. Lauer SA, Grantz KH, Bi Q, Jones FK, Zheng Q, Meredith HR, Azman AS, Reich NG, Lessler J. The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. *Ann. Intern. Med.* 2020 May 05;172(9):577-582. [PMC free article] [PubMed]
7. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, Ren R, Leung KSM, Lau EHY, Wong JY, Xing X, Xiang N, Wu Y, Li C, Chen Q, Li D, Liu T, Zhao J, Liu M, Tu W, Chen C, Jin L, Yang R, Wang Q, Zhou S, Wang R, Liu H, Luo Y, Liu Y, Shao G, Li H, Tao Z, Yang Y, Deng Z, Liu B, Ma Z, Zhang Y, Shi G, Lam TTY, Wu JT, Gao GF, Cowling BJ, Yang B, Leung GM, Feng Z. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *N. Engl. J. Med.* 2020 Mar 26;382(13):1199-1207. [PMC free article] [PubMed]
8. Bauch CT, Lloyd-Smith JO, Coffee MP, Galvani AP. Dynamically modeling SARS and other newly emerging respiratory illnesses: past, present, and future. *Epidemiology.* 2005 Nov;16(6):791-801. [PubMed]
9. Lei J, Kusov Y, Hilgenfeld R. Nsp3 of coronaviruses: Structures and functions of a large multi-domain protein. *Antiviral Res.* 2018 Jan;149:58-74. [PMC free article] [PubMed]
10. Song W, Gui M, Wang X, Xiang Y. Cryo-EM structure of the SARS coronavirus spike glycoprotein in complex with its host cell receptor ACE2. *PLoS Pathog.* 2018 Aug;14(8):e1007236. [PMC free article] [PubMed]
11. Angeletti S, Benvenuto D, Bianchi M, Giovanetti M, Pascarella S, Ciccozzi M. COVID-2019: The role of the nsp2 and nsp3 in its pathogenesis. *J. Med. Virol.* 2020 Feb 21; [PMC free article] [PubMed]
12. Ciceri F, Beretta L, Scandroglio AM, Colombo S, Landoni G, Ruggeri A, Peccatori J, D'Angelo A, De Cobelli F, Rovere-Querini P, Tresoldi M, Dagna L, Zangrillo A. Microvascular COVID-19 lung vessels obstructive thromboinflammatory syndrome (MicroCLOTS): an atypical acute respiratory distress syndrome working hypothesis. *Crit Care Resusc.* 2020 Apr 15; [PubMed]
13. Conti P, Ronconi G, Caraffa A, Gallenga CE, Ross R, Frydas I, Kritas SK. Induction of pro-inflammatory cytokines (IL-1 and IL-6) and lung inflammation by Coronavirus-19 (COVI-19 or SARS-CoV-2): anti-inflammatory strategies. *J. Biol. Regul. Homeost. Agents.* 2020 Mar 14;34(2) [PubMed]
14. Tian S, Hu W, Niu L, Liu H, Xu H, Xiao SY. Pulmonary Pathology of Early-Phase 2019 Novel Coronavirus (COVID-19) Pneumonia in Two Patients With Lung Cancer. *J Thorac Oncol.* 2020 May;15(5):700-704. [PMC free article] [PubMed]
15. Zhang H, Zhou P, Wei Y, Yue H, Wang Y, Hu M, Zhang S, Cao T, Yang C, Li M, Guo G, Chen X, Chen Y, Lei M, Liu H, Zhao J, Peng P, Wang CY, Du R. Histopathologic Changes and SARS-CoV-2 Immunostaining in the Lung of a Patient With COVID-19. *Ann. Intern. Med.* 2020 May 05;172(9):629-632. [PMC free article] [PubMed]
16. Menter T, Haslbauer JD, Nienhold R, Savic S, Hopfer H, Deigendesch N, Frank S, Turek D, Willi N, Pargger H, Bassetti S, Leuppi JD, Cathomas G, Tolnay M, Mertz KD, Tzankov A. Post-mortem examination of COVID19 patients reveals diffuse alveolar damage with severe capillary congestion and variegated findings of lungs and other organs suggesting vascular dysfunction. *Histopathology.* 2020 May 04; [PubMed]
17. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X, Cheng Z, Yu T, Xia J, Wei Y, Wu W, Xie X, Yin W, Li H, Liu M, Xiao Y, Gao H, Guo L, Xie J, Wang G, Jiang R, Gao Z, Jin Q, Wang J, Cao B. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet.* 2020 Feb 15;395(10223):497-506. [PMC free article] [PubMed]
18. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *JAMA.* 2020 Feb 24; [PubMed]
19. Kogan A, Segel MJ, Ram E, Raanani E, Peled-Potashnik Y, Levin S, Sternik L. Acute Respiratory Distress Syndrome following Cardiac Surgery: Comparison of the American-European Consensus Conference Definition versus the Berlin Definition. *Respiration.* 2019;97(6):518-524. [PubMed]
20. Singer M, Deutschman CS, Seymour CW, Shankar-Hari M, Annane D, Bauer M, Bellomo R, Bernard GR, Chiche JD, Coopersmith CM, Hotchkiss RS, Levy MM, Marshall JC, Martin GS, Opal SM, Rubenfeld GD, van der Poll T, Vincent JL, Angus DC. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). *JAMA.* 2016 Feb 23;315(8):801-10. [PMC free article] [PubMed]
21. Seymour CW, Kennedy JN, Wang S, Chang CH, Elliott CF, Xu Z, Berry S, Clermont G, Cooper G, Gomez H, Huang DT, Kellum JA, Mi Q, Opal SM, Talisa V, van der Poll T, Visweswaran S, Vodovotz Y, Weiss JC, Yealy DM, Yende S, Angus DC. Derivation, Validation, and Potential Treatment Implications of Novel Clinical Phenotypes for Sepsis. *JAMA.* 2019 May 28;321(20):2003-2017. [PMC free article] [PubMed]
22. Matics TJ, Sanchez-Pinto LN. Adaptation and Validation of a Pediatric Sequential Organ Failure Assessment Score and Evaluation of the Sepsis-3 Definitions in Critically Ill Children. *JAMA Pediatr.* 2017 Oct 02;171(10):e172352. [PMC free article] [PubMed]
23. Yang AP, Liu JP, Tao WQ, Li HM. The diagnostic and predictive role of NLR, d-NLR and PLR in COVID-19 patients. *Int. Immunopharmacol.* 2020 Apr 13;84:106504. [PMC free article] [PubMed]
24. Gattinoni L, Coppola S, Cressoni M, Busana M, Rossi S, Chiumello D. COVID-19 Does Not Lead to a "Typical" Acute Respiratory Distress Syndrome. *Am. J. Respir. Crit. Care Med.* 2020 May 15;201(10):1299-1300. [PMC free article] [PubMed]
25. Hui DS, Chow BK, Lo T, Tsang OTY, Ko FW, Ng SS, Gin T, Chan MTV. Exhaled air dispersion during high-flow nasal cannula therapy versus CPAP via different masks. *Eur. Respir. J.* 2019 Apr;53(4) [PubMed]
26. Wu CN, Xia LZ, Li KH, Ma WH, Yu DN, Qu B, Li BX, Cao Y. High-flow nasal-oxygenation-assisted fibreoptic tracheal intubation in critically ill patients with COVID-19 pneumonia: a prospective randomised controlled trial. *Br J Anaesth.* 2020 Mar 19; [PMC free article] [PubMed]
27. Cao B, Wang Y, Wen D, Liu W, Wang J, Fan G, Ruan L, Song B, Cai Y, Wei M, Li X, Xia J, Chen N, Xiang J, Yu T, Bai T, Xie X, Zhang L, Li C, Yuan Y, Chen H, Li H, Huang H, Tu S, Gong F, Liu Y, Wei Y, Dong C, Zhou F, Gu X, Xu J, Liu Z, Zhang Y, Li H, Shang L, Wang K, Li K, Zhou X, Dong X, Qu Z, Lu S, Hu X, Ruan S, Luo S, Wu J, Peng L, Cheng F, Pan L, Zou J, Jia C, Wang J, Liu X, Wang S, Wu X, Ge Q, He J, Zhan H, Qiu F, Guo L, Huang C, Jaki T, Hayden FG, Horby PW, Zhang D, Wang C. A Trial of Lopinavir-Ritonavir in Adults Hospitalized with Severe

- Covid-19. *N. Engl. J. Med.* 2020 May 07;382(19):1787-1799. [PMC free article] [PubMed]
28. Gordon CJ, Tchesnokov EP, Feng JY, Porter DP, Götte M. The antiviral compound remdesivir potently inhibits RNA-dependent RNA polymerase from Middle East respiratory syndrome coronavirus. *J. Biol. Chem.* 2020 Apr 10;295(15):4773-4779. [PMC free article] [PubMed]
29. de Wit E, Feldmann F, Cronin J, Jordan R, Okumura A, Thomas T, Scott D, Cihlar T, Feldmann H. Prophylactic and therapeutic remdesivir (GS-5734) treatment in the rhesus macaque model of MERS-CoV infection. *Proc. Natl. Acad. Sci. U.S.A.* 2020 Mar 24;117(12):6771-6776. [PMC free article] [PubMed]
30. Gautret P, Lagier JC, Parola P, Hoang VT, Meddeb L, Mailhe M, Doudier B, Courjon J, Giordanengo V, Vieira VE, Dupont HT, Honoré S, Colson P, Chabrière E, La Scola B, Rolain JM, Brouqui P, Raoult D. Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. *Int. J. Antimicrob. Agents.* 2020 Mar 20;:105949. [PMC free article] [PubMed]
31. Zarogoulidis P, Papanas N, Kioumis I, Chatzaki E, Maltezos E, Zarogoulidis K. Macrolides: from in vitro anti-inflammatory and immunomodulatory properties to clinical practice in respiratory diseases. *Eur. J. Clin. Pharmacol.* 2012 May;68(5):479-503. [PubMed]
32. Mercurio NJ, Yen CF, Shim DJ, Maher TR, McCoy CM, Zimetbaum PJ, Gold HS. Risk of QT Interval Prolongation Associated With Use of Hydroxychloroquine With or Without Concomitant Azithromycin Among Hospitalized Patients Testing Positive for Coronavirus Disease 2019 (COVID-19). *JAMA Cardiol.* 2020 May 01; [PMC free article] [PubMed]
33. Kollias A, Kyriakoulis KG, Dimakakos E, Poulakou G, Stergiou GS, Syrigos K. Thromboembolic risk and anticoagulant therapy in COVID-19 patients: emerging evidence and call for action. *Br. J. Haematol.* 2020 Apr 18; [PMC free article] [PubMed]
34. Buonaguro FM, Puzanov I, Ascierio PA. Anti-IL6R role in treatment of COVID-19-related ARDS. *J Transl Med.* 2020 Apr 14;18(1):165. [PMC free article] [PubMed]
35. Vittori A, Lerman J, Cascella M, Gomez-Morad AD, Marchetti G, Marinangeli F, Picardo SG. COVID-19 Pandemic ARDS Survivors: Pain after the Storm? *Anesth. Analg.* 2020 Apr 27; [PubMed]

