

## Diseases of hunger: Mexico 1915

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### Abstract

1915 was a terrible year for Mexican people. After dictator Huerta's fall, fratricide fighting involved diverse revolutionary groups. Mexico City was assaulted and occupied successively by different armies and, following the war came hunger and epidemics. Many people died from starvation, 30 to 40 every day in July and August. In this paper I review the medical texts written by physicians involved in the treatment of these patients. The main were E. Landa, M. Torroella and F. de P. Miranda and all of them concurred in the observation of important edema increasing to become generalized, important anemia and a watery aspect of the blood, facts that determine the term edema employed to characterize this disease. (Gac Med Mex. 2016;152:231-4)

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### Introduction

1915 was a complicated year for Mexico. In the middle of enormous political instability, fratricide struggle continuously re-emerged. Once Huerta was defeated, it didn't take long for conventionalist and constitutionalist groups to split and fight against each other for power. Roque González Garza and Venustiano Carranza, respectively, led both groups. The Constitutionalist Army occupied the capital city for second time and its forces remained under the command of General Álvaro Obregón who, shortly, on February 22, led a memorial ceremony in remembrance of Francisco I. Madero. However, all sorts of problems reappeared and, soon, a rupture between Villa and Carranza occurred.

The half million pesos contribution imposed by Obregón to the Church was not enough to achieve

minimal stability, and for the case we are going to examine, it didn't take long for a myriad of diseases to appear. War and plague, this time embodied by typhus, were accompanied by hunger, which in turn had an impact on epidemics' seriousness and variety.

### Events and famine

Before Obregón was forced to abandon the city in March 10, the Zapatistas, who were in possession of Xochimilco, cut the water supply off, and large part of the population was forced to resort to water originating in other places, to overuse the few existing artesian wells and even to resort to unhealthy water, such as that of the still remaining lakes, which were polluted and turned into swamps with garbage dumps at their shores.

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Shops closed their doors unable to pay the extraordinary taxes they had been imposed, since the successive governments demanded more and more money, with validity loss of the currency issued by the opponent group in power added. Coal became scarce, and the trees that once adorned the streets and avenues had to be resorted to. Supplies were scarce and crowds and lines were produced at grocery stores and warehouses; the police and soldiers had to intervene to maintain order and to prevent speculation and looting. Butt-stroking was not uncommon while people crowded where they might find something to eat, and grocery store owners who kept their shops closed were forced to sweep the streets.

It didn't take long for essential goods to be lacking; there wasn't even corn or *tortillas*.

On the other hand, sanitary conditions in Mexico City were quite poor, especially owing to the revolutionary movements. In 1911, mortality rate in the city amounted to 42.3 deaths for each 1,000 inhabitants, whereas, in the same year, the rate in Madras was 39.51, in El Cairo, 40.15, and in Constantinople, 15, in spite of cholera and bubonic plague, which were endemic there, and in the German cities of Bresgau, Koln, Dresden and Frankfurt, the rate ranged from 12.1 in the latter, to 19.4 in the former. Alberto J. Pani, in the book *Hygiene in Mexico*, concluded that the city was the unhealthiest of all large cities in the world<sup>1</sup>. However, curiously, the figures reported by the Public Health Higher Council only informed on one case of death by pellagra in 1909 and one by beriberi in 1912, which would indicate either a population with a nutritional status with no apparent severe forms of vitamin deficiencies or under-reporting of this type of diseases, which only then were beginning to be better known. In view of the catastrophic situation, extraordinary measures were taken.

At the moment the Convention government and its troops returned, shortages were at their peak, and the problem of hunger did not only continue, but was exacerbated. Antonio Díaz Soto y Gama, ideologist of the *Zapatista* movement, was appointed president of the commission created to solve the problem of hunger. The government obtained corn and some other basic foods from other parts of the country, had them brought to the capital city and organized their distribution in several points of the city.

The sale of corn was established at the Mining School, where more than 10,000 people crowded in, and the Red Cross and the White Cross had to attend to give first aid to those who suffered sunstrokes and

fainting fits. The same happened in the railroad station and at police stations, where the commission concentrated corn supplies and established small shops. The doors of grocery stores, markets and bakeries were forced open, and their contents, looted.

The police took care of distributing supplies to the people, controlling for distribution to be on an individual basis and for duplications and speculation to be avoided. Especially, justices of the peace and police commissioners from several small villages of neighboring areas of the city, San Andrés Tetepilco, San Simón, Ticumán, Zacaquico and Peñón de los Baños, developed intense activity alerting the population and its higher authorities and taking care of the maintenance of order<sup>2</sup>.

Not only public institutions took matters into their own hands: Manuel Amieva, Ignacio Rivero and Manuel Zamacona also created a Private Assistance Committee. The problem was felt especially west of the city, at Tacubaya, and peaked on July and August, when the city, occupied by the Zapatistas, was besieged by the Constitutionalist troops. Famine was prolonged several months further and caused countless victims. Recapitulating his evaluation on the deficient nutrition conditions already suffered by the capital city inhabitants, Alberto J. Pani, who in those months was in Veracruz with the Constitutionalist government, categorically maintained that social conditions had brought large part of the population from poverty to misery and that then "the deprivations suffered by the metropolis inhabitants were exacerbated to the point of making the fateful prophecy of *hunger-related deaths* come true", that shame for civilization that had led to the existence of "the new hunger-related deaths item in our horrifying mortality statistics"<sup>3</sup>.

Rodríguez Kuri, a diligent historian who has dedicated several works to Mexico City's social history, not knowing "any global, systematic estimate on the number of hunger-related deaths in the city" –documentation that also I have not been able to find–, points out that, in August 1915, i.e., at the famine's acme, 201 people died in the city due to starvation, whereas the American Red Cross spoke about 20-30 deaths every day, although this data was denied by the press of those days<sup>4</sup>. Those days' physicians who wrote on the subject agreed that ambulances picked up every day people starved to death lying on the streets and that large numbers of people died at hospitals for the same cause. The records of the American Hospital, which took care of a very special clientele, reported several cases classified as *starvation* during the aforementioned months.

Finally, on December 9, the Public Health Higher Council was reestablished, and the Department of Assistance for the people was created by decree, in order to control food, *tortillas*, bread and meat acquisition and sale at low prices, since speculation and abusive pricing of basic foods were commonplace<sup>5</sup>.

## Hunger-related diseases

In 1916, Everardo Luna presented a work at the National Academy of Medicine, which later was published in number 11 of the *Gaceta Médica de México* on that same year, with the title “Diseases of misery. Notes for the study of hydrohemia caused by insufficient nutrition”, where he gathered his observed experiences with patients who had suffered extreme degrees of acute or subacute undernourishment resulting of the shortage of food that had become critical during the previous year<sup>6</sup>.

Landa drew attention to the food shortage and the appearance of an epidemic during which a large number of patients started presenting with edemas. Initially, he didn't find an explanation for it, but he noticed that it started with fluid accumulation at the lower limbs, that soon it passed from the ankles to the knees and thighs, to rapidly become generalized. Patients started arriving to public hospitals, particularly to the General Hospital, where Landa made his observations at ward number 9. Physicians reported that nearly all patients had large amounts of fluid in the abdominal cavity, which in no time became prominent. With a heavily compromised general status, patients were feeling very sick; they showed extreme weakness and asthenia and, as Landa referred, they had marked skin and conjunctival pallor. Collected histories agreed that during the previous months they had eaten poorly and that most times their nutrition had been restricted to weeds of the *Amaranthus* and *Chenopodium* genuses, prickly pears, chards, purslanes, mallows and plants of the *Spinacia* genus. There was no adequate material available to perform laboratory tests, and therefore only a few urinalyses could be carried out, which reported total albumin absence; without being able to count red blood cells, blood had a colorless and “aqueous” appearance. In the autopsies practiced by Ernesto Ulrich, in addition to fluid in all cavities, blood was found to be aqueous, and viscera were also very pale and the contents of the stomach frequently included roots, leaves and even tree barks<sup>7,8</sup>.

Hunger, as Pani had pointed out, made its appearance revealing the extreme degree of misery suffered by the population.

In his article, Landa made a detailed report on the evolution of 4 cases (all died) and pointed out that growing edemas and weakness reaching adynamia had kept the patients from working, who had had no other choice but panhandling. In Tacubaya, Fernando Ocaranza reported having treated 38 patients: 22 died, in 14, the outcome was unknown, since they just didn't return to the office, and 2 were healed after having been treated with stimulants and nutrition<sup>9</sup>. Another interesting article, published in the same journal than that by Ocaranza, is the paper by Mario Alfonso Torroella, a young physician who was to be a pioneer of Mexican pediatrics and set standards for children nutrition based on early observations on undernourishment, which would culminate with the definitive establishment of the four degrees of undernourishment by Federico Gómez, describing the general features of the condition, associated it with edemas due to hypoproteinemia<sup>10</sup>. Landa refers that another great Mexican physician, José Terrés, had reported two cases he diagnosed as cachexia due to poor nutrition, which he associated with beriberi, in addition to the presence of multiple parasites.

Other source reports that Francisco de Paula Miranda presented “a work dated on July 10, 1916” where he addressed “Mexico's epidemic hydrops” and modified Torroella's denomination to propose the term hypoproteinosis<sup>11</sup>.

Torroella and Miranda, two exceptional figures who made numerous contributions to Mexican medicine, in fact spoke about hydremia and correctly defined it not as the main problem, but rather as the manifestation of a lack of proteins. Both authors, who were very young in 1915, revisited the subject in several occasions and many years later, Miranda in 1948<sup>12</sup> and Torroella in 1949<sup>13</sup>. It is worth remembering that, by the end of the 1920's decade, Francisco de P. Miranda had dedicated one of his main lines of investigation to nutritional problems and had managed to establish a National Institute dedicated to such studies. However, as referred in previous paragraphs, it was Everardo Landa who definitively drew attention to the relationship between extreme hunger and hydrops, with the presence of aqueous-looking blood, which he named hydrohemia.

Landa also added some foreign authors to the list, who referred conditions similar to beriberi, which had occurred in individuals who consumed exclusively weeds of the *Amaranthus* and *Chenopodium* genuses, as well as purslanes, with absolute absence of milk, eggs and meat in their diets. In the same text, Landa

also mentions a disease referred by Matignon, a physician of the French embassy in Beijing, which he named atriplicism, and that affected poor people and was attributed to intoxication by the ingestion of plants of the "*Atriplex* genus, bitaceae family, spinaciae group, which are herbaceous suffruticosus plants, regularly with alternate, fleshy peciolated leaves, with greenish-colored monoic polygamous flowers arranged in clustered glomerules or spicate panicles". Landa pointed out at the fact that purslanes were plants belonging to the *Atriplex* genus and, therefore, their effects could be related to those of the intoxication referred by Matignon among Chinese subjects and, thus, he suggested to carefully consider if the problem derived from consuming them as the only source of food, and if this was the case, would the problem be one of undernourishment or vitamin deficiency, or would it be about an intoxication?

In the reviews on Mexican medicinal and/or toxic plants, two species of the *Atriplex* genus are found: *A. canescens* and *A. lentiformis* (the former known with the popular names *cenizo* [ash-gray], *chamizo* [thatch, brush] and *costilla de vaca* [cow's rib], of the *chenopodiaceae* family. Conversely, the two reported species of purslanes correspond, respectively, to *Jussieuia repens* and *Sesuvium portulacastrum*, of the *onagraceae* and *aizoaceae* families, for which no relevant toxic effects have been reported<sup>14</sup>. Both are used as food and vermifuge, and the latter effect might be responsible for certain toxicity at extremely high doses, a situation that might occur in those who consume exclusively these plants for more or less long periods.

## Recapitulation

In the eyes of modern medicine, the answer is clear: it wasn't intoxication what individuals with hydremia had in 1915, but a highly severe proteinemia.

It should be remembered that in these first years of the 20<sup>th</sup> century, important studies were conducted on diseases until then considered to be epidemic and that were classified as deficiency diseases. This is the case of pellagra, which caused a terrible epidemic in central-African countries subsequently to the extensive

introduction and consumption of corn without following the preparation rules established by Mesoamerican cultures thousands of years back, consisting in adding lime when making the dough. From these years are Goldberger's works, who established its true origin and pointed out to its distribution in poor and undernourished population groups. At the beginning of the decade of 1920, it was already quite clear that pellagra was not contagious, but it could be endemic, although only in times of famine. It was also established that, between the years of 1915 and 1918, numerous cases had occurred in the USA, particularly in southern states, and in Mexico<sup>15</sup>.

Everardo Landa was one of the first authors to integrate the clinical and anatomopathological picture of subacute undernourishment resulting from the lack of minimal nutrients and to clinically describe the curse of starving to death.

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