Polio, approaching eradication as a result of vaccination

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In these COVID-19 pandemic times, we live with uncertainty, just as people lived in the last century during the poliomyelitis pandemic, which mainly affected children. Their families knew that the possibility of acquiring such a terrible disease was high.

Poliomyelitis is an infectious disease caused by a poliovirus that is neurotrophic and belongs to the *enterovirus* family. It initially invades the digestive and respiratory tract and later spreads to the central nervous system hematogenously, with a preference for the anterior horn. The damage produced by the virus causes necrosis of these cells with loss of innervation of the motor unit, resulting in paralysis, and subsequent muscular atrophy, in some cases leading to death.

Poliomyelitis was first described by the Swiss physician Ivar Wickham, but it was not until 1909 when Landsteiner and Popper demonstrated the viral etiology of the disease by inoculating monkeys intraperitoneally with bone marrow from deceased patients with poliomyelitis.

By the end of the 19th century and the first half of the 20th century, poliomyelitis caused havoc by becoming a grand scale epidemic, being a very contagious disease transmitted from person to person without respecting social status, race, or religion. Contagions were more common during summer, with sporadic cases in the fall and winter, mainly affecting healthy children concentrated in large cities, although it was also common in rural areas.

The worst epidemic outbreak documented in the history of the United States occurred in 1952, becoming

a severe health problem with almost 58,000 cases reported in only that year; of these, 3,145 perished and 21,269 were affected by functional disability as a result of the paralysis. Facing this problem, a race against time began to find either a cure or a vaccine.

Dr. Jonas Salk developed the first injectable vaccine against polio in 1955 from a dead virus. Years later, in 1957, Dr. Albert Sabin reduced the fear of an injection with an attenuated virus in an oral presentation (in sweet drops), in addition to lowering production costs, and most importantly, his method proved to be more effective than the injectable vaccine. From this moment, there was a solution for this terrible disease; now, the problem was how they could reach every corner of the world.

In Monterrey, Nuevo Leon, Mexico, Dr. Carlos Canseco (1921-2009), a specialist in allergology, actively participated in vaccination efforts worldwide. As president in 1984 of the International Rotary Association and the PolioPlus Speakers Bureau, he began a program to achieve the vaccination of over 2 billion children. Dr. Canseco's contribution and institutions like the WHO managed to eradicate poliomyelitis from the American continent.

In 1988, The World Health Organization (WHO) implemented a global plan for the eradication of poliomyelitis, and today, the number of cases has decreased significantly. It is considered almost eradicated, though sporadic cases in Africa, Somalia, Afghanistan, Pakistan, and India have been reported. Today, several organizations and foundations, along

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with the WHO, continue their efforts worldwide to manage its eradication.

This issue includes a revision titled “Avoiding infantile paralysis. Orthopedists and their fight against the sequelae of poliomyelitis in Mexico (1940-1960)” since there were many patients during this period who were functionally affected by polio, worldwide as well as domestically. Last century, there was a great need to develop orthoses and prostheses and new orthopedic surgical treatments. With the knowledge of this disease and its sequelae as the basis for the development of endless orthopedic devices, splints for different segments of the body, as well as crutches, canes, and gait-assistance attachments, it was also a motive for the creation of different surgical

techniques, some of which are still utilized today to improve the function of some neuromuscular diseases such as the sequelae of myelomeningocele, infantile cerebral palsy, and arthrogryposis, to name a few.

Despite all the sequelae that this viral disease caused in a large portion of the world’s population, it allowed for the development of a vaccine, which is still giving results; it also allowed us to accomplish advancements in orthopedic surgeries and implants. Based on this knowledge, we need to comprehend that we do know how to advance from catastrophic situations, assisted by scientific knowledge, as well as in an organized civil society which allows for an efficient vaccination program.