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of the

AMERICAN MOSQUITO CONTROL ASSOCIATION

HELD JOINTLY WITH THE UTAH MOSQUITO
ABATEMENT ASSOCIATION

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PART II

THE 1958 ENCEPHALITIS OUTBREAK IN NORTHERN UTAH.

I. HUMAN ASPECTS

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During the summer and fall of 1958 there was an epidemic of western equine encephalitis (WEE) in northern Utah. This was the largest laboratory-confirmed outbreak of this disease among humans in the history of the state. For a number of years, people interested in disease control have recognized that Utah has the potential for a WEE outbreak; namely, the reservoir, the vector, and the susceptible population. However, only a few cases of this disease had been reported in the last several years.

In 1957, a physician in Weber County reported clinical cases of WEE, two of which were laboratory confirmed. An older physician in Box Elder County informed us that they had had quite an extensive outbreak of encephalitis in Tremonton and vicinity in 1936, and that there were still a few people who have residual effects of the disease.

First knowledge of an encephalitis outbreak in Utah in 1958 was on August 12th,

when physicians from Box Elder County reported clinical cases. Subsequently, other clinical cases were reported by physicians in Box Elder, Weber, Davis, Salt Lake, and other counties.

After the first clinical case was reported from Box Elder County, all physicians in the County were notified of the possible outbreak, and of laboratory specimens needed for confirmation. Through the *Utah Medical Bulletin*, all physicians of the state were likewise alerted and given information concerning the reservoir, vector, signs and symptoms, and particularly specimens needed for laboratory study. Emphasis was placed on obtaining acute and convalescent blood specimens in cooperation with physicians and hospital personnel, since this is one of the best methods for confirmation of the disease.

An analysis of the 48 cases of encephalitis in this outbreak shows that 36 were confirmed by a fourfold or greater increase in titer between acute and convalescent blood specimens; 11 by a single high convalescent titer along with compatible signs and symptoms in individuals living in the area; and 1 case (the only confirmed fatality) by laboratory study of brain tissue.

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The first known case had onset June 15, 1958, and the last case September 21, 1958. There were 38 males and 10 females who had the infection. Of the 48 cases, 31 were hospitalized while 17 were treated at home. By date of onset the peak of this outbreak was reached during the second week of August when 12 cases occurred.

Signs and symptoms in infants and young children consisted of irritability, localized twitching of face and extremities, fever up to 104° F., neck rigidity (50%), tense fontanels, and 100-200 cells, predominately lymphocytes, in the spinal fluid. Some adults had severe headache, lethargy, and vomiting.

In order to obtain data on human sub-clinical infection rates from an epidemic area, a serum survey was conducted in the general area of Tremonton, Utah, during the period from November 18 to 21, 1958. The following is a preliminary summary of this survey.

In all 268 sera were collected, including 30 from infants, 30 from adults (mothers of these infants), and the rest mostly from 4th and 5th grade students. Aliquots of 197 sera were tested for WEE hemagglutination-inhibition antibodies in both the Greeley, Colorado, and the Montgomery, Alabama, laboratories of the Communicable Disease Center. The results from the two laboratories, summarized in Table 1, were in very close agreement.

Although the total numbers of WEE-positive serum specimens from infants and adults were too small to measure accurately the differences in infection rates, the results do tend to indicate a progressive increase in the rates from infants to adults. The over-all infection rates are in line with those obtained from other areas where WEE is endemic, and confirm the considerable amount of inapparent infection which usually occurs in such areas.

TABLE 1.—Summary of laboratory tests (HI) for western encephalitis antibodies on human sera collected in northern Utah, November 1958

Age group	Total number of sera tested	Total number of positives	Percent positive
Infants	25	1	4.0
School-children*	145	13	9.0
Adults	27	3	11.1
Totals	197	17	8.6

* Fourth and fifth grades.

UTAH MOSQUITO ABATEMENT ASSOCIATION

Sixty per cent of the people in the state of Utah are now living within the boundaries of organized mosquito abatement districts.

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