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CHEMICAL WARFARE IN SOUTHEAST ASIA - PERSONAL OBSERVATIONS*

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Medical Experience - 1980:

I was in charge of the tuberculosis and pulmonary disease program in Ban Vinai Camp in Northeastern Thailand from January to July of 1980. At that time, the camp was populated by somewhere between 35 and 40,000 Hmong refugees from Laos. New arrivals, after traveling for a month or more from their villages in Laos, were entering the camp at a rate of at least 1,000 per month. After crossing the Mekong River into Thailand, they were detained at the Pak Chom Holding Center for up to two weeks until being released to enter the camp where they were first available for any medical examination.

During my diagnostic evaluation of patients with pulmonary disease, I had contact with at least 50 people whose lung disease was possibly caused by exposure to a variety of chemical weapons used in their native Laos. Although I was primarily occupied with diagnosing and treating patients and had little time to do a systematic study of the chemical warfare issue, I interviewed and examined enough people who had experienced chemical attacks so that I became convinced of the truth of the Hmongs' allegations, which have been disputed in the media and even in the scientific literature.[1,2]

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*Parts of this material have been previously presented in my Proposal for Special Relief to Victims of Chemical Warfare in Thailand Refugee Camps, September, 1980; in an oral presentation to The Asia Society, New York, February, 1982; or in my testimony before the Subcommittee on Asian and Pacific Affairs, House Foreign Affairs Committee, U.S. House of Representatives, March 30, 1982.

My main reason for taking an interest in chemical warfare lung injuries was that I had to differentiate these from tuberculosis and other infectious diseases. Eventually "poison gas lung disease" became one of our frequent diagnoses in the clinic at a time when U.S. officials in Bangkok and experts elsewhere were skeptical of the Hmongs' reports.

I recognized three categories of lung disease seen in the camp associated with exposure to chemical weapons. The most frequent type was chronic bronchitis, which was objectively nonspecific and was treated fairly successfully like chronic bronchitis. These patients gave histories of chemical exposure from 1 to 3 years prior to coming to the camp. The only unusual feature of the cases in this group was that young people were presenting with this, which is usually a disease of the elderly.

The second type was less frequently seen but appeared to be more specific. Initially, it was confused with tuberculosis. Patients had chronic hemoptysis with variable amounts of blood in their sputum, which was characteristically thin and bloody, in contrast to the thick, purulent and bloody sputum of pneumonia, tuberculosis, or paragonimiasis patients. Microscopic examination of the sputum found no evidence of infection, and antibiotic therapy caused little improvement. Their chest X-rays were usually normal. Along with these pulmonary symptoms, there were other systemic symptoms of peripheral neuropathy, nausea, vomiting, anorexia and weight loss. Males complained of impotence and females reported spontaneous abortions after their exposure. These patients reported exposure to a yellow dust within the previous 1 to 4 months. (It should be pointed out that I saw no patient before a minimum of 1 to 2 months had passed since their exposure). Because this hemoptysis type was quite unusual and the most dramatic, I reviewed our clinic records to estimate how often this type was being seen. In 85 patients presenting with hemoptysis, there were 22 who had no evidence of infection but gave definite histories that their problem started with exposure to the yellow dust in Laos. The others had tuberculosis, paragonimiasis or were undiagnosable.

The third type was very unusual and very difficult to documen. and to exclude other diseases. I referred to it as the congenital form. It was seen in babies from mothers exposed during their pregnancy. These babies were weak and lethargic, but generally well nourished. Their respiratory effort was very poor, and they died of respiratory failure.

While talking to patients and other people, I heard many stories that indicated that they had been exposed to a number of chemical agents. A red gas, possibly a nerve gas, caused immediate incapacitation, rapid loss of conciousness, and death. A yellow "drizzle,"* which sounded most like a blister agent or vesicant, caused skin blisters and respiratory effects. A white smoke, possibly a form of tear gas, was considered to be the most potent because it caused burning of the eyes and respiratory tract from a long distance. There were other stories of poison needles or darts from exploding "wonderful" dart bombs, and stories of poisoned food and water and of toxic injections. Most of these, however, were essentially impossible to document.

Reports of a yellow chemical indicate that it is a relatively new type of weapon that has been used since at least 1977. Symptoms occurring after exposure to this were described to me as follows:

1. Burning sensation of the eyes, nose, and lungs.

2. Nausea, then vomiting with blood.

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*This may or may not be the agent referred to as "yellow rain", which is a term popularized by Western journalists. The Hmong have only one term, usually translated as "poison gas," with which they refer to all chemical weapons.

3. Diarrhea with blood occurring within one to several hours after exposure. If this symptom occurred, the person would usually die within a week. Breathing opium fumes or ingesting opium infusions would, in some cases, lessen the symptoms and prevent death.

4. Coughing with chest pain and blood in the sputum developing within hours after exposure. These people might die after up to several weeks later and were probably the same type of cases, the milder forms of which I saw in camp with hemoptysis.

5. Variable periods of unconsciousness lasting up to several days with disorientation, dizzyness, and weakness. Occasionally convulsions occurred.

6. Skin contact caused blistering within a few days. The blisters were small and multiple, scattered about the body, and the refugees commonly described them as "scabies." Examination of these lesions, when seen in camp at least a month after exposure, did appear similar to scabies, but mites were rarely documented.

Long before any mention of mycotoxins had appeared,[3] I felt that this yellow agent was quite peculiar, and I made a list of the most consistently reported characteristics of the material, which are as follows:

1. It had a relative short range effect, compared to the white smoke agent.

2. It was not particularly rapid acting, but had major delayed effects.

3. It had an action on the mucosae of the respiratory and gastrointestinal tracts, to produce bleeding.

4. It acted on the central and peripheral nervous systems.

5. It was very toxic in water, causing death in as little as one-half hour from vomiting and diarrhea with blood.

6. It killed children and small animals preferentially, possibly because of a higher per weight dose or because of increased exposure to environmental dust.

7. There was evidence of fetal damage with abortions and the congenital hypoventilatory syndrome that I described above.

8. Boiling contaminated water did not lessen its toxicity.

9. It was usually dropped from aircraft and appeared on the ground and other objects as dry, or moist turning to dry, yellow to red dust or particles, ranging in size up to 2-4 mm, which persisted at least 7 days.

10. Leaves of plants, especially the broad leaf types (banana and papaya) turned dry and yellow within a few days.

Update - 1982:

I revisited Ban Vinai Camp the week of March 20-27, 1982. At this time the population was approximately 31,000. In contrast to the situation in 1980, there were very few recent arrivals in camp and no refugees in the Pak Chom Holding Center. Only less than 300 new refugees had entered the camp since November of 1981, and the groups that were coming across the Mekong River were much smaller, usually numbering less than 20.

I interviewed representatives of most of these recently arriving groups, and they all were familiar with the same yellow agent described in 1980. Altogether I spoke with refugees from several villages in Xiang Khoang Province (Phu Hak, Phu Sao, Phu Bia, Phu Kan Houa, Padong, and Phangont) and in Vientiane Province (Ban Duon, Phouynaw, and Nang Pao) who gave detailed accounts of many chemical attacks that occurred from 1977 to 1982. Many of the people had experienced the same symptoms as I noted in 1980. In addition to several attacks with the yellow agent, two of the groups had experienced attacks with other agents which were described as more incapacitating than the yellow agent, but caused similar symptoms. One agent was a white liquid and the other was a blue-green very pungent mist. Consistently, these recent refugees said that it was the poisonings which made them decide to leave Laos.

Analysis of the Medical Evidence:

Many medical persons, including myself, are now convinced that the Hmong have been subjected to repeated attacks with lethal chemical weapons. However, no one has made a proper in-depth investigation of the lesions suspected of being caused by the agents. Initially, very few people knew the Hmong well enough to ask particular questions regarding the refugees' histories; thus, many ailments which may have been caused by poisoning were attributed to other, infectious, causes. Only recently have enough medical people become sufficiently aware of the problem to consider that poison may be contributing to or causing the diseases that they are treating.

A major difficulty in studying the symptoms of the refugees is the long time period between their exposure and when they are examined medically in the Thailand camps. Those who are most severely affected either die in Laos without any chance for post-mortem examination, or are too weak to make the

journey to Thailand. By the time the victims are seen in Thailand, their symptoms are resolving, and any visible lesions are too old to be very specific, especially with the crude diagnostic facilities available there. Because of the Hmong's animistic beliefs, no autopsies have been permitted or, to my knowledge, performed in the camp.

Few people have tried to relate diseases of the Hmong to chemical exposure. Dr. Amos Townsend is a notable exception who has examined refugees along the Kampuchean border, as well as the Laotian border, and his conclusions are essentially in agreement with my own. An independent study from Canada also confirms these conclusions, and in addition, this study also points out that the symptoms of the Hmong are similar to those of Stachybotryotoxicosis.[4] Unfortunately, the United Nations Group of Experts' initial report of November 1981, was too superficial to be very useful.[5]

Although the present medical staff at Ban Vinai accept the refugees' stories as truthful, this group, in the past, has had neither the time nor special interest in pursuing the chemical warfare issue. Being supported by a religious organization, they are quite concerned about the political implications and are very careful about making public comments. Unfortunately, no other groups are in charge of the hospital, so that detailed records of cases have been scarce. Other than Dr. Townsend, who is a retired U.S. Air Force physician, no medical specialists have come to that camp for any extended period of time to assist in case identification, documentation, sophisticated diagnosis, or treatment. As a result, the present medical evidence regarding chemical warfare injuries is not documented nearly as well as it could and should be.

Correlation of Hmong Accounts With Medical Findings:

In considering whether a complaint is related to injury by an unknown chemical weapon, the two most important considerations are, first, a consistent and convincing history, and second, exclusion of other causes. In

regards to the first, it is necessary to consider the reliability of the Hmongs' accounts in order to analyze both the symptoms of the poisoning and the details of the incidents. Since all victims so far have not been examined medically until at least one month after their exposure, the analysis of their acute symptoms depends solely on the accuracy of their reports. I have spent a long time in interviewing patients, and thereby have become familiar with their ability to relate accurately what they actually experienced and what they may offer as interpretations of events they imperfectly understood.

For the most part, the Hmong people are quite honest. Their accounts are related unemotionally and stand up to repeated and detailed questioning. Furthermore, people interviewed separately and by different persons give similar descriptions regarding time, place, and symptoms. This is not to say that all of their stories are to be taken literally. There have been a few episodes in which frightened sick patients tried to tell me that their disease was caused by poisoning, when in fact, it appeared to be a natural one. On the other hand, there are inconsistencies with some Hmong accounts which may indicate that several agents or mixtures of agents have been used with various methods of deployment and vehicles of dispersal.

The credibility of the Hmongs' accounts was questioned for several years because the acute symptoms they described did not fit with any of the conventional chemical warfare agents used in previous wars. After trichothecene mycotoxins were identified in environmental samples from areas of chemical weapons use in Laos and in blood samples from Kampuchean refugees, it was realized that the unusual symptoms reported by the Hmong corresponded closely with those documented in cases of accidental animal and human poisoning. The trichothecene toxins are known to be powerful inducers of hemorrhagic syndromes.[6] Furthermore, the yellow color of the agent is likely to be from the pigment produced by the strain of Fusaria fungus used

to biosynthesize the toxins.[7] From the available evidence, it is a reasonable hypothesis that these trichothecene-containing chemical weapons are crude extracts of cultured fungi dispersed in a relatively volatile solvent, most often from aerial sprayings. Since the toxins do not have the immediately incapacitating effectiveness of, for example, nerve gas, they are not likely to be used in a battlefront situation. Rather, as the reports from Hmong suggest, they are used as more insidious poisons to weaken and eventually destroy the population over a prolonged period. This type of chemical weapon is particularly dangerous because, after taking measures to avoid the initial spraying, people may continue to live in a contaminated area, unaware of the long-term effects of the toxins. Furthermore, the symptoms that these toxins produce mimic natural diseases, and the chemical assays for these compounds are relatively difficult. Consequently, these agents can easily escape detection, as this whole issue ultimately demonstrates.

In regards to the second consideration mentioned above, the exclusion of other causes, it is important to realize that in Southeast Asia, there are many causes for skin lesions, pulmonary disease, and gastrointestinal disorders. In addition, the difficulty of establishing a precise relationship of a lesion to a chemical injury increases with the time after the exposure. Currently, only the crudest diagnostic facilities are available to be applied a relatively long time after the injury has at least partly resolved, so that excluding other causes is difficult. Clearly, what is needed to recognize chemical warfare injuries are more sophisticated diagnostic methods that can be used to examine victims as soon as possible after their exposure.

In questioning many of the Hmong, I frequently asked them the motives of their enemies' use of chemical weapons. The most common reason given was that the Vietnamese were seeking revenge for the Hmongs' cooperation with the United States during the Vietnam war. Those supporters of General Vang Pao, both the soldiers and their families, are most actively sought for elimination. These people must remain in the forest in hiding in order to

stay alive in Laos. Hmong villages are controlled by Pathet Lao and Vietnamese soldiers, and in these, people try to cooperate in order to live peacefully, even providing Vietnamese soldiers with food. Nevertheless, these villages are also attacked with chemical weapons. Most Hmong feel that the Vietnamese and their supporters want to kill them all, but many are either unwilling or afraid to depart Laos.

The Hmong Sudden-Death Syndrome:

Within the last three years, over fifty previously healthy young adult Hmong males, who had emigrated and were living in the U.S., have died suddenly in their sleep. Post-mortem examinations of these cases have demonstrated no cause of death. While this number by itself constitutes no significant public health problem, in the total population of U.S.-residing Hmong males of similar age, this manner of death is the most common. The Center for Disease Control (Atlanta) is investigating these cases, and so far, there has been no evidence connecting the deaths with previous exposure to chemical weapons.[8] However, to conclude at this point that there is no relationship between these two remarkable circumstances (the history of poisoning and the sudden death syndrome) is probably premature. Rather, it seems more reasonable to consider alternative explanations. For example, the relatives of the deceased may have been unaware of an exposure, or had they been aware, they may have chosen to conceal the facts; Hmong in general have become rather mistrustful of strangers with questions. Admittedly, it would be highly exceptional for a toxin to produce a death of this type, especially so long after exposure. Nevertheless, in view of the lack of medical studies on the long term effects of these chemical agents, all possibilities must be considered, and this situation again points out the necessity of obtaining objective information.

Recommendations for Further Action:

In the past, there has been no organized effort to systematically record, analyze, and correlate the Hmongs' reports. When I was at Ban Vinai

in March 1982, I prepared a detailed questionnaire for recording the witnesses' accounts and encouraged the medical staff to help the refugees complete as many forms as possible. They agreed that such a program would be desirable, but pointed out that many of their current programs were suffering from understaffing. A further problem is, because of its location in a politically sensitive border area, the camp is relatively inaccessible to U.S. military medical people. Thus, a private investigational program which would be well worth funding, in order to obtain the maximum information regarding the agents involved over the years, the places they have been used, and the acute and chronic effects they produce, is a diagnostic medical team equipped with compact but sophisticated equipment that could operate in border areas to detect cases of chemical warfare injuries. This facility would be useful to corroborate refugees' reports, to study particular lesions caused by agents, and to develope casualty treatment programs. Up to now, much of the data-collecting has been done by journalists and political and/or military specialists, few of whom are trained sufficiently well to adequately assess technical or medical information. In addition, much of the data accumulated by the U.S. State Department is classified, and it is doubtful that this material will be available for independent analysis. Surprisingly, even as a "cold war" issue, this topic has not received as much attention as one might expect of a potential enemy's development and large-scale deployment of a new class of biochemical weapons.

Despite the confusion and controversy surrounding this issue, it would be beneficial for humanistic, public defense, and medical scientific reasons, if more independent medical experts became aware of the situation so that there may be a more complete assessment of the present and past experiences of the Hmong.

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