week no. 26 ending June 30, 1984

Texas Preventable Disease NEWS

contents:

BUREAU OF EPIDEMIOLOGY 1100 West 49th Street, Austin, Texas 78756 (512-458-7207)

BACTERIAL MENINGITIS IN TEXAS - 1983

Hemophilus influenzae

A total of 394 cases of Hemophilus influenzae meningitis was reported in Texas during 1983. Although this represents a 10% decrease from the 439 cases reported in 1982, H. influenzae remains the most common type of bacterial meningitis in Texas. The peak period of H. influenzae disease occurred during the winter months. In 1983, the highest incidence occurred in January and December, with 51 and 50 cases reported, respectively. The age distribution of Texas H. influenzae meningitis was typical of national reports: 96% of the cases occurred in children under 4 years of age; and 81%, in children under 2 years of age.

The case-fatality ratio (CFR) also decreased from 7.5% in 1982 to 5.8% in 1983. The 23 deaths reported in 1983 included seven infants under 1 year of age, eight 1- year-olds, six 2-year-olds, one 11-year-old, and one elderly patient 70 years of age.

The specific serotype was noted for only 62% of the cases: 239 type b, 3 type a, 3 cross-reactive with types a-f, and 1 non-typeable. Antibiotic sensitivity studies revealed that 58 (27%) of 218 organisms tested in 1983 were resistant to ampicillin. None of 197 organisms tested were resistant to chloramphenicol. Twelve organisms were tested for rifampin sensitivity; none were resistant, although one displayed intermediate sensitivity.

Through May 1984, 224 Texas cases of H. influenzae meningitis have been reported, a 29% increase over the 174 cases reported from January through May of 1983. Thus far in 1984, 12 of the 224 cases have died as a result of their illnesses.

Neisseria meningitidis

There were 188 cases of meningococcal infections reported in Texas in 1983 for an annual incidence rate of 1.23 per 100,000 population. This was the second year of decline from a peak of 2.23 per 100,000 in 1981. The 1983 case-fatality ratio was 8%, the lowest in a decade when ratios ranged from 25.7% (1978) to the previous low of 10.4% (1981). The decline in case-fatality ratios in 1983 both for H. influenzae and meningococcal infections may be due to improved reporting of non-fatal cases.

Meningitis and septicemia are the most commonly reported forms of meningococcal infections, but also included are arthritis and other systemic diseases caused by Neisseria meningitidis. In 1983, the source of the organism isolated was recorded as cerebrospinal fluid or CSF (60%), blood (30%), and CSF and blood (10%) for 118 cases. The numbers of N. meningitidis organisms for which serotypes are available declined over the last three years from 62% to 55% in 1983. The serotypes included 2% serotype A, 71% serotype B, 23% serotype C, 3% serotype W135, and 1% serotype Y.

Although the proportion of serotype C organisms increased from 5% in 1980 to 39% in 1981, it has declined steadily since then. Serotype data are extremely useful in interpreting appropriate course of action.

Antibiotic resistance information was available for only a small percentage of the organisms isolated in 1983. None of 59 isolates tested were resistant to ampicillin, one of 49 was resistant to chloramphenicol, one of 13 was resistant to rifampin, and one of eight was resistant to sulfadiazine. The percentage of N. meningitidis resistant to rifampin and sulfadiazine appears high, but all of these conclusions are based on a very few organisms tested.

The age distribution of cases remained constant, with the majority of cases occurring among children less than 1 year of age; the incidence rate among this group was 21 per 100,000. Among children ages 1 to 4, the annual incidence rate was 4.3 per 100,000. For all other age groups, incidence rates were less than 1 per 100,000. There was no difference in the incidence rates between males and females in the various age groups except for children under 1 year of age; in this age group, the incidence rate for males was 25.9 per 100,000 compared to 15.7 per 100,000 for females (Chi square, p=.05). Despite the increased incidence, there were only four deaths in this age group, two males and two females, for an overall case-fatality ratio of 8.0%.

PDN Editorial Note:

Accurate and complete information on cases of H. influenzae meningitis and meningococcal infections regarding outcome, serotype, and antibiotic sensitivity are critical. In Texas, these data have been obtained primarily from surveillance forms submitted by hospital infection control practitioners and local health department personnel. This information has been the best available source of antibiotic resistance patterns statewide. Accurate rates and analyses of trends depend on this continued source of information.

The Texas Department of Health encourages the submission of cultures to the state laboratory when serotyping is not available locally. Procedures are described in the following article. A copy of the Bacterial Meningitis Case Investigation form has been reprinted in this issue with recommendations for prophylaxis on the reverse side. Any remaining supplies of the older forms should be discarded; use of the new form should begin immediately. A supply of the form may be obtained from the Texas Department of Health, Bureau of Epidemiology, 1100 W. 49th Street, Austin, Texas 78756-3180. Your continued cooperation in submitting the form and cultures is essential in determining the impact of these two diseases in Texas.

This report was prepared by Christie Reed, MPH, Bureau of Epidemiology, Texas Department of Health.

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SEROGROUPING OF NEISSERIA MENINGITIDIS AND HAEMOPHILUS INFLUENZAE

If serogrouping capabilities are not available locally, the Texas Department of Health (TDH) will perform the tests on pure cultures of Neisseria meningitidis and Haemophilus influenzae. Only subculture transfers incubated for the 18-24 hours prior to shipment are likely to survive. To submit a culture for serogrouping, transfer the N. meningitidis or H. influenzae to tubed chocolate agar and incubate overnight at 35°C in 5% CO_2. Allow the CO_2 to enter the tube prior to sealing the cap tightly. A culture thus prepared should survive two days in transit at ambient temperatures. If tubed chocolate agar is not available, a chocolate agar plate may

BACTERIAL MENINGITIS AND MENINGOCOCCEMIA
CASE INVESTIGATION

1. Name of Case: _____ Phone: _____

Address: _____ City: _____

County: _____

Age: _____ Birthdate: ____/____/____ Sex: ☐ Male ☐ Female

Race/
ethnicity: ☐ White, not Hispanic ☐ Hispanic ☐ Black, not Hispanic

☐ American Indian ☐ Asian ☐ Unknown

2. Onset of symptoms: ____/____/____ Outcome: ☐ Recovered ☐ Died ☐ Unknown

3. Was the patient hospitalized?: ☐ No ☐ Yes Hospital: _____

Physician's Name: _____ City: _____

Date admitted: ____/____/____ Date of discharge/death: ____/____/____

4. TYPE OF ILLNESS (Check one)

☐ Bacterial meningitis ☐ Both

☐ Meningococcemia/septicemia ☐ Other: _____

5. AGENT

☐ Neisseria meningititis
serotype ☐ A ☐ B ☐ C ☐ W135 ☐ Y ☐ Other _____

☐ Haemophilus influenzae
serotype ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F

☐ Other _____

Isolated from: ☐ CSF ☐ Blood ☐ Other: _____

6. CONTACTS

Number of contacts: _____ How many given prophylaxis: _____

Type of prophylaxis: _____

Did patient attend/work at a day-care center?: ☐ No ☐ Yes (if yes, give Name and address of center: _____)

7. ANTIBIOTIC SENSITIVTY

Sensitive	Intermediate	Resistant	
☐	☐	☐	Ampicillin/Penicillin
☐	☐	☐	Sulfadiazine
☐	☐	☐	Rifampin
☐	☐	☐	Chloramphenicol

Submitted by: _____

Agency: _____

Date: ____/____/____

Return Completed form to:

Bureau of Epidemiology
Texas Department of Health
1100 West 49th Street
Austin, Texas 78756-3180

TDH 05/01/84

MENINGITIS PROPHYLAXIS

When prophylaxis is indicated, it should be administered to all eligible contacts at the same time to eliminate the organism from that population. Culturing contacts is not recommended. Prophylaxis should not substitute for close observation of case contacts for sypmtoms.

1. Neisseria meningitidis (meningococcus) (Gram negative diplococcus)

Who should receive prophylaxis:

a) All "family contacts": those who spend 8 hrs/day with case
b) Day-care center/nursery attended by case: intimate contacts of case only
c) Hospital personnel: only those who examine the throat, intubate, suction, or give mouth-to-mouth resuscitation to the case

When should prophylaxis begin:

Within 24 hours of diagnosis or strong suspicion.

Dose of Rifampin*:

a) Adults: 600 mg P.O. twice a day x 2 days
b) Children: 1 month - 12 years: 10 mg/kg** P.O. twice a day x 2 days
c) Infants under 1 month: 5 mg/kg P.O. twice a day x 2 days

Dose of Sulfadiazine*:

Note: Use only if the organism has already been cultured and shown sensitive to sulfas.

a) Adults: 1 gram P.O. twice a day x 2 days
b) Children: 1 - 12 years: 500 mg P.O. twice a day x 2 days
c) Infants: 1 - 11 months: 500 mg P.O. once a day x 2 days

In addition to the routine medications used to treat meningococcus, the index case should receive one of the above regimens before going home from the hospital in order to eradicate pharyngeal carriage of N. meningitidis.

2. Haemophilus influenzae (H. flu) (small gram-negative rods)

Who should receive prophylaxis: (Note: There continues to be some disagreement among experts, but physicians should consider prophylaxis for:)

a) All "family contacts": if there is another child 4 years old in family
b) Day-care center/ nursery attended by the case: all children and staff who have contact with the index case (i.e., same room)
c) Hospital personnel: do not need prophylaxis

When should prophylaxis begin:

Within 24 hours of diagnosis or strong suspicion of case.

Dose of Rifampin*:

a) Adults: 600 mg P.O. once a day x 4 days
b) Children: 1 month - 12 years: 20 mg/kg** P.O. once a day x 4 days
c) Infants under 1 month: 10 mg/kg P.O. once a day x 4 days

In addition to the routine medications used to treat H. influenzae, the index case should receive the above regimen before going home from the hospital in order to eradicate pharyngeal carriage of the organism.

*Before administering Rifampin, note that it:

- is not recommended for use during pregnancy.
- interferes temporarily with effectiveness of oral contraceptives.
- will turn urine, tears, saliva an orange/red color, transiently. Soft contact lenses will be permanently stained if worn while taking Rifampin.

The **maximum dosage of Rifampin should not exceed 600 mg total per dose.

be used, but it should be sent by courier service. A sample in tubed chocolate agar travelling by mail may use the double-can "Pure Culture for Special Study" container obtainable from the TDH Bureau of Laboratories in Austin, or from local affiliated laboratories. Alternative double-barrier containers meeting biohazard safety standards may be used (such as feces containers), but must be clearly labeled as pure cultures to insure proper handling when received by the laboratory.

For additional information on serogrouping N. meningitidis and H. influenzae or information on the shipment of these organisms through the mail, contact the Reference Bacteriology Unit, Bureau of Laboratories at (512) 458-7581 or Tex-An 824-9581.

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LABORATORY DIAGNOSIS OF ROCKY MOUNTAIN SPOTTED FEVER

Thirty-two cases of Rocky Mountain spotted fever (RMSF) have been detected by the Texas Department of Health (TDH) laboratory during the first six months of 1984, the majority from north central and northeast Texas. One death each occurred in Tarrant, Red River, and Grayson counties.

The TDH laboratory can detect RMSF by several methods. Whole blood may be submitted for rickettsial isolation studies. Bloods must be drawn within seven days of onset of symptoms, must be drawn prior to administration of anti-rickettsial drugs, and must be received frozen or refrigerated. Isolation studies on whole blood are considered supplemental to serologic tests. Rickettsia also can be detected in unpreserved tissue. Liver, spleen, lung, or kidney tissue samples should be submitted chilled or frozen.

Most commonly, RMSF is serodiagnosed. Upon receipt, acute serum samples are tested by a latex agglutination procedure. On samples positive for RMSF antibody, the confirmatory micro-immunofluorescent antibody (mIFA) test is performed. Acute sera negative by the latex agglutination test are stored until a convalescent sample (drawn 10 to 14 days after onset) is received. This second specimen is also screened by the latex method and finally, the mIFA test is done to confirm positive and negative results. A four-fold rise in titer to 1:128 from the acute to the convalescent phase of illness is considered diagnostic.

Since many physicians prefer to rely on local laboratory detection of RMSF antibody as a basis for treatment of suspected cases, hospital and clinical laboratories offer the Weil-Felix test. This test, which relies on a cross-reaction between proteus and rickettsial organisms, is known to result in a large number of both false-positive and false-negative reactions. Several hospitals in Texas have replaced the Weil-Felix test with the latex agglutination procedure in which RMSF organisms attached to latex particles are allowed to react with antibodies in human serum. Sensitivity and specificity studies have shown that this newly available test is far superior to the Weil-Felix test as a screening procedure for RMSF. It is simple, rapid, and requires no complicated equipment. Specimens still should be submitted to the state laboratory for confirmation by mIFA. General information on testing for RMSF may be obtained from the TDH Medical Serology Laboratory (512-458-7514), the Medical Entomology Laboratory (512-458-7605), or the Infectious Diseases Division of the Bureau of Epidemiology (512-458-7328). Information on availability of reagents for the latex agglutination test is available from Dr. Karim Hechemy[1] at the New York State Health Department (518) 474-2444.

Reference

1. Hechemy K, et al. 1983:Evaluation of latex Rickettsia rickettsii test for Rocky Mountain spotted fever in 11 laboratories. J Clin Microbiol 18:938-46.

AVAILABILITY OF DTP VACCINE IN TEXAS

Wyeth Laboratories has announced that it is discontinuing production of DTP (diphtheria-tetanus-pertussis) vaccine. Current inventories within the state will meet estimated needs through early August 1984. The TDH is actively seeking alternate supplies of the vaccine. These additional supplies should be available during August to meet the normally heavy fall vaccine demand.

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Erratum:

The date given for Texas Preventable Disease News, week number 25, is incorrect. It should read; "week no. 25, ending June 23, 1984."

TEXAS PREVENTABLE DISEASE NEWS
Texas Department of Health
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Austin, TX 78756-3180