

Louisiana



REPORTED MORBIDITY
AUGUST, 1982

DEPARTMENT OF HEALTH AND HUMAN RESOURCES
OFFICE OF HEALTH SERVICES AND ENVIRONMENTAL QUALITY
BOX 60630 NEW ORLEANS, LOUISIANA 70160

MONTHLY MORBIDITY REPORT

Provisional Statistics

PUBLIC HEALTH STATISTICS and
DIVISION OF DISEASE CONTROL

VIBRIO VULNIFICUS INFECTIONS

In 1976 Hollis et al reported on 38 human isolates of a then unnamed halophilic organism similar to, but not identical to, *V. parahaemolyticus* and *V. alginolyticus*.¹ This organism was subsequently named *Vibrio vulnificus*. It has the ability to ferment lactose, which is one characteristic that distinguishes it from *V. parahaemolyticus* and *V. alginolyticus*, and has been referred to as the halophilic lactose-positive *vibrio*. The source of 20 of the 38 cultures was blood, indicating the importance of recognition of this organism by clinical microbiologists and prompting the authors to describe the organism and how it could be differentiated from other halophilic *Vibrio* species. In 1979 Blake et al reported on a study of the clinical characteristics and epidemiology of the disease associated with this "lactose-fermenting *Vibrio* species."² Two distinct manifestations of the infections were observed among the 39 patients in that study. One was described as a primary septicemia, typically presenting with an abrupt onset of malaise followed by chills, fever and prostration, without an apparent primary focus of infection. Vomiting and diarrhea occasionally occurred after onset of chills and fever. Secondary cutaneous lesions (erythematous or ecchymotic areas of the extremities, bullae or vesicles and necrotic ulcers) commonly developed within 36 hours after onset of illness. Eighteen of 24 patients in this group had preexisting hepatic disease and eleven of the 24 died. Nineteen patients whose oyster eating habits were known often ate raw oysters.

The other manifestation of the disease was described as an overt primary focus of infection in a wound acquired within 7 days prior to onset, or in a preexisting ulcer characterized by swelling, erythema and sometimes intense pain. Fever and chills, and occasionally vomiting and hypotension were observed. The preexisting wounds or ulcer in 14 of the 15 cases in this group had been exposed to seawater or had been sustained while cleaning saltwater crabs.

In Louisiana, the Division of Laboratories has received 24 cultures of *V. vulnificus* isolated from humans since 1977. Fourteen of these were cases representing the primary septicemia manifestation and 7 were of the wound infection type. However, three cultures were from patients with diarrheal disease which did not fit the description of either of the two previously described syndromes.

Except for one case diagnosed in a Baton Rouge, Louisiana, hospital, all cases were diagnosed in Orleans and Jefferson parish hospitals. Two cases were in out-of-state visitors to Louisiana.

Seasonally, the highest incidence was during the summer and fall months with 20 (83%) of the cases occurring from June through November. Ages of the cases ranged from 28 to 91, with a median age of 60 years. Males outnumbered females 17 to seven.

WOUND INFECTIONS

The seven wound infections were described at the time of hospital admission as having cellulitis with pain, erythema, edema and tenderness at the site of a wound. These symptoms were often accompanied by fever and weakness and occasionally by nausea, vomiting and diarrhea. Subsequent blister or bullae formation was seen in three patients, and gangrene developed in one of these. Five of the seven infections occurred following puncture wounds from seafood, with onset of symptoms occurring within 24 hours. The remaining two cases occurred in individuals with preexisting stasis ulcers. Four of the seven required surgical and/or debridement of their wounds.

V. vulnificus was isolated from five of five wounds cultured and from the blood of five of five whose blood was cultured. Three patients had positive cultures from both the wound and the blood. Three of six patients with liver function tests had abnormal hepatocellular enzymes. Six presented with a spectrum of underlying chronic illnesses which included arteriosclerotic heart disease, chronic phlebitis, chronic obstructive pulmonary disease, diabetes mellitus, peptic ulcer disease, liver disease, polycythemia and renal failure requiring dialysis. The median hospital stay was eight days. There were no fatalities in this group.

PRIMARY SEPTICEMIA

The 14 cases classified as primary septicemia presented with fever, chills and disorientation, often preceded or accompanied by loss of appetite and nausea. Following the initial symptoms, vomiting, abdominal cramps, diarrhea, weakness, seizures and loss of consciousness sometimes

occurred. Hypotension (systolic 90 mm Hg) was present in three cases on admission and developed within 24 hours in four other cases. Nine patients developed widespread cutaneous lesions, including four with a papular eruption, three others with large areas of ecchymosis and one who developed bullae which progressed to necrotizing ulcer that eventually required limb amputation. *V. vulnificus* was isolated from the blood of all 14 patients. In addition one patient had *V. vulnificus* isolated from a cutaneous lesion, and another had the organism cultured from the throat. Hepatocellular enzymes were elevated in nine patients who had liver function studies performed.

All 14 cases presented with a variety of underlying illnesses that included seven with liver disease (cirrhosis or chronic active hepatitis), five with hematopoietic disorders, three with renal failure requiring dialysis, three with history of peptic ulcer disease, four with diabetes mellitus and four with heart disease.

Ten of the 14 cases died, nine of which died within two days of onset. In this group males outnumbered females ten to four.

Ten of the 14 patients were known to have consumed raw oysters within two weeks prior to onset. Also, the other four were known frequent or occasional consumers of raw oysters; however, because of death of the patient and/or histories being obtained from family members, it could not be determined if oysters had been eaten within two weeks prior to onset of illness.

DIARRHEAL DISEASE

V. vulnificus was isolated from the stool of three patients with diarrheal disease. All three had history of stomach disorders. One had chronic indigestion and two had peptic ulcers and all three were taking antacids. Also, one reportedly had cancer of the cecum. All three gave histories of raw oyster consumption.

DISCUSSION

To date almost all patients identified with *V. vulnificus* infection had been diagnosed at hospitals. This suggests that only the more severe cases are being recognized and an undetermined number of less severe cases may be left undetected. Also, the clustering of the Louisiana cases in the New Orleans area may possibly be related to the lack of employment of appropriate laboratory culturing techniques for the growth of *V. vulnificus* and its differentiation from other vibrio species by laboratories in other areas of the state.

Similar patient histories, clinical syndrome and laboratory findings to those reported by Blake et al were found in this study. Both studies showed strong correlation of the septicemia form with preexisting hepatic disease. This study showed more significantly than the former a correlation with other underlying diseases including cancer, hematopoietic disorders and renal failures. The association of wound infection with peptic ulcer is difficult to explain;

it is possible that this may simply reflect the small sample size. Both studies strongly implicated raw oysters as the source of infection for the septicemia cases and seawater, crabs, and shrimp via puncture wounds as the source of wound infections.

In ongoing studies of the *Vibrio* species the State Laboratories have found that *V. vulnificus* is distributed throughout the coastal waters whenever there is an appropriate salinity concentration. *V. vulnificus* has been isolated from seawater, and seawater sediments. The concentration of the organism in seawater was as high as 150,000 per liter, and as many as 130,000 per gram of sediment. Additionally, 61 raw oyster samples were assayed and 34 (55%) contained *V. vulnificus*. The concentration of *V. vulnificus* in the oysters ranged from as low as 3 per gram to as high as 1,100 per gram. It is not known at this time what significance may be placed on the concentration of *Vibrio vulnificus*. Furthermore, studies in other laboratories have been initiated to determine what the virulence factors are, but to date, none have been reported.

Because of the severity and high case fatality rate for the septicemia cases, physicians should warn patients with chronic underlying liver and kidney diseases and other conditions causing, or capable of causing, impaired immune responses, to avoid eating raw oysters. Also, physicians are encouraged to culture for *Vibrio* species when clinical symptoms and exposure histories suggest infections with these organisms. *Vibrio vulnificus* will not grow in media that contain no sodium chloride; however, like other *Vibrio* species, it will grow readily on thiosulfate citrate bile salts agar (TCBS). Laboratories not familiar with *Vibrio* species and are unable to identify them correctly should forward specimens or isolates to the State Division of Laboratories for culture and/or species identification.

Since *V. vulnificus* infections can progress rapidly and are often life threatening, treatment should not wait for organism identification and antibiotic sensitivity determination. In a previous study, 38 strains of *V. vulnificus* were tested and, based on minimum inhibitory concentrations, all were susceptible to ampicillin, carbenicillin, cephalothin, rifampin, nitrofurantoin, sulfisoxazole, penicillin, chloramphenicol, gentamicin and tetracycline, some were susceptible to clindamycin and erythromycin, and all were resistant to colistin.¹ In addition to antibiotic therapy, for wound infections, vigorous debridement is suggested.

Any questions concerning this subject should be directed to the Division of Disease Control (504) 568-5005 or the Division of Laboratories (504) 568-5375.

REFERENCES

1. Hollis, D.G., Weaver, R.E. et al: Halophilic *Vibrio* species isolated from blood cultures. *J. Clin. Microbiol.* 3: 425-431, 1976
2. Blake, P.A., Merson, M.H. et al: Disease caused by a marine vibrio. *N. Engl. J. Med.* 300: 1, 1979

SELECTED REPORTABLE DISEASES (By Place of Residence)

STATE AND PARISH TOTALS REPORTED MORBIDITY AUGUST, 1982	VACCINE PREVENTABLE DISEASES					ASEPTIC MENINGITIS	HEPATITIS A ** AND UNSPECIFIED	HEPATITIS B	LEGIONNAIRES DISEASE	MALARIA ***	MENINGOCOCCAL INFECTIONS	SHIGELLOSIS	TUBERCULOSIS, PULMONARY	TYPHOID FEVER	OTHER SALMONELLOSIS	UNDERNUTRITION SEVERE	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY	RABIES IN ANIMALS (PARISH TOTALS CUMULATIVE, 1982)
	MEASLES	RUBELLA*	MUMPS	PERTUSSIS	TETANUS														
TOTAL TO DATE 19 81	2	9	4	5	2	64	587	236	1	4	96	65	265	2	124	1	14580	1107	27
TOTAL TO DATE 19 82	2	1	5	9	5	78	621	197	0	4	48	55	274	2	116	5	16235	1296	28
TOTAL THIS MONTH	0	0	0	0	1	17	75	33	0	1	8	5	35	0	20	0	2284	220	8
ACADIA							1	1										23	2
ALLEN													1					3	
ASCENSION																		11	2
ASSUMPTION																		13	
AVOUELLES																		8	
BEAUREGARD							1											12	
BIENVILLE																		3	1
BOSSIER																		29	1
CADDO						1					1		4		3		201	41	1
CALCASIEU							4				1							127	8
CALDWELL																		2	
CAMERON																			
CATAHOULA																		2	
CLAIBORNE																		2	1
CONCORDIA																		2	
DESOTO																		3	1
EAST BATON ROUGE							4						1					181	24
EAST CARROLL																		9	
EAST FELICIANA																			2
EVANGELINE							1						2					3	
FRANKLIN							3											7	
GRANT								1										10	
IBERIA							25	1								1		20	
IBERVILLE							1											7	
JACKSON																		3	1
JEFFERSON						4	6	1			3		1		2			165	17
JEFFERSON DAVIS								1					1					12	2
LAFAYETTE						1	2	3										57	
LAFOURCHE								1										15	4
LASALLE																		1	
LINCOLN								1					1					20	5
LIVINGSTON													1		1			4	
MADISON													1					33	2
MOREHOUSE							1								1			20	2
NATCHITOCHES																		1	7
ORLEANS						1	7	13			1	1	13		1			816	75
OUACHITA							3						1					130	1
PLAQUEMINES																		2	2
POINTE COUPEE																		2	1
RAPIDES							1	1					1					91	4
RED RIVER																		1	
RICHLAND																		12	
SABINE																		1	2
ST. BERNARD					1													3	1
ST. CHARLES							1	1										8	2
ST. HELENA																			
ST. JAMES																		11	
ST. JOHN								1					1					8	
ST. LANDRY							3						2		2			12	1
ST. MARTIN						1		1					1					13	1
ST. MARY						2	5	1				1						1	
ST. TAMMANY																		31	1
TANGIPAHOA															1			36	4
TENSAS																		1	2
TERREBONNE						7	5	2							1			23	3
UNION																		6	1
VERMILION													1		3			2	
VERNON								2			1	2						9	3
WASHINGTON							1						1		3			9	3
WEBSTER								1					1					7	3
WEST BATON ROUGE																		13	
WEST CARROLL																		3	
WEST FELICIANA																			1
WINN																		7	
OUT OF STATE										1								18	

* Includes Rubella, Congenital Syndrome

** Includes 15 cases of Hepatitis, Non A and Non B reported Jan. - August, 1982

*** Acquired outside United States unless otherwise stated.

From January 1, 1982 - August 31, 1982 the following cases were reported: 1-Psittacosis, 3-Amebiasis, 6-Brucellosis.



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