



Echovirus Type 13 --- United States, 2001

Echoviruses constitute one of the major groups of the genus *Enterovirus* and are associated with illnesses including aseptic meningitis, nonspecific rashes, encephalitis, and myositis (1). Echovirus 13 is an enterovirus that rarely has been detected in the United States, accounting for only 65 of approximately 45,000 enterovirus isolates reported to CDC during 1970--2000. No associated outbreaks have been reported in this country. As of June 2001, eight state public health laboratories and one private laboratory had reported an increased number of echovirus 13 isolates to CDC, most associated with aseptic meningitis. This report summarizes echovirus 13 activity in the United States and highlights the investigation of aseptic meningitis outbreaks in Louisiana, Mississippi, Montana, and Tennessee. Echovirus 13 should be considered in the differential diagnosis of persons with aseptic meningitis.

CDC's National Enterovirus Surveillance System (NESS) relies on voluntary reporting of enterovirus isolates by serotype from state public health laboratories (2). Aseptic meningitis was removed as a nationally notifiable disease in 1995, and no uniform nationally recognized case definition exists for this condition (3). Cases of aseptic meningitis described in this report represent physician diagnoses based on clinical presentation and laboratory findings.

As of August 14, 2001, echovirus 13 has been isolated in specimens from 76 patients in 13 states (Tennessee [26], Mississippi [10], Louisiana [nine], Florida [eight], Texas [six], California [six], Kentucky [three], Ohio [two], Montana [two], and Georgia, Illinois, Indiana, and North Carolina [one each]). Of 76 isolates tested, 51 (67%) were from cerebrospinal fluid (CSF) and 12 (16%) from stool or rectal swabs. The source specimens for these isolates were collected during March--June 2001.

Of the 76 patients, 47 (62%) were male. The patients ranged in age from 2 weeks to 29 years (median age: 7 months). Most (73 [96%]) were aged <15 years, 41 (54%) were infants aged <1 year, and 29 (38%) were aged <3 months.

Clinical diagnoses were reported for 52 (68%) of the 76 patients and included aseptic meningitis (50 patients), febrile illness (one), and diarrhea (one). Of 50 isolates from patients with a diagnosis of aseptic meningitis, 45 were associated with outbreaks of aseptic meningitis in four states (26 from Tennessee, nine from Mississippi, eight from Louisiana, and two from Montana) during April--July 2001.

Louisiana. In June, 27 cases of aseptic meningitis among patients admitted to one hospital during May 22--June 20 were reported to the Louisiana Office of Public Health (Table 1), representing a nine-fold increase in the number of aseptic meningitis hospitalizations over the same period during 2000. All of the patients resided in three parishes (i.e., counties) in the southeastern part of the state. Of the 27 cases, 20 (74%) occurred in the same parish (hospitalization rate: 20 per 100,000 population). Reported clinical symptoms included fever (94%), headache (77%), vomiting (77%), stiff neck (50%), and photophobia (23%).

Mississippi. During May 5--July 31, 56 cases of aseptic meningitis were reported to the Mississippi State Department of Health from one regional medical center ([Table 1](#)). Of the 56 patients, 41 (73%) resided in a county adjacent to the Louisiana parish that accounted for most of the cases in Louisiana. The hospitalization rate for this Mississippi county was 111 per 100,000 population. Reported clinical symptoms included fever (75%), headache (70%), vomiting (55%), nausea (52%), and stiff neck (20%).

Montana. During June 8--July 11, 23 cases of aseptic meningitis were reported to the Montana Department of Public Health and Human Services (MDPHHS) from a single county in the southeastern part of the state (hospitalization rate: 181 per 100,000 population) ([Table 1](#)). Eighteen additional cases of aseptic meningitis reported from a neighboring county since early July are being investigated by MDPHHS.

Tennessee. An outbreak of aseptic meningitis involving approximately 250 persons admitted to a hospital in Tennessee since April 2001 is being investigated by the Tennessee State Health Department. Echovirus 13 has been confirmed as the etiologic agent for 33 of 75 cases.

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Editorial Note:

This is the first report of widespread circulation of echovirus 13 and of outbreaks associated with this enterovirus in the United States. Increased echovirus 13 activity also was reported in Europe during 2000 when echovirus 13 was associated for the first time with outbreaks of aseptic meningitis in England, Wales, and Germany (4,5).

Clinical manifestations of enterovirus infections are protean, ranging from asymptomatic carriage to life-threatening illness (6). Because echovirus 13 rarely has been isolated, the spectrum of disease associated with this virus has not been well established. Conditions previously associated with echovirus 13 are typical of enterovirus infections (6) and include asymptomatic carriage (6), mild febrile illness (7), aseptic meningitis (4,5,8,9), respiratory diseases (e.g., coryza, pharyngitis, bronchitis, and bronchiolitis [7,9]), poliomyelitis-like illness (8), diarrhea with fever (7,9), rash (7,9), encephalitis (9), and enteroviral sepsis (9). Aseptic meningitis is the predominant illness that has been associated with the current echovirus 13 activity in the United States and with echovirus activity reported in Europe in 2000. However, patients with meningitis are more likely to be tested for enteroviruses than are patients with milder illnesses.

In temperate climates, enteroviruses demonstrate a marked seasonality, with widespread circulation during summer and fall. A typical enterovirus season in the United States lasts from June through October (9). In 2001, the first isolations of echovirus 13 in the United States were reported in March. The reported outbreaks of aseptic meningitis associated with this serotype started early in the enterovirus season.

The age distribution of patients with echovirus 13 isolates and of the other cases involved in the three aseptic meningitis outbreaks indicates that young children are at highest risk for infection. A similar age distribution was observed during the aseptic meningitis outbreak associated with echovirus 13 in Germany in 2000 (5), but the outbreaks in England and Wales predominantly affected older children (4).

In addition to echovirus 13, other enterovirus serotypes have been identified in these outbreaks of aseptic meningitis. The isolation of several enteroviruses in community outbreaks is not unusual because numerous serotypes commonly co-circulate. Predominant enterovirus serotypes tend to change over time (10). In the United States, the serotypes most commonly reported to NESS were echoviruses 30, 6, and 7 in 1997, echoviruses 30, 9, and 11 in 1998, and echoviruses 11, 16, and 9 in 1999 (2). Although the clinical spectrum of diseases associated with various enterovirus serotypes overlap, some manifestations of enterovirus infection are associated commonly with certain serotypes (i.e., aseptic meningitis and echovirus 30, hand-foot-and-mouth disease and coxsackievirus A16, and acute hemorrhagic conjunctivitis and enterovirus 70 and coxsackievirus A24) (6).

Enterovirus surveillance is important for understanding circulation patterns of these viruses in the United States. In addition, this information may be helpful for evaluating potential antienterovirus drugs and in understanding the links of enteroviruses with disease. More information is needed to clarify the epidemiologic characteristics and to define better the clinical spectrum of associated diseases.

No specific prevention or control measures are available for nonpolio enteroviruses, including echovirus 13. Adherence to good hygienic practices, such as frequent and thorough hand washing (especially after diaper changes), disinfection of contaminated surfaces by household cleaners (e.g., diluted bleach solution), and avoidance of sharing utensils and drinking containers may be effective in reducing the spread of infection.

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Table 1

TABLE 1. Number of persons with aseptic meningitis, by selected characteristics — Louisiana, Mississippi, and Montana, 2001

Characteristic	Louisiana (n=27)		Mississippi (n=56)		Montana (n=23)	
	No.	(%)	No.	(%)	No.	(%)
Sex						
Male	18	(67)	26	(46)	13	(56)
Female	9	(33)	30	(54)	10	(44)
Age group						
≤3 mos	9	(33)	11	(20)	6	(26)
4–11 mos	0	—	3	(5)	2	(9)
1–14 yrs	14	(52)	33	(59)	14	(61)
≥15 yrs	4	(15)	9	(16)	1	(4)
Median age (range)	7 yrs (3 wks–43 yrs)		6 yrs (3 days–48 yrs)		7 yrs (8 days–23 yrs)	
Enterovirus isolates*						
Echovirus 13	8		3		2	
Total	9		9		3	

* Echovirus 13 was isolated from cerebrospinal fluid (CSF) for all isolates in the Louisiana and Mississippi outbreaks and from rectal swabs for both isolates from Montana. Echovirus 6 was isolated from the CSF of one patient from the Louisiana outbreak. Eight CSF specimens from the Mississippi outbreak tested positive for an enterovirus in a polymerase chain reaction with pan-enterovirus primers. Echovirus 13 was cultured from two of these specimens. Echovirus 25 was isolated from a throat swab of one patient from Montana.

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