

tence of the disease is not, therefore, due to a lack of tools to eliminate it, but to the failure to decide to use them. It should be stressed that research now underway will help reduce the time and expense required to achieve this goal.

Replies by countries to surveys conducted by CEPANZO in 1971 and 1977 indicate that, while the disease continued to occur with the same or greater intensity, vaccine production for human use remained at ap-

proximately the same level. It is important to stress again that the control of this zoonosis in man depends on the extent to which there is a reduction in the number of cases in epidemiologically important animal species that transmit the disease.

(Source: Pan American Zoonoses Center,
Special Publication No. 3, 1981.)

Acute Respiratory Disease (Atypical Pneumonia) in Spain

On 4 May 1981 the Spanish health authorities and the Ministry of Health were notified of the hospitalization of six brothers who for three days had shown signs of an acute syndrome of unknown etiology. Of these patients, all residents of Torrejón de Ardoz, 20 km from Madrid, one was pronounced dead on arrival at the medical center. The same day, two of three siblings of a neighboring family experienced an onset of similar symptomatology. All cases were diagnosed as "atypical pneumonia" based on distinctive radiologic characteristics and respiratory symptoms.

By 8 July 1981 there was a total of 10,179 hospitalized cases with 65 deaths, 41 of which were in Madrid and 24 in the provinces. Most affected were the north central and northwestern provinces, particularly Palencia, Valladolid, and León. Only sporadic cases occurred in the southern and coastal provinces and the islands. Eleven cases were reported in Portugal and these had been in Madrid previously.

Clinically, the disease was characterized by symptoms of interstitial pneumonia (confirmed by x-ray), fever, marked, progressive eosinophilia (about 8 days after the onset) and, in many cases, cutaneous symptomatology, in particular pruritus. A large majority of cases was in the 15-55 age group with only a few under four and over 65. In general, most patients lived in suburban or rural areas and belonged to the lower-middle economic stratum. Relapses with neurologic symptoms were also observed.

Initially, epidemiological investigations seemed to indicate an infection with *Mycoplasma pneumoniae*, which was isolated in a number of samples from pathological material, but they also pointed to viral pneumonia since various viruses, mainly the adenovirus, were isolated at the same time. However, lack of transmission, lack of coherent laboratory findings, a typical occurrence in families, age distribution of the cases, and the use of a particular oil as the only common factor, directed attention to the possibility of a toxic factor.

The clinical and epidemiological investigation revealed the use of an adulterated edible oil sold without authorization. The oil was distributed by two small companies in Alcorcón and Badaján near Madrid and sold from house to house by unauthorized dealers as "olive oil" in five-liter unlabeled and unsealed plastic containers. Subsequent investigations showed that the cheap, denaturalized oil (colza-oil) was imported for industrial use by a company in San Sebastián and was "de-denaturalized," or regenerated by subsequent buyers in order to sell it as edible oil. This oil was then mixed with soy and olive oil. It seems that this practice had been going on for years without reports of adverse effects. Apparently, either the de-denaturalizing or the mixing processes were deficient in a large consignment (approximately 110 tons) of oil, which is thought to have given rise to the outbreak of intoxication that started in early May and continued

throughout June. The operation was illegal for three reasons since the sale of open, non-sealed, unregistered, unlabeled oil, was prohibited in Spain in 1979, as was any adulteration of oil and manipulation of industrial oil.¹

When the fraud was discovered, the stock of adulterated oil, some 150,000 liters, was confiscated, and the Association of Olive Oil Producers, although not involved in the fraud, volunteered to exchange all illicit oil for controlled, good quality olive oil. In spite of this and the radio, press, and television campaign, new cases, though declining in numbers, were still occurring (about 50 a day) because some people did not believe oil to be the cause and did not want to discard the reserves they had bought, or because the press, radio, or television had not reached them. Those responsible for the adulteration have been arrested and legal action has been initiated.

The toxic contaminants found in painstaking analyses were different aromatic amines (aniline, acetanilide, erucic acid, and quinoline), but these do not fully explain the respiratory symptomatology. Additional investigation was directed to cyclic hydrocarbons (toluene and benzene) which also did not provide a satisfactory explanation. The present hypothesis is a contamination with short chain hydrocarbons (a molecule similar to gasoline) which could explain the elimination of toxic substance via the respiratory route. The gas chromatography testing of many thousands of samples and various experiments on animals are still in process. The exact nature of the contamination and the physiopathologic mechanisms are as yet unexplained.

In the majority of cases, an infectious etiology seems to have been ruled out by Spanish and other collaborating foreign laboratories (Centers for Disease Control, CDC, Atlanta, Georgia, U.S.A.), although some clinicians still maintain that an infectious agent cannot be completely discarded. In the present situation it is possible that, among the cases of acute pneumopathy, a number of respiratory infections of varied etiology might have been included.

¹Spain consumes 400,000 tons of olive oil of guaranteed quality a year, which is controlled by the industry of oil-producing associations and sold with registration in sealed containers.

As a result of public dissemination of these findings and actions taken to restrict consumption of the oil by the population, a gradual decrease in the numbers of new cases has occurred. The decrease in registration of new cases since these measures were started confirms that the contaminated oil is a principal factor in this epidemic; however, there are still several clinical and etiological factors in need of further research and clarification. Furthermore, the clinical variability and evolution suggest the need to establish a follow-up program of similar nature to those established in other collective toxic accidents.

(Source: Division of Communicable Diseases,
WHO Regional Office for Europe.)

Editorial Comment:

This outbreak demonstrates several important points. The epidemic is an example of a chemically induced, toxic illness which masqueraded initially as infectious disease. Without careful epidemiological investigation supported by adequate laboratory resources, this illness might have been dismissed as an atypical viral syndrome.

It is important to note that the incriminated oil is not, per se the cause of the epidemic. Rather it is a combination of factors, some of which remain to be explained. Apparently, the custom of "de-denaturalizing" the oil was well established for years without known adverse effects. However, the technology for this process failed. This failure, perhaps coupled with other unknown factors and the inadequate monitoring of legal controls for the sale of oil, led to the epidemic.

Epidemiologists and public health officials must remain alert to possible adverse health effects of chemical wastes and toxic products produced by modern technology. Although many countries have developed laws for the control of toxic wastes, strict monitoring and enforcement may be difficult to carry out effectively. Epidemiological surveillance and clinical suspicion are essential to detect any adverse effects.