

A **FOODBORNE OUTBREAK OF HEPATITIS**

WITH A HIGH ATTACK RATE

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FOOD, milk, and waterborne outbreaks of infectious hepatitis have been well substantiated in past years. Recently, raw shellfish was incriminated in several serious outbreaks of the disease. Other foods, such as meat, coldcuts, cheese, mayonnaise, custard, orange juice, frozen strawberries, salad, and garnishes also have been incriminated; however, when such foods were involved, investigations revealed that contamination was caused either by food handlers or by grossly unsanitary conditions, such as the backflow of sewage. Documented reports of outbreaks of hepatitis are summarized in the Hepatitis Surveillance Reports of the National Communicable Disease Center, Atlanta, Ga.

Our report deals with a small, foodborne outbreak of hepatitis with an unusually high attack rate. This outbreak was recognized during routine surveillance for hepatitis by the Memphis-Shelby County Health Department.

The Outbreak

Six of eight women who participated in a social study session and had luncheon in a private home in Memphis, on April 13, 1967, subsequently were stricken with infectious hepatitis. The meal was prepared by the hostess and a maid. The hostess was one of the two members of the group who did not become ill.

In addition to the six women, whose ages ranged from 41 to 48 years, three other persons were affected—the hostess' husband, age 52, their 23-year-old daughter, and a 24-year-old male friend of the family. The husband and daughter probably ate some of the foods served at the luncheon but did not eat with the study group.

The male friend visited the home during the week of the luncheon. He remembered having eaten there but could not recall any specific foods. Because of this uncertainty, his illness was not considered an epidemic case although he probably was a victim of the same outbreak. The maid and the hostess' other four children (ages 11, 15, 20, and 22) did not eat any of the foods served at the luncheon and did not become ill.

The cluster of cases and high attack rate suggested a common-source outbreak of infectious hepatitis. Inspection of the home disclosed no sewage problems, water contamination, or any other sanitary irregularities. Therefore, a specific food may have been responsible. Contamination of a specific food by either the hostess or the maid seemed improbable. Neither woman had a recent history of hepatitis or other illness, and it was unlikely that either was a hepatitis carrier because four members of the household were not ill before or after the epidemic. This would indicate that contamination of the food occurred outside the household.

The luncheon consisted of packaged cooked ham which was sliced at home, beef consomme, a salad of avocado and grapefruit with cottage cheese, rolls, spongecake with frozen raspberries, a gin cocktail, and beer. Each person who attended the luncheon ate all the foods served

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except the two beverages. There was no significant difference in degree of illness between affected persons who drank or did not drink a specific beverage. Further food histories were difficult to elicit because recall was difficult 3 or more weeks after the event.

Time intervals between the meal and onset of symptoms ranged from 25 to 42 days. The chart shows the day of onset of symptoms but not the onset of jaundice. The case of the family's male friend is also included in the chart. The hostess' husband was the first one to become ill. One guest who had anicteric hepatitis became ill 42 days after the luncheon.

All nine patients had clinical signs suggestive of definite hepatitis; six had definite jaundice. Usually fever, tiredness, and brownish urine were indicative of the disease. Except for the woman who had no jaundice or scleral icterus, all the patients were hospitalized. A biopsy of the liver of one woman revealed indications of infectious hepatitis. Results of tests of liver function in all patients were abnormal, but those of the hostess and the maid were within normal limits.

Most of the persons affected were very active socially. The hostess had given several dinners before and after the incriminated luncheon. The daughter who became ill had prepared a luncheon for friends before the onset of her illness. The family friend was also socially active, and one patient had prepared luncheon for a group before the onset of her illness. The gregariousness of these persons was another reason why it was not possible to obtain accurate food histories that would statistically incriminate the contaminated food.

Gamma globulin prophylaxis was given to

more than 150 contacts of the group, and no secondary cases were observed within 4 months after the epidemic. No deaths resulted from this epidemic.

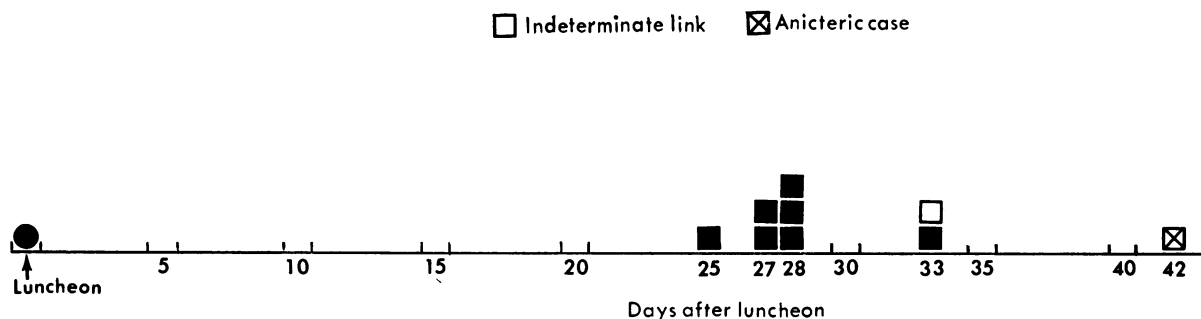
Discussion

An unusual characteristic of the outbreak was its high attack rate among middle-aged adults. In Memphis the hepatitis attack rate is high among children and young adults and decreases with increasing age, especially after age 30. The increasing immunity with age probably occurs because of subclinical and asymptomatic infections in populations. At the time of this outbreak the case rate of hepatitis throughout the city was normal, and no unusual events had been detected.

The virus dose in this epidemic must have been exceedingly large to cause illness with an attack rate of 80 percent. Incrimination of the raspberries is supposition, but they seem the most likely source. The raspberries could have been exposed to fecal or urinary contaminants in the field or in preparation at the processing plant. Although some of the other foods could have been the vehicle for the virus, their nature and the manner in which they were prepared and served minimized the likelihood of their being so highly contaminated.

An epidemic incriminating frozen strawberries has been reported (1). Since commercially prepared frozen foods are distributed nationwide, scattered cases or outbreaks related to the initial contamination of the products can occur. However, because of the long incubation period of hepatitis and its differential attack rate, it would be almost impossible to incriminate a particular product.

Onset of symptoms of hepatitis in common-source outbreak



Summary

Eight of ten adults who ate a meal in a private home and a friend who ate at the home during the same week were stricken with infectious hepatitis.

Onset of illness occurred 25 to 42 days, with a median of 28 days, after the meal. Eight persons were hospitalized. Gamma globulin prophylaxis was given to more than 150 of their contacts, and no secondary cases or deaths resulted from the epidemic.

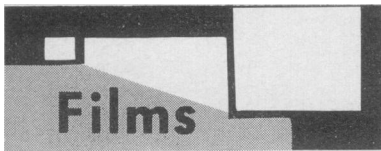
The meal consisted of cooked ham, beef consommé, a salad of avocado and grapefruit with

cottage cheese, rolls, spongecake with frozen raspberries, a gin cocktail, and beer.

The frozen raspberries seemed to be the most likely source of the infection. Although some of the other foods could have been the vehicle for the virus, their nature and the manner in which they were prepared and served minimized the likelihood of their being sufficiently contaminated to produce an epidemic with such a high attack rate.

REFERENCE

- (1) National Communicable Disease Center: Hepatitis surveillance report No. 24, Dec. 31, 1965, pp. 13-14.



The Headbangers. Motion picture, 16 mm., black and white, sound, 30 minutes, 1965; order No. AM-1411. Produced by the National Institute of Mental Health, Public Health Service, in collaboration with Sonoma State Hospital in California. (Requests for information regarding the medical or psychiatric aspects of the film can be addressed to the film's project director, Dr. Larry H. Dizmang, Center for Studies of Suicide Prevention, National Institute of Mental Health, 5454 Wisconsin Ave., Chevy Chase, Md. 20015.)

AUDIENCE: Medical students, residents in psychiatry and pediatrics, nurses, psychologists, and professional and subprofessional staffs of hospital for mentally ill and mentally retarded children.

SUMMARY: Pictures several institutionalized children who manifest self-destructive behavior through the symptom of headbanging. Specifically outlines the developmental history of Jeanne, a severely self-destructive child who blinded herself and was subsequently placed in a special study unit. The possibility of successful treatment for what has been generally considered "hope-

lessly intractable behavior" is seen in the changes that occur in Jeanne. The persistent, cooperative effort of the staff and therapist on a small, well-staffed hospital ward is the primary mode of treatment emphasized in the film.

AVAILABLE: Free short-term loan from National Medical Audiovisual Center (Annex), Chamblee, Ga. 30005. Attention: Film Distribution. Purchase from DuArt Film Laboratories, Inc., 245 West 55th St., New York, N.Y. 10019.

Hospital Housekeeping—wet pick-up. Motion picture, 16 mm., color, sound, 7 minutes, 1966; order No. M-1325. Related films: *Hospital Housekeeping—mopping, two-bucket method*, order No. M-1324, and *Surface Sampling for Microorganisms—Rodac method*, order No. M-924. Produced by the Public Health Service Audiovisual Facility for the National Communicable Disease Center, Atlanta.

AUDIENCE: Personnel in hospitals, other institutions, and health departments who are interested in hospital housekeeping, hospital sanitation, and control of hospital infections.

SUMMARY: Shows the complete, step-by-step procedure for wet vacuuming a floor in a hospital or other institution.

AVAILABLE: Free short-term loan from National Medical Audiovisual

Center (Annex), Chamblee, Ga. 30005. Attention: Distribution Unit. Purchase from DuArt Film Laboratories, Inc., 245 West 55th St., New York, N.Y. 10019.

Strokes. Motion picture, 16 mm., black and white, sound, television film recording, 59 minutes, 1964; order No. T-1412-X. Produced by the Division of Postgraduate Education, Medical College of South Carolina.

AUDIENCE: Professional biomedical personnel.

SUMMARY: Dr. Clark Millikan, Mayo Clinic, Dr. C. Thorpe Ray, University of Missouri School of Medicine, Dr. Julian R. Youmans, Medical College of South Carolina, and Dr. Dale Groom, Medical College of South Carolina are panelists in a discussion of cerebral vascular disease setting forth the differential diagnosis between thrombosis, embolism, and hemorrhage. Additionally Dr. Millikan reviews his now well-recognized entity of "transient ischemic attacks." Essentials of treatment, including anticoagulant therapy, are taken up in accordance with these divisions of the subject. The symposium is entirely clinically oriented.

AVAILABLE: Free short-term loan from National Medical Audiovisual Center (Annex), Chamblee, Ga. 30005. Attention: Distribution Unit. Not presently available for purchase.

MILLER, ROBERT A. (East Pakistan Research and Evaluation Center, Dacca), **HAIDER, S. JAHANGIR, CROLEY, H. T., and GUSTAFSON, HAROLD C.:** *Survey of the sales of contraceptives by pharmacies of Dacca, East Pakistan, Public Health Reports, Vol. 83, January 1968, pp. 49-52.*

A survey of 114 pharmacies was conducted in Dacca, East Pakistan, in order to investigate features of the commercial system for distributing contraceptives. Tentative findings, which must be verified by other research methods, indicate that oral pills and condoms were the most widely available contraceptive meth-

ods, and together accounted for more than 90 percent of all sales.

Of the estimated monthly total of more than 6,000 customers, about 95 percent were men in the middle and upper socioeconomic groups. Shopkeepers estimated that sales have increased by nearly 150 percent between 1965 and 1966, and reported

customers behaved in a less shy, embarrassed, secretive manner than in the past.

Few shops reported selling government-subsidized condoms at the suggested price of 10 paise. Those shops that do sell condoms at that price reported a large number of customers and an estimated sales increase of more than 270 percent between 1965 and 1966. Foam tablets were not popular and accounted for only 1 percent of all sales. The demand for foam tablets did not appear to increase as price decreased.

HILLMAN, ROBERT W. (Downstate Medical Center, Brooklyn, N.Y.), and **SMITH, HOWARD S.:** *Hemoglobin patterns in low-income families. Public Health Reports, Vol. 83, January 1968, pp. 61-67.*

Hemoglobin determinations were recorded for 5,597 persons (68.4 percent) in 1,342 predominantly low-income families in Brooklyn, N.Y., studied by fourth-year medical students over a 10-year period.

Blood hemoglobin concentrations

were below 11 gms. per 100 ml. in 34.0 percent of the subjects, below 10 gms. in 14.2 percent, and below 9 gms. in 5.0 percent. The highest frequencies of anemia were observed generally among children 0-9 years old, notably in Negroes and, to a

lesser degree, Puerto Ricans. Low hemoglobin readings also were relatively more common in younger males and in adult and pubescent females.

Anemia was more common among relatives of index patients with low hemoglobin levels and in families receiving public assistance. It was not more common among children with positive tuberculin tests.

LEWIS, JAMES C. (U.S. Department of Interior): *Use of poison bait to control rabies in Tennessee wildlife. Public Health Reports, Vol. 83, January 1968, pp. 69-74.*

In 1964 and 1965 more cases of rabies in wildlife were reported from Tennessee than from any other State. In 1965, the State legislature authorized the Tennessee Game and Fish Commission to reduce or control any species of animals suspected of having rabies. In 1965 and 1966 bait containing strychnine was distributed on Federal and privately owned lands. In 1966-67 all or parts of 14 counties received control treatment carried out or directed by commis-

sion personnel.

Bait was placed on road rights-of-way with 2.2 bait stations per linear mile. In 13 counties, 9,301 bait stations were operated for a total of 60,593 bait nights and 22,847 baits were eaten or removed. Animals removing 78 percent of the baits were not identified.

In June 1967, landowners, especially farmers, were asked to put out poisoned bait adjacent to pastures and farm buildings to eliminate

carnivores living close by. This system of rabies control is less expensive, requires less professional manpower, and can be started early in the year. The 45 participating farmers reported 484 baits taken from 346 stations.

The first use of poison bait on private land cost \$120 per square mile. Rabies control in the 13 counties cost \$9 per square mile. The 1965 trapping and hunting program cost \$33.60 per square mile. Having individual landowners put out poison bait on their land cost approximately \$1.10 per square mile.

BLUMENKRANZ, LUCILLE (Richmond Professional Institute), and **SPENCER, F. J.:** *Patients with chronic disease in Richmond's home care program. Selected data, December 1965. Public Health Reports, Vol. 83, January 1968, pp. 75-80.*

Of the 149 patients with chronic disease who were supervised by the Richmond home medical care program in December 1965, 95 were non-white and 69 percent were over 65 years of age. Three-fourths of the patients had three or more diseases, with heart disease, diabetes mellitus, and diseases of the central nervous system being most prevalent.

Three-fourths of the patients had been treated at the specialty clinics of the Medical College of Virginia. One-fourth received prescriptions for four or more drugs, suggesting a need for close supervision of drug use. Laboratory tests had been performed for 98 patients. Half the patients had stays at the school's hospital and 10 percent had been in

other hospitals.

Sixty-four percent of the patients had been admitted to the program only once, and 17 percent had been in the program 10 or more years. A nurse had visited 54 percent of the patients in their homes, but practically no visits had been made by a nutritionist or sanitarian.

Two-thirds of the patients were served by the social service bureau of the welfare department, but only 46 percent were known to the public health social worker.

ARMIJO, ROLANDO (Pan American Health Organization), and **REQUENA, MARIANO**: *Epidemiologic aspects of abortion in Chile. Public Health Reports, Vol. 83, January 1968, pp. 41-48.*

Several recent studies in Chile point to provoked abortion as an increasing health problem, with the number of abortions exceeding by far what is officially reported. In a 1961-64 study of 3,926 women, those in Santiago interviewed by 35 social workers and those in the rest of the country interviewed by 30 other workers, 23 percent of the women reported a total of 2,499 abortions.

The studies indicate that the 20-34 year age group and a small proportion of women exposed to repeated abortions are particularly vulnerable. Those women exposed to repeated abortions accounted for a third of the total number recorded. Highest rates were found for married women, those having up to three children, and those in low-income groups. Most abortions were provoked by nonqualified persons using risky methods which involved serious danger to the patient.

Economic reasons, conjugal problems, and ignorance of birth control methods appear to be the basic reasons for the upward trend of provoked abortion.

The epidemiologic picture of provoked abortion points to the urgent need for prevention and replacement of abortion with the use of contraceptives.

Using available raw data and preliminary studies is the first step in studying the problem. Data from such available sources of information, however, should be used cautiously. Studies in hospitals, being more meaningful and appealing to medical groups, should be undertaken as the second step.

The third step, community surveys aimed at describing the nature, magnitude, and distribution of provoked abortion, requires lengthy planning. The two basic rates used in studies are annual incidence rates of provoked abortion=

$$\frac{\text{number of provoked abortions reported}}{\text{number of women of childbearing age}} \times 100,$$

$$\text{and outcome of pregnancy} = \frac{\text{number of provoked abortions}}{\text{number of pregnancies}} \times 100.$$

Community studies can provide a number of useful clues from the public health viewpoint in order to set up a rational abortion prevention program and to explore a number of more specific variables through a prospective study.

Prospective studies, the fourth step, are elaborate and expensive; therefore the population sampled is limited. However, they can provide a better insight of the problem and more refined data, as well as a means for evaluating control measures. The findings also can substantiate data obtained from community surveys.

A fifth step is evaluation of control measures by means of either community surveys or prospective studies aimed at determining whether or not contraceptive measures prevent abortion.

McLONE, DAVID G. (Fulton County Health Department, Atlanta, Ga.), **BILLINGS, TERRENCE E.**, **LUCAS, JAMES B.**, **HARDEGREE, WILLIAM E.**, and **HACKNEY, JAMES F.**: *Gonorrheal urethritis in men treated with one oral dose of methacycline. Public Health Reports, Vol. 83, January 1968, pp. 87-89.*

Clinical evaluation of methacycline in the treatment of gonorrhea was conducted from January 1, 1967-March 30, 1967, at the Fulton County Health Department, Atlanta, Ga.

The study involved 289 men who came for treatment at the clinic. A negative smear and culture were used as the criteria for cure.

The schedule of one oral dose of

1,200 mg. resulted in a cure rate of 96.4 percent. The rate of emesis was not influenced by dosage or meals. Age, race, marital status, and taking methacycline with meals did not alter the cure rate.

Based on these findings, methacycline is an acceptable alternative to penicillin in the treatment of gonococcal urethritis in males.

KASHGARIAN, MARK (University of Tennessee), **RENDTORFF, ROBERT C.**, and **HORNE, MALCOLM**: *A foodborne outbreak of hepatitis with a high attack rate. Public Health Reports, Vol. 83, January 1968, pp. 90-92.*

Eight of ten adults who ate a meal in a private home and a friend who ate at the home during the same week were stricken with infectious hepatitis.

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