LOUISIANA MONTHLY MORBIDITY — LHSRSA

DISEASES REPORTED DURING THE MONTH OF JUNE, 1973 **BY PARISH OF RESIDENCE**

REYE'S SYNDROME IN LAFAYETTE LOUISIANA

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Editorial Introduction:

In March of this year we received two death certificates in the Epidemiology Section, LHSRSA, Division of Health Maintenance and Ambulatory Patient Services, which listed chicken pox as the primary cause of death. Since varicella infections rarely produce severe disease in an immunologically normal individual, we requested additional information of the attending physicians regarding these cases. The following article has been prepared by Dr. Suresh Kumari, Instructor in Pediatrics, L.S.U. School of Medicine, who attended these children during their illness. In her report, she describes a severe complication of common viral infections which has been recognized with increasing frequency by clinicians in recent years. . . . .

BUREAU OF VITAL STATISTICS **DIVISION OF HEALTH MAINTENANCE AND AMBULATORY PATIENT SERVICES**

Prepared by:
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	ASEPTIC MENINGITIS	DIPHTHERIA	ENCEPHALITIS	ENCEPHALITIS, POST INFECTIOUS	INFECTIOUS AND SERUM HEPATITIS	TUBERCULOSIS, PULMONARY	MENINGOCOCCAL INFECTIONS	PERTUSSIS	POLIOMYELITIS, PARALYTIC	RABIES IN ANIMALS	RHEUMATIC FEVER	RUBELLA *	SHIGELLOSIS	TYPHOID FEVER	OTHER SALMONELLOSIS	TETANUS	MEASLES	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY
TOTAL TO DATE 1972	28	4	5	9	374	290	31	21	0	24	7	84	62	4	68	4	81	8328	445
TOTAL TO DATE 1973	56	0	11	4	418	303	26	9	0	25	13	100	144	5	79	3	83	11078	423
TOTAL THIS MONTH	21	0	1	1	67	26	1	0	0	5	1	7	49	2	14	1	3	2024	62
ACADIA						1					1				1			12	
ALLEN																		4	
ASCENSION																		1	
ASSUMPTION																		1	
AVOYELLES					1													6	2
BEAUREGARD					1													3	
BIENVILLE																		4	
BOSSIER					3	1							1		1			11	
CADDO					1													255	
CALCASIEU					1							1			1			81	
CALDWELL																			
CAMERON																			
CATAHOULA																		1	
CLAIBORNE						1												2	
CONCORDIA																		3	
DESOTO						1				1								16	
EAST BATON ROUGE					3	2									3		2	125	7
EAST CARROLL																		9	
EAST FELICIANA																		1	
EVANGELINE						1									1			7	
FRANKLIN																			
GRANT										1								3	
IBERIA					1													15	3
IBERVILLE																			

*Includes Rubella, Congenital Syndrome.

Louisiana Department
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These two children, aged ten and eleven years, were admitted to Lafayette Charity Hospital within 24 hours of each other. Both had experienced a prodromal illness of fever, malaise and eruption of typical chicken pox lesions about 3-4 days prior to admission. They had fever on the day of admission and vomited once that morning. A few hours later they became weak and lethargic. When the first patient was examined in our Admitting Room she possessed chicken pox lesions most of which were scabbed. She was well oriented though very lethargic. Her sclerae were not icteric, and she did not have papilledema. No signs of meningeal irritation were present. Her liver was just palpable. Deep tendon reflexes were hypoactive; there was no Babinski. During the physical examination she lapsed from lethargy into semicoma. At this time the clinical diagnosis of chicken pox with the complication of viral encephalitis or Reye's syndrome was entertained. A spinal tap revealed clear CSF with no cells but glucose of 33 mgm and protein 18 mg%. Blood sugar at that time was reported to be 40 mgm%.

The patient was treated with 50% glucose for hypoglycemia and with I.V. Mannitol and Decadron for possible cerebral edema. In spite of these efforts she rapidly progressed into coma and died 17 hours after admission.

A second child, the 11/ year old sibling of the first patient, was admitted with similar findings approximately 24 hours after the first child. By this time we considered Reye's syndrome as a strong possibility in both patients since there was laboratory evidence of liver involvement (elevated SGOT) and elevated blood ammonia levels. During the first 24 hours after admission, attempts were made to treat cerebral edema with Mannitol. Initially her sensorium improved somewhat but later she again lapsed into a delirious state. An exchange transfusion with 2000 cc. of fresh whole blood was undertaken and another 24 hours later. There was no clinical improvement. During the second hospital day she developed upper G.I. bleeding which was controlled with saline irrigation and Maalox. The patient remained comatose throughout her hospitalization and approximately 4 hours prior to her death experienced a generalized tonic clonic seizure. The patient died 58 hours after admission.

After the admission of the second child we considered toxins as a possible etiology for their illness. On further questioning, the family mentioned that they made tea out of some herbs from their yard and the family members took it a few days prior to admission. The urine and the blood from one of these patients were analyzed at the Crime Laboratory and no toxins detected.

Autopsy findings in these two siblings were similar. The main findings were in the liver and brain. Liver was grossly yellow. Marked fatty changes were seen microscopically.

Meninges were intensely congested but contained no inflammatory exudate. Brain tissue was congested and edematous. Widespread severe hypoxic changes were evident at all levels, most marked in cerebral cortex. Myelin stains showed pallor associated with edema in white matter immediately adjacent to gray matter structures. Even in areas with the most striking and diffuse nerve changes there was no inflammatory reaction. These changes in the brain were acute, unassociated with inflammatory reaction and characteristic of hypoxia. These changes, accompanied by fatty change of the viscera, were consistent with the clinical diagnosis of Reye's syndrome.

Viral cultures of the brain, lung and kidney were negative.

DISCUSSION:

Reye's syndrome was first described by Reye et al. in 1963. The etiology of this syndrome is unknown, but there is a definite association with viral illnesses and toxins. Most of these cases occur in late winter and early spring and are probably related to the increased incidence of viral illnesses, e.g., influenza B, chicken pox. Aflatoxin, a toxic substance produced by Aspergillus flavus, has been incriminated as an etiological agent.

Clinical Features - - Most of these patients have varying degrees of prodromal illness characterized by fever, malaise, cough, rhinorrhea; some have rash. The second stage of this illness consists of symptoms of CNS involvement. Vomiting usually seems to indicate the progression into the second stage. The interval between the prodromal illness and the stage of CNS involvement varies from a few hours to a few days. After the onset of vomiting the patient rapidly progresses through the stages of delirium, combative-

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JACKSON																		10	
JEFFERSON	2		1		3	3							10		2			93	4
JEFFERSON DAVIS					1													8	
LAFAYETTE	1				4							2						13	
LAFOURCHE					3													16	
LASALLE																			
LINCOLN						1												32	
LIVINGSTON																		1	
MADISON																		9	
MOREHOUSE					1													13	3
NATCHITOCHES																		24	
ORLEANS	13			1	19	7	1						33		5			744	30
OUACHITA										2			4					138	3
PLAQUEMINES																		6	
POINTE COUPEE																			
RAPIDES	1				2	2						3		1				82	2
RED RIVER																		1	
RICHLAND																		4	1
SABINE										1								1	
ST. BERNARD					4	1												5	
ST. CHARLES	1												1					17	
ST. HELENA																			1
ST. JAMES																		4	
ST. JOHN																		5	1
ST. LANDRY						2												32	
ST. MARTIN					2	1										1		1	
ST. MARY					1													5	2
ST. TAMMANY	1				6													26	
TANGIPAHOA																		28	3
TENSAS																			
TERREBONNE	2																	3	
UNION					1													13	
VERMILION																		3	
VERNON					4	2						1					1	53	
WASHINGTON					1													48	
WEBSTER					4													10	
WEST BATON ROUGE																		1	
WEST CARROLL														1				2	
WEST FELICIANA																		5	
WINN																		7	
OUT OF STATE																		1	

From January 1 through June 30, the following cases were also reported: 1-Actinomycosis; 4-Brucellosis: 2-Malaria (contracted outside the U.S.A.)

ness, stupor, coma, convulsions and death.

Lab Investigations - - CBC reveals polymorphonuclear leukocytosis without any evidence of infection. Blood chemistries show elevation in blood urea nitrogen, decrease in blood sugar which is also reflected in low CSF sugar. Arterial blood gases frequently indicate metabolic acidosis. Liver function studies show consistent and typical abnormalities. Despite a minimal elevation of bilirubin, SGOT is markedly and disproportionately elevated. In a patient presenting with symptoms of encephalopathy who has an elevated SGOT, blood ammonia should be obtained. R.K. Byers recommends that L.P. should not be done when Reye's syndrome is suspected to avoid medullary coning from sudden decrease in CSF pressure. Coagulation studies in these patients reflect the decrease in the liver factors by prolongation of both prothrombin time and PTT.

Treatment should be aimed at:

1. Treatment of hypoglycemia.
2. Treatment of cerebral edema.
3. Measures to decrease the production of ammonia.
4. Supportive treatment for respiratory failure if it occurs, and antibiotics if infection supervenes.
5. Early diagnosis and treatment of coagulation problems.
6. Maintaining good renal function.
7. Measures to remove the excessive blood ammonia.

Hypoglycemia is a frequent manifestation, especially in patients who have had salicylates administered for fever. Blood sugar should be frequently monitored with Dextrostix even though the patient is receiving I.V. fluids. To control the cerebral edema Mannitol 1G/Kg intravenous should be used. Dexamethasone can be used if there is no G.I. bleeding. Since encephalopathy may be related to blood ammonia, measures should be taken to decrease its production. If the patient has G.I. bleeding secondary to liver failure, measures should be taken to stop the bleeding since blood in the G.I. tract will elevate blood ammonia. Neomycin orally and by enema helps to decrease the ammonia production by altering the intestinal flora. If sedation is needed for agitation and restlessness, drugs excreted through the kidney (phenobarbital) must be chosen. Morphine and paraldehyde are contraindicated.

If respiratory failure occurs, respiration should be supported by mechanical ventilation.

When bleeding is a problem one should differentiate the bleeding secondary to liver failure from disseminated intravascular coagulation. Treatment of choice for bleeding in liver failure is replacement of liver factors (Prothrombin, Factor VII, IX, X, Fibrinogen and Factor V) by plasma transfusion. Vitamin K is ineffective in controlling bleeding under these circumstances.

Treatment should also be aimed at maintaining normal electrolyte balance and intravascular volume to assure good urinary output. An attempt should be made to remove the excessive blood ammonia either by peritoneal dialysis or exchange transfusion. There is one case in the literature of Reye's syndrome successfully treated by peritoneal dialysis.

Exchange transfusion should be performed with fresh whole blood prior to the onset of medullary dysfunction and repeated every 12 hours. Ammonia content of stored blood rises precipitously with storage, so the blood for exchange transfusion should be as fresh as possible.

The therapy of Reye's syndrome should be very vigorous and multifaceted. With high index of suspicion, early diagnosis and vigorous treatment, we should be able to improve the mortality rate considerably.

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LABORATORY DATA

	PATIENT I	PATIENT II
SGOT	1160	990
Bilirubin	Not done	Total 2.4 mgm% Direct 1.25 mgm%
Blood Sugar	40 mgm%	113 mgm%
BUN	17.5 mgm%	27 mgm%
Creatinine	Not done	1 mgm%
CBC	Hb 14.3 Hct 40.5 WBC 24,900 Platelet--normal	Hb 12.1 Hct 36.9 WBC 10,100 Platelet--normal
Salicylate Level	18 mgm%	Not done
U/A	Specific Gravity 1.027 Glucose 1+ Protein--trace	Specific Gravity 1.031 Ketones--small Glucose--negative Protein--negative
CSF	Glucose 33 mgm% Protein 18.5 mgm% Cells 0	Not done
Blood Ammonia	Not done	190 micrograms
Arterial Blood Gases	PH 7.22 PCO_2 14.5 SB 10.5 BE -20.6	PH 7.46 PCO_2 16 SB 16 BE -16
Cultures:		
Blood	Negative	Negative
CSF	Negative	Not done
Urine	Negative	Negative
Throat	Negative	Negative

COAGULATION STUDIES IN PATIENT II

FACTOR	NORMAL	PATIENT
Fibrinogen	170-410 mg.	185 mg%.
PT	11.9 sec.	20.4 sec.
PTT	32.4 sec.	40.5 sec.
Platelets	200,000-400,000	275,000

LOUISIANA EXPORTS NOT NECESSARILY IN DEMAND

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Epidemic Intelligence Service Officer, Louisiana

Louisiana, due to an abundance of fertile farmland and a wealth of natural resources, has for many years been a large exporter of such items as rice, cotton, corn, wheat, seafood and paper products. She has shared her wealth through these exports with neighboring states as well as distant countries. In recent years with the advent of an increasing demand for her natural gas and petroleum products, she has continued to share her wealth with her neighboring states, at times with such enthusiasm and apparent altruism that she seems to place her neighbors needs ahead of her own.

Recently Louisiana added a new item to her list of exports. This one, however, unlike those mentioned above did not fulfill any need or satisfy any appetite of its unwitting recipient. That recipient, Mississippi, referred to this unwelcome export in the June 8th Mississippi Weekly Morbidity Report:

> •That issue featured an article describing an outbreak of measles in a single day care center in McComb, Mississippi. A total of 9 cases were involved, including 6 primary and 3 secondary cases. Investigators working with the Mississippi State Board of Health were astute enough to identify the index case in this outbreak as a child who had resided in Baton Rouge, Louisiana until a few days prior to the onset of her symptoms at which time she and her parents had moved to that state.

Louisiana is not currently adequately immunized against measles or other equally preventable communicable diseases. Recent surveys conducted by representatives of the State's Vaccination Assistance Program (VAP) have shown large areas of the State to possess suboptimal immunity levels against measles. The results of one of these surveys is presented in the accompanying figure. These data were obtained by comparing the number of children in the 5-9 year age group in each parish to the number of doses of VAP measles vaccine given in this age group in that same parish. The data are biased by the fact that they do not take into account vaccine administered by private physicians; they do not allow for cases where repeat doses of the vaccine were given to a single child; nor do they reflect changes attendant to movement of children from one parish to another. Survey data, however, also indicate that large numbers of Louisiana's children have not received adequate immunization. These observations are further reinforced by a review of reported cases of measles in Louisiana which to date number 83.

School registration will take place next month. According to Louisiana law, all children must supply proof of vaccination against polio, measles, diphtheria, tetanus and pertussis prior to their entry into the school system. If rigidly enforced, this policy will provide a minimal supervision of Louisiana's immunization activities since it does not deal with immunization of preschool-age children. Proper immunization, years before a child registers for school, is not assured by law. Rather, it requires a continuous concerted program of public education by the medical community to motivate parents to complete their child's immunizations. Only if local school boards, health units and private physicians throughout the State join together in this concerted effort can we hope to provide adequate protection for the children of Louisiana and, in turn, avoid future exportation of disease.

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RED MEASLES IMMUNITY LEVELS
IN THE LOUISIANA PARISHES IN THE 5 - 9 AGE GROUP
AS OF DECEMBER 31, 1972