

Central America's Silent Massacre:
The Politics of Chronic Kidney Disease Amidst Scientific Uncertainty

Everyone in Chichigalpa, Nicaragua knows what their creatinine level is. Or at least it appears that way. Creatinine blood tests are used to measure the state of a patient's kidneys. Too much creatinine in the blood—anything above 2.0 milligrams per deciliter—is an indication that someone's kidneys are seriously impaired. When I began meeting people in Chichigalpa for my research this past summer, they often introduced themselves to me with their creatinine level—without my solicitation—as if it were their last name. Chichigalpa is a small town located in western Nicaragua known primarily for its mammoth sugarcane production and for being the home of the Flor de Caña rum distillery, one of the country's most iconic exports. But, in recent years, Chichigalpa has also gained notoriety for being ground zero of one of Central America's largest, deadliest, and most mysterious epidemics of chronic kidney disease (CKD).

Over the last two decades, this epidemic has claimed thousands of lives, primarily those of young males along the Pacific coasts of El Salvador and Nicaragua. It is estimated that since 2000, the disease has killed more than 20,000 people in Nicaragua and El Salvador alone. Along with violence, kidney failure is one of the top causes of death among young men in El Salvador. Indeed, a particular neighborhood in Chichigalpa named Guanacastal Sur has been so heavily impacted by the epidemic that it has been dubbed *La Isla de Viudas* (the Island of Widows), due to the widespread death of the community's young men. Although it has received greater attention by epidemiologists in recent years, the etiology of the disease continues to elude researchers. This peculiar outbreak of Central American kidney disease has been so extensive that some epidemiologists created a new name for it: Mesoamerican nephropathy. But others, such as Dr. Ramón García-Trabanino, a nephrologist and researcher based in the capital of El Salvador, simply prefer to call it a silent massacre.

García-Trabanino put the CKD epidemic on the map by publishing some of the first journal articles on the phenomenon. While working in San Salvador's Rosales National Hospital he unexpectedly began seeing cases of young men, mostly coming from coastal towns, with late stage kidney disease. These young men, he recounted, often died within days or weeks of their first visit to the hospital. Out of sheer curiosity and necessity, he began to research this odd influx of CKD patients. Now, after nearly two decades of researching the disease, García-Trabanino seems to have more questions than answers. He is no longer the only person researching the epidemic and countless articles using multiple methods and reaching various conclusions have now been published on it. As research has progressed, several theories have emerged for the cause of the disease. For his part, García-Trabanino proudly states that he is more committed than ever to scientific doubt, rather than to certainty.

Yet, this scientific doubt shouldn't be mistaken for indifference. García-Trabanino speaks passionately about the need for a more comprehensive response to an epidemic that has remained silent, partly due to the nature of the disease and partly because it is impacting poor rural communities that tend to be neglected by the medical system. While García-Trabanino seems to doubt that any single cause will emerge as the primary culprit for the disease any time soon, there does appear to be a growing consensus on some common factors that bind its victims. Agricultural work, particularly in the sugarcane industry, is one of those key factors. But, what about such work could possibly be leading to kidney disease? Studies by Dr. Carlos Orantes, a nephrologist and researcher with El Salvador's National Institute of Health, pointed to pesticides as a possible factor. In response to this research, El Salvador's National Assembly approved a decree prohibiting the sale of 53 agrochemicals in 2013.

However, some researchers, including García-Trabanino, remain doubtful about the role of pesticides, arguing that studies conducted by Orantes' team never actually showed a statistically significant connection between exposure to pesticides and CKD prevalence. Pesticides, some argue, were simply a politically expedient culprit used by the current left-wing FMLN government to challenge the power of Alfredo Cristiani, the former president of El Salvador with the right-wing ARENA party and owner of a subsidiary of the agriculture biotechnology giant Monsanto. While some epidemiologists, such as Sandra Peraza with the University of El Salvador's Program on Work and Health in Central America, applaud the banning of pesticides, they don't believe that this will put an end to the CKD epidemic. Peraza and García-Trabanino both argue that stronger links have been made between CKD and hot climates. Agricultural workers in the coastal lowland areas of El Salvador, where the climate is hotter and more humid, have a higher prevalence of CKD than their counterparts in higher inland areas. Thus, heat stress and dehydration from toiling in intense heat during long work days has emerged as another popular theory for the epidemic. Peraza hopes that this research can be used to advocate for stronger oversight of occupational health standards, such as the provision of breaks and water, by El Salvador's Ministry of Labor.

But, García-Trabanino is also quick to point to research indicating that agricultural workers are not the only ones being diagnosed with CKD. Rather, some work in the fishing industry or as truck drivers. While he maintains that most victims are men, he explains that more women are being diagnosed as well. Moreover, nephropathy epidemics among young men are beginning to be studied in other parts of the world, such as Sri Lanka and Egypt. García-Trabanino stretches his hands out, explaining that these epidemics are all being registered in locations somewhere between the Equator and the Tropic of Cancer. Such research raises the alarming possibility that a young person does not necessarily need to work in a highly strenuous job to acquire CKD if they live in areas with extreme heat. What might this mean as these areas and more parts of the world

get hotter with climate change? Could agricultural workers in Central America simply be climate canaries, the first to be impacted by conditions that will spread?

For the young men who are living and dying with CKD in Chichigalpa, there is only one culprit—the Ingenio San Antonio (ISA), Nicaragua’s largest sugar cane refinery. This makes sense, since Chichigalpa has essentially been a factory town for over a century. For the most part, sugarcane production provides the only jobs. All of the men who have CKD have worked at the sugar mill and they all squarely blame the company. Most of the men I spoke with tend to believe that pesticides used by the ISA had a role to play. Grupo Pellas, a Nicaraguan conglomerate that owns the refinery, has consistently denied any responsibility for the disease. That is, until recently. After years of promoting research and generating media about the CKD epidemic, La Isla Network (LIN), an international non-governmental public health organization, was finally able to convince the company to collaborate with them in implementing an occupational health protocol that they believe will curb the spread of the disease. The LIN protocol, dubbed the Worker Health and Efficiency (WE) Program, emphasizes water, work breaks, shade, and the use of heat-appropriate clothing. These former rivals will now work together to pilot the program for the next two years.

But, both Grupo Pellas and the Nicaraguan government have yet to take full responsibility for the plight of the sugar refinery’s former employees who are still struggling with kidney disease. One former employee, Nelson, explained to me that if he goes to receive dialysis he wouldn’t be able to feed his two children. While the dialysis is covered by his social security from his years of working at the ISA, he has to travel to Managua to receive treatment. The cost of the trip is not covered. The former employees have formed a number of organizations to demand a response from the company and the government. But, they argue that their protests have been repressed by the police or ignored by the media and that some of the organizations have been coopted by the company. Indeed, when former workers occupied the entrance to the sugar mill in a protest in 2014, two men were shot by the police—one killed and one left paralyzed. Blood spilled in the desire to get their blood cleaned. In Chichigalpa, blood and creatinine mean everything. While the mystery of CKD continues unresolved, lives are being lived and Chichigalpa just opened its second cemetery.