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Blood sugar in status thymo lymphaticus: new theory as to cause of sudden death.

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In the majority of patients who died with symptoms of status thymo-lymphaticus in the wards of the Babies' Hospital, the prostration of the patient was so marked that it was out of all proportion to the general physical findings. The clinical picture closely simulated a state of sugar shock from overdosage of insulin. It was, therefore, decided to determine the blood sugar level in such patients. In three cases where the diagnosis of status thymo-lymphaticus was confirmed by autopsy a sample of blood was taken within half an hour of death while the patient was in convulsions. The blood sugars were 52, 57, and 42 mg. per 100 cc. (Table I.) All three are considerably below the normal blood sugar of infants, which we have found to be between 80-120 mg. per 100 cc. as estimated by the Myers-Bailey modification of the Lewis Benedict method.

We have determined the blood sugar within half an hour of death in a series of patients with diseases other than status thymo-lymphaticus. (Table II.) The values are all normal or above normal. Hypoglycemia is not therefore a constant finding before death.

The blood sugars of six patients in convulsions of some hours' duration produced by conditions other than status thymo-lymphaticus were normal or above normal. (Table III.) It does not therefore seem probable that the convulsions alone produced the hypoglycemia.

The blood sugar was estimated in six cases of suspected status thymo-lymphaticus where roentgenograms showed a large thymus. The patients were not in convulsions at the time the sample of blood was taken. With the exception of one, which was slightly decreased, the blood sugars were normal. (Table IV.)

TABLE I.

Blood sugar of thymo-lymphaticus patients during convulsions immediately preceding death.

Case		Age	Sex	Time in convulsion before taking blood	Blood chemistry in mg. per 100 cc.				Spinal fluid in mg. per 100 cc.		Cistern fluid in mg. per 100 cc.	
					Sugar	Chlorids	Urea N	CO_2CP	Sugar	Chlorids	Sugar	Chlorids
I	VOB	24 mo.	F	5½ hours	52	—	20.8	27 vols per cent	28	650	—	—
II	ME	16 mo.	M	2 hours	42	550	—	—	62	738	64	725
III	TL	22 mo.	M	drowsy 12 hours	57	600	—	—	26	775	—	—

TABLE II.

Blood sugars done within half an hour of death in patients suffering from diseases other than status-thymo-lymphaticus.

Case	Age	Sex	Diagnosis	Blood sugar mg. per 100 cc.	Spinal fluid sugar mg. per 100 cc.	Remarks.
I	2 yrs.	M.	Anemia Lead poisoning	188	94	Autopsy performed by medical examiner. Only cause of death anemia. Suprarenal normal. Spleen negative. Thymus 15 gm. Lymph nodes normal. Convulsions for 3 hrs. before death.
II	5½ yrs.	F.	Acute intestinal intoxication	202	—	Twitching of muscles of extremities. In state of coma.
III	8 mo.	M.	Tuberculosis of cerebral and spinal meninges	141	12	
IV	10 mo.	M.	Acute intestinal intoxication Mongolian idiocy	101	—	
V	9 mo.	F.	Acute nephritis Bronchopneumonia Acute catarrhal colitis	93	—	
VI	3 yrs.	F.	Tuberculosis of cerebral and spinal meninges	165	28	

TABLE III.

Blood sugars of patients in convulsions produced by other conditions than status-thymo-lymphaticus.

Case	Age	Diagnosis	Time in convulsions before taking blood	Blood chemistry in mg. per 100 cc.							Necropsy
				Sugar	Chlor.	Ca.	P.	Sugar	Chlor.	Result	
I	8 mos.	Bronchopneumonia	8 hrs.	140	650	10.5	3.5	130	675	Died	Thymus 5 gm. Spleen neg. Suprarenal normal.
II	6 mos.	Tetany	6 hrs.	106		7.7	4.0			Improved	
III	12 mos.	Tetany	24 hrs.	130	500			86	673	Died	Thymus 5 gm. Spleen neg. Suprarenal normal.
IV	5 mos.	Tetany	4 da. 2-3 hr.	106		5.2	5.3	71	763	Not impr.	
V	5 yrs.	Streptococcus Meningitis	3 hrs.	134				19	500	Died	
VI	2 yrs.	Anemia Lead poisoning	3 hrs.	188	538			94	675	Died	Autopsy performed by the medical examiner who gave the only cause of death as: Anemia. Suprarenal normal. Spleen neg. Thymus 15 gm. Lymph nodes normal.

TABLE IV.

Blood sugar of patients having large thymus as shown by roentgenogram at a time when they were not in convulsions.

Case	Age	Sex	Diagnosis	Blood sugar in mg. per 100 cc.	Remarks
I	21 mos.	F	Hypertrophied Tonsils Hyperplasia of Thymus	106	No history of convulsions
II	3½ mos.	F	Enlarged Adenoids Hyperplasia of Thymus	72	History of convulsions
III	4 mos.	M	Status Lymphaticus Rickets	111	No history of convulsions
IV	6½ mos.	M	Hyperplasia of Thymus Acute Intest. Intoxication	86	No history of convulsions
V	13 mos.	M	Hyperplasia of Thymus Acute Tonsillitis	89	No history of convulsions
VI	4 mos.	M	Enlarged Thymus	103	Difficulty in breathing

The hypoglycemia, therefore, was temporary rather than continuous.

Acute suprarenal insufficiency is suggested as the immediate cause of the sudden death in status thymo-lymphaticus.

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Comparative study of action of antiseptics on staphylococci and body cells by tissue culture method.

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Experiments begun in 1916 by one of the authors[1] to test *in vitro* by the tissue culture method the comparative action of certain bacterial substances on tissues and on bacteria have been continued. In the previous studies human tissues were used and a uniform exposure of one hour was employed. In the present experiments rabbit tissue (spleen) was used throughout, and the time of exposure in the first series of experiments was twenty minutes. The antiseptics tested have included alcohol, iodine, mercuric chloride, mercurochrome, acriflavine, protargol, albargin, gentian violet, neosalvarsan, and hexylresorcinol.

The spleen of a freshly killed rabbit was divided into pieces of about 1 mm. in diameter. After washing in physiological salt solution, one lot of the fragments was placed one minute in a suspension of *Staphyloccoccus aureus,* and then put in graded solutions of the antiseptic for 20 minutes. Tissue cultures were then prepared in hanging drops of homologous plasma, following two washings of the tissue in salt solution. A second set of cultures were made from non-infected tissues similarly exposed with appropriate controls of untreated tissues. The comparative effect of these antiseptics on splenic cells and staphylococci is shown in the following table.

It is seen that in the majority of instances, particularly in the case of several of the newer antiseptics, bacteria proved decidedly

[1] Lambert, R. A., *J. Exp. Med.*, 1916, xxiv, 683.