ISSN 1669-9106

The disappearance of Onas and Yaganes. Between measles, rabies and tuberculosis

E. Lucas Bridges was born in Ushuaia in 1874, son of Thomas Bridges, pastor of the Anglican Mission and one of the first settlers of *Tierra del Fuego*. A friend since his childhood of the Yamanas or Yaghans, inhabitants of the south of the Island, and also of the Onas or Selk'nam, located in the center and south, he relates in his book *Uttermost part of the Earth*, characteristics and customs of these native peoples, as well as some terrible causes of their disappearance. Here we refer to the three most important[1].

Measles. In 1884 a lighthouse was installed in the bay then known as Alakushwaia (today Ushuaia), and in October of that year, the ships *Villarino*, *Comodoro Py*, and *Paraná* departed from there, bound for Punta Arenas. In the latter, in addition to the "white" crew, 7 young Yaghan men traveled. All of them fell ill during the voyage, and died. Meanwhile, in Ushuaia, after the departure of these ships, one after the other, the Yaghans fell ill and died in a few days. All the Yaghan children, who lived in an orphanage at the Mission, also died. The people of European origin who administered the Mission had already had measles as children. Half of the Yaghan population died, and the remaining half was so reduced in vitality that most of them succumbed within the next two years.

The Yaghans, though incredibly strong to withstand cold and even to survive their wounds, lacked immunity to measles.

Rabies. In 1897, the then governor of Tierra del Fuego, Pedro Godoy, decided to show a group of 3 or 4 Onas at an exhibition in Buenos Aires. The Onas embarked with their guanaco skin tent, their bows, arrows, dogs, and belongings. The group camped in Palermo Park. The exhibition was a success. But it had unfortunate consequences. In a scuffle with other dogs, those of the Ona group were bitten. Because they were suspected of rabies, the *porteño* dogs were eliminated, but the Onas were allowed to return with their dogs to Ushuaia. There, rabies spread, an enormous mortality occurred, both of dogs and of entire Onas families[1].

Measles again. Perhaps the Onas would have survived as a people had it not been for two subsequent measles epidemics, which, like the Yaghan population before them, wiped out most of what was left of the tribe. The first epidemic occurred in 1924 and was introduced to the Rio Grande by a "white" family, according to Lucas Bridges' account. The few who escaped the first outbreak fell victim to the second, which struck the region five years later, in 1929. Only the *mestizos* survived, perhaps because of a certain innate, genetic immunity coming from their European side.

In 1932, on his last visit to Ushuaia, Bridges learned that most of his Ona friends had already died of measles[1].

Tuberculosis. Interethnic contact, coexistence in religious institutions, installed as part of the colonization process from 1893, in overcrowded conditions, and uprooting of their habits and customs, was the cause of the spread of infectious diseases for which that population was virgin , especially tuberculosis (TB), which, as Raul Vacarezza pointed out, became epidemic[2].

The Salesian Mission of Candelaria was installed in Río Grande in 1893. The religious themselves recognized the hardships that the aborigines felt while staying at the Mission. Monsignor Fagnano relates how the Indians of the mission of Candelaria "diminish every year, depressed by tuberculosis and perhaps by the lack of air, having been built too closed houses (...)" (Bruno C, 1981, 451-455, quoted

by Casali, et al[3]). The detailed Mission Records, the Mission Diary, 1896-1902, and the Book of Deaths, 1902-1931, allow us to evaluate this process[3, 4].

The total population of the Selk'nam at the time of the beginning of colonization (1880) was about 2400 individuals[1, 3]. Between 1897 and 1902, according to the *Diario de la Misión*, the highest number of deaths occurred; in June, 1900, 168 residents are reported, and 49 deaths. In 1918 only 10 inmates are registered[3, 4].

Between 1896 and 1902, 126 deaths are recorded in the Mission's Diary. The causes of death were reported by the missionaries themselves in the Book of Deaths (Table 1). It is very likely that the ones registered as *SD*, and *Lung*, in addition to meningitis, were cases of rapidly evolving TB, and that, therefore 97% of these 105 deaths were due to TB.

Several factors were responsible for the near-disappearance, in less than half a century, of an ethnic group that had inhabited this region since about 10 000 years BP. In 1883, the Argentine government granted the first land concession on the island for sheep raising.

Wire fences are installed, the Selk'nam, for whom every animal, whether it was a red guanaco or a "white guanaco", could be hunted to serve as food for its meat, and to coat its skin, begin to hunt the first sheep and that in turn triggers the " hunting" of the Selk´nam[3-5]. This was added to the inter-ethnic contact, with the transmission of infections brought by the new inhabitants of European origin, as determining factors in the massive disappearance of these native peoples of *Isla del Fuego*.

Since then, how have prevention and control measures for these three diseases evolved in Argentina?

Rabies[6] Rabies vaccine was applied for the first time in Argentina in September 1886. It was the first vaccination in Latin America and the third in the world (after the application of the vaccine by Louis Pasteur in July 1885 and one carried out in July 1886 in the USA)[6, 7].

The Argentine physician Desiderio Davel visited Dr. Pasteur's laboratory in Paris, where he learned the production techniques of the antiviral vaccine. In 1886, he returned to Buenos Aires by ship and brought back the necessary attenuated rabies virus to prepare the vaccine, which he had maintained during the voyage by means of passages through nervous tissue (bone marrow) of rabbits, every 7 days[6, 8].

That same year, Dr. Davel prepared the first rabies vaccines. In this way, Buenos Aires was the first city in the world, besides Paris, to produce this vaccine. In 1927, the Pasteur Laboratory for Rabies Control, currently the Institute of Zoonosis, was inaugurated in Buenos Aires.

The last cases of canine rabies occurred in 2021, one in Formosa and another in the province of Buenos Aires. Also in this province, in 2021, the last case of human rabies was recorded, transmitted by cat bites (a variant of the bat-rabies virus). Between 2018 and 2021, 600 cases of animal rabies cases were notified in Argentina, of which 91% were insectivorous bats, 6% bovines and equines, 2% dogs, and 1% cats[9].

TABLE 1.– *La Candelaria Mission, causes of death (1892- ¿?)**

Cause	N°	(%)
Tuberculosis	72	(68.6)
SD	25	(23.8)
Lung	4	(3.8)
Whooping cough	2	(1.9)
Cardiac arrest	1	(0.9)
Meningitis	1	(0.9)
Total	105	(100)

*SD: Undetermined * Source: Casali et al. Ref. 3*

Rabies still causes tens of thousands of deaths each year, mainly in Asia and Africa. The WHO is leading the "Unite against rabies" campaign to achieve the goal of "No human deaths from rabies by 2030"[10].

Measles: 17 338 measles cases were reported worldwide in January and February 2022, compared to 9665 in the first two months of 2021. The 5 countries with the most reported cases, in the last 12 months, until April 2022, are Somalia, Yemen, Afghanistan, Nigeria and Ethiopia[11].

In Argentina the last endemic case was recorded in 2000. However, 179 cases classified as "non-imported" were confirmed in 2019 and 2020, which could indicate a resurgence. The National Vaccination Calendar includes two applications with the "triple viral" (measles-rubella-mumps), the first at 12 months of age and the second at 5 years of age[11].

In 2020, as a result of the pandemic, there was a decrease in compliance with the vaccination schedules, which had already declined between 2009 and 2019. The measles virus still circulates endemically in other countries of the Region (Brazil, Venezuela), and this, together with the decrease in vaccination coverage, implies a high risk of importation of cases and development of outbreaks in the country.

Therefore, the Ministry of Health urges the maintenance of high vaccination coverage and an active surveillance system for early detection of the disease[12-14].

Tuberculosis: Argentina is among the 12 countries in the Americas considered to have a "high burden of TB", with 14 000 cases and an incidence estimated by WHO at 31/100,000 in 2020[15]. Treatment is successful (bacteriological negativization - cure) in only about 54% of cases, which drops to 39% when there is multidrug-resistance.

The population that identifies itself as indigenous, with 4% of the total cases, is considered especially vulnerable[15, 16].

The situation of TB among these native peoples, in two bordering countries, Paraguay and Brazil, showed in 2016 that, although the overall incidence of TB was the same in both countries: 36.3/100 000, in that native population it was 335.3 in Paraguay, and 117.1/100 000 in Brazil, which means a Relative Risk of 9.2 and 3.2, respectively[16].

It can be added that also in Argentina, (2017-18), with an average notification rate of TB of 26.2/100 000, the rates found in two populations of native origin, *Matacos* and *Ramón Lista* (Formosa Province), were 159 and 208/100 000 respectively, the highest in the country[17, 18].

In order to prevent TB, it is necessary to detect early and cure infectious TB cases in the communities, and prevent future cases through treatment of latent TB infection (LTBI) and the administration of BCG vaccine to newborns.

It is also necessary for health personnel to have access to comprehensive knowledge about TB, avoiding misinformation, stigma and discrimination. The objective, in terms of health policies, is universal coverage and access to health care, especially for the most vulnerable populations. Clear state policies are required for financing care and access to quality health services, with regulatory frameworks for the production, quality control and use of TB diagnostics and drugs, mandatory case notification, improved recording of TB deaths in vital statistics, and comprehensive measures for the prevention and treatment of TB.

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