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Combating Konzo

EAST LANSING, MICHIGAN – Too many preventable diseases, from AIDS to yellow fever, have long afflicted Sub-Saharan Africa. But eradicating them requires an understanding of the disease in question, money, education, government support, planning, and, not least, an interest from the community and the wider world in solving the problem.

Consider a preventable disease that most people have never heard of: konzo, a permanent, irreversible, upper-motor neuron disorder, common in rural areas of Sub-Saharan Africa that rely on the bitter varieties of the cassava plant as a staple crop. Konzo occurs when cassava tubers are not properly prepared before consumption, which usually requires soaking them until they ferment and then drying them in the sun to allow for the breakdown of cyanogenic compounds. Hundreds or thousands of people in a village region can be affected with every outbreak.

Konzo is especially common in the Democratic Republic of the Congo, the Central African Republic, Mozambique, and Tanzania, and often follows droughts or conflicts, when food is scarce. Women and children are the worst affected, especially during times of economic hardship, when they have the least access to meat, beans, and other sources of sulfur amino acids necessary for the liver to detoxify cyanide in the body.

The effects are not easy to miss. The World Health Organization defines konzo as a visible spastic abnormality of gait while walking or running; a history of onset within one week in a formerly healthy person, followed by a non-progressive course; and exaggerated jerking of the knees or ankles without signs of spinal disease.

Konzo's severity varies. According to the WHO's 1996 classification, the disease is deemed mild when the victim does not need to use walking aids regularly; moderate when one or two sticks or crutches are used; and severe when he or she is bedridden or unable to walk without support.

Because konzo was initially characterized as a pure upper-motor neuron disease confined to motor pathways in the central nervous system, it was suggested that the cognitive effects were minimal. But electrophysiological evidence later emerged suggesting that higher-level brain functioning may be affected as well. In documenting neurocognitive impairments in children with konzo, my colleagues and I also noted sub-clinical symptoms even in konzo-free children living in konzo-affected households, a finding based on their performance on more specialized neurocognitive tests of memory and learning.

These subtler symptoms may constitute a pre-konzo condition, providing a warning that a child is approaching the disease's threshold. Thus, the neurocognitive effects documented for non-konzo children in konzo-affected households and communities make it all the more important to ensure food safety in regions dependent on bitter varieties of cassava with high levels of cyanogenic compounds.

To this end, the Bill and Melinda Gates Foundation has supported research leading to the development of nontoxic, high-yield varieties of cassava. These genetically engineered strains can thrive even in degraded soil, so that people no longer have to turn to the more toxic varieties.

But disseminating these safer strains is proving difficult. Konzo-affected regions lack the agricultural, educational, and public-health capacity and infrastructure needed to implement the necessary changes. For the same reasons, these regions fail to diversify their food staples to include safer crops such as millet, maize, or beans.

Because there is no cure for the neurological damage that konzo causes, the battle against the disease must focus on prevention. While that means continuing to demonstrate the benefits of new strains of cassava and other staples, the first priority must be to educate people, especially village women, about the hazards of eating unprocessed cassava, and to teach them how to prepare it safely. Using culturally appropriate social marketing, similar to those used in anti-HIV education, the message can be spread through social networks, mobile phones, radio, and television.

To be sure, communities in affected regions have long followed safe, traditional practices. But they may be unaware of why these practices are so important, and therefore of the consequences of not adhering to them. Especially during times of upheaval and increased food scarcity, soaking the peeled tubers for three days until fermentation, and then sun-drying them for a day, might seem like an unaffordable luxury. It is not.

Millions are at risk of konzo, and outbreaks can occur at any time. The neurological injury can be debilitating, and it is permanent. Because we know how to prevent it, we are obliged to act.

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