SOME THOUGHTS ON THE VACCINATION DEBATE

BY NICHOLAS GONZALEZ, M.D..

I appreciate the opportunity to add my thoughts to the ongoing debate over vaccinations in the Journal Club and BaseCamp forums. In my mind, the discussion, sometimes heated, really brought into my focus the larger, more global issues of infectious disease, the nature of infection, and the all-important participant in the action, the host.

I will say I don't think it too helpful when physicians and scientists turn to emotional arguments and pleas that do little to advance a scientific, objective perspective. Evoking a paralyzed relative or poor Thai children doesn't teach us what we need to know about the role of innate immunity, and the pathogenicity of microorganisms.

In terms of my own background, although I am known to many as a physician offering an intensive nutritional program for patients diagnosed with advanced cancer and other serious diseases, my formal training was in cancer immunology, in a specially designed program created for me by my conventional mentor Robert A. Good, M.D., Ph.D., for years president of Sloan-Kettering. Dr. Good, called the "father of modern immunology" by the *New York Times*, was the most published author in the history of medicine, and the scientist who first unraveled the immune complexities of the thymus in the 1950s. When I joined his group as a fellow, I lived in his house with his wife, living, breathing, and ingesting immunology, an experience that has served me well in my medical career however far from the conventional it has veered.

Through Dr. Good, I learned of Rene Dubos, Ph.D., the famed Rockefeller University researcher whom I mentioned in a Journal Club debate. Dr. Dubos started his professional life as a soil microbiologist, but then in the 1950s and 1960s emerged as the leading voice, insisting we all view infectious disease in an ecological context – a lesson that has stayed with me since I devoured his many books and papers years ago. Dr. Dubos knew more about the subject than anyone who probably will ever live, and along the way he first warned in the 1950s that antibiotics came with a down side, the disruption if not the destruction of our normal bacteria flora, a problem virtually ignored at the time by the Western research and medical world.

I think, in the current debate, it would be a most useful exercise to go back in time, to review historical examples of allegedly or presumably catastrophic infectious disease, specifically two examples, that of polio and Keshan's disease, for which in both cases a vaccine was thought to be the only solution. I realize others have addressed polio in other posts and through other links, so I will limit my comments in that case.

I remember the hysteria generated in the media by polio, the well-funded advertising campaigns by organizations such as the March of Dimes, relying on, of course, emotional arguments to raise money from "regular" moms and dads and Girl Scout and Boy Scout troops all over the Country. My childhood vision of polio was that of a true catastrophe, threatening the entire population of the United States, with our only hope the dedication and hard work of our wonderful research scientists who were extolled in the press on a near daily basis.

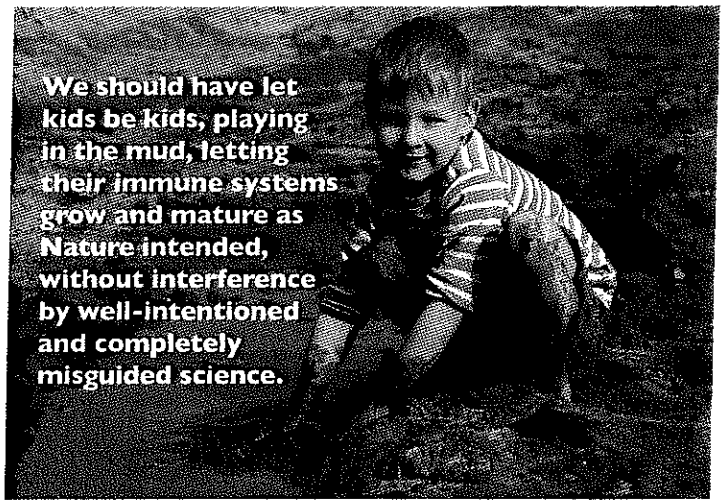
As a fledging research immunologist under Dr. Good, and somewhat fascinated by Dubos' perspective, I began to investigate the actual epidemiology and ecology of polio. As I was to learn, it turned out that polio "epidemics" as they were called, didn't really emerge until the late 19th, and early 20th Centuries. I had been taught in medical school that the epidemic nature of polio showed itself because of growing population density in urban areas associated with poor sanitation. Although this position seemed logical, since polio transmits through a fecal oral route, the opposite has proven to be the case.

Studies from the late 1940s, before the availability of the Salk vaccine, indicated that in low-income urban areas up to 90% of the population showed antibodies to polio, although most who tested positive had no recollection of having been infected and had not experienced any residual neuro-muscu-

lar problems. For them, the disease seemed no more serious than a brief upper respiratory infection or gastroenteritis.

True, the number of deaths from the disease and cases of paralytic polio did increase significantly in the early 1950s, but these numbers were hardly at the level of full-blown catastrophe. For example, in 1949, considered an epidemic year, 42,173 cases were identified in the U.S., with 2, 720 deaths. Anyone unfortunate enough to be killed, or struck down and left paralyzed would be an individual tragedy, but the numbers just were not there for a major epidemic as has often been portrayed. Even throughout the so-called "epidemic" years of the late 1940s and early 1950s, most contracted the virus without any recognition they had been infected with the "deadly" polio organism.

Ironically, the increasing incidence of paralytic cases and deaths, although still relatively small, occurred as intensive public-health campaigns to clean up the cities went into full force. As in most instances, Nature doesn't work the way the human mind would like it to work. It turns out all these highly funded and well-intentioned efforts to prevent polio by cleaning out and sterilizing the cities came inevitably with unintended consequences. In its usual ecological setting, prior to these public-health experts at work, polio rarely struck infants younger than six months old, most commonly infecting children between six months and four years of age when the disease usually presented in its "common cold" form. With improved sanitation, polio tended to hit at later ages, even into adulthood, when it was quite a different, far more aggressive illness. So, with improved sanitation, fewer children were exposed to the disease, more adults were, and the results in adults were disastrous. In "unclean" urban areas, early exposure mitigated the severity of the illness, with the added benefit of providing lifetime immunity. With improved sanitation, the disease became far more deadly. In this context I am reminded of more recent studies demonstrating that children allowed to play in the mud and muck – as I was as a child before germ-phobia became itself an epidemic – and who attend day care centers where they are exposed to all manner of drippy noses and minor infections, tend to have far less asthma, far fewer allergies, and far stronger immunity, than their over-protected colleagues.



Keshan's Disease provides another interesting take on another seemingly "catastrophic" infectious disease, requiring for salvation it was thought the ingenuity of our best microbiologists and vaccinologists. Indeed, although Keshan's is more obscure than polio, the lesson is as striking. Keshan's, named after the province in China where the syndrome had been first identified, would strike with a progressive cardiomyopathy that often ended in rampaging deadly heart failure and fatal cardiac conduction defects. It could afflict children, young adults, old men and women, and no one seemed immune.

During the 1960s, before China had opened to the World, the disease became so significant a problem that the government invited Western researchers to help find Keshan's cause and cure. Subsequently, these smart scientists honed in on a new and particularly virulent strain of Coxsackie that appeared be the definitive culprit. In the years that followed and with the "cause" known, the "race for the cure," that is a viral cure, went into full swing.

However, some bright epidemiologists looking at the incidence province by province noted that Keshan's was only to be found in epidemic proportions in certain areas, leaving others, sometimes adjacent to the danger zones, free of the disease. Since the affected provinces were not necessarily geographically isolated from the Keshan-free regions (by mountain ranges for example), physical separation seemed not to be an issue. Further, since the Chinese are a relatively genetically homogeneous population, bizarre DNA defects were not thought to be at fault.

Surprisingly, since conventional researchers usually discount environmental causation, some of the scientists began studying the soil in the high-incidence and low-incidence regions, looking for a, well, an ecological solution. To their astonishment, in every high-incidence area they studied the soils were significantly lacking in the trace mineral selenium, needed for the generation and regeneration of glutathione so critical in modulating free-radical reactions. In areas of low-incidence, the soils were selenium replete. Apparently, only in the context of selenium deficiency did the normally well-behaved and only mildly virulent Coxsackie virus mutate into a highly aggressive, cardiac-toxic organism.

With the simple solution of selenium supplementation enforced in endemic areas, the disease has become for China a rarity, largely a non-issue – as long as the population in vulnerable areas "takes their vitamins," or in this case, takes their minerals.

Here is a case of an "infectious disease" with an incidence and fatality rate in affected provinces higher than polio ever was in the U.S. At the height of its reign, Keshan's was a very disabling, very deadly disease. And of course the same expert forces mobilized, as they do, to create the ideal Coxsackie virus vaccine to end this modern-day plague. But as it turned out, all the Chinese needed was more selenium.

Most of us, that is most "alternative" practitioners, have a vague belief that it is the "terrain" that determines the nature and severity of infection. With Keshan's we have an ideal laboratory for this hypothesis, in which a deficiency in a single nutrient, in this case selenium, could cause a simple common-place virus, Coxsackie, to mutant into a very effective killer.

Polio is, in my opinion, somewhat more

complicated. Dubos did believe that the underlying nutritional status of individuals often would determine the nature of the infection, whether it be mild or deadly. But, here too, the ecological forces are so important, with exposure at the right age in the right way in the right circumstance provoking only mild disease, with the added benefit of that life-long immunity.

I think myself so fortunate that I contracted, and endured, the usual childhood illnesses, including measles, mumps, and chicken pox, even a minor brush with Epstein Barr. For me, and for all my school friends, these diseases were hardly anything worth remembering particularly, leaving us somewhat disabled for a few days, with much-appreciated time off from school and a certain amount of parental pampering. No one I knew was left with encephalomyelopathy, nor any other serious neurological deficit as a result of their experiences with any of these viruses. I do believe these illnesses served me a valuable function, testing my immune system, letting it flex its muscles, teaching it how to work against a mild infection so that someday it might effectively deal with a more serious organism.

I see so many patients in their 20s and 30s, the first of the highly-vaccinated generation, coming to my office unable to function, having been exposed to some viral illness like Epstein-Barr, or Borrelia, or some associated "coinfection," who five and ten and fifteen years later despite aggressive treatments of all types, both alternative and conventional, are unable to function, finish school, hold a job, at times – and you all know patients like this – unable to leave their room (except initially to see me). These are young adults with immature immune systems, whose immune cells either underperform, don't perform at all, or that over-react, with immune regulation gone haywire. We can get these patients well, fortunately, but they often endured quite a bit of suffering for long periods of time. And these are not the kids with autism, these are young people with promising futures and careers ahead, sidelined and sidetracked by some trivial little virus.

When we think about the child paralyzed by polio or the poor, debilitated, diphtheria-infected Asia children, we need to step back for a moment, and realize Nature really isn't the enemy, it's so often – as Dubos made clear 50 years ago – what we do as individuals, as cultures, and as governments that makes a tolerable, manageable problem into something worse, and this includes force-feeding vaccination. When these discussions begin, just remember the negative blowback from those "improved" public health measures in urban areas, that made polio a much worse disease than it had been, and left in their wake death and disability.

Speaking scientifically, it appears that no polio vaccine was really needed any more than it was needed for Keshan's. Instead, we should have let kids be kids, playing in the mud, letting their immune systems grow and mature as Nature intended, without interference by well-intentioned and completely misguided science.