JONES (JOS.)

Temperature in Yellow Fever.

TEMPERATURE IN YELLOW FEVER.

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THE following table contains the results of my own observations upon the pulse and temperature in yellow fever, consolidated with those of several other observers; viz., W. Arnold M.D.,* Charles Faget, M.D., D.M.P. &c., 159 Burgundy street, New Orleans; Just Touatre M.D., D.M.P., 142 Dumaine street, New Orleans; and Thomas Layton, M.D., D. M. P., Magazine street, New Orleans.

My thanks are especially due to my learned and distinguished confrère, Dr. Charles Faget, for the opportunity of examining the careful thermometric records preserved by himself, and Drs. Touatre and Layton, during the epidemic of 1870.

The general results of my investigations upon the changes of temperature and conditions of the pulse in yellow fever may be formulated thus:—

The maximum elevation of temperature, in yellow fever, is rapidly attained upon the first, second and third days of the disease, ranging from 102° F., to 110° F., in the axilla; and, as a general rule, from the third to the fifth day, steadily falls, and sinks down to the normal standard and even below; in some fatal cases, it rises again towards the end, rarely, however, reaching or exceeding, during the stage characterized by passive hæmorrhages, black vomit, jaundice and urinary suppression, 104° F.; and, as a general rule, never attains the high degree of temperature characteristic of the first stage of active febrile excitement.

The supervention of an inflammatory disease, or the occurrence of an abscess, or the access of malarial fever, after the first stage of active febrile excitement, may, in like manner, cause a progressive elevation of temperature, with slight evening exacerbations.

The pulse, at the commencement of the febrile attack, is rapid and full; the increase in the frequency of the pulse does not, however, as a general rule, continue to correspond with the elevation and oscillations of temperature, as in many febrile diseases; and, in many cases of yellow fever, the remarkable phenomenon is

* Practical Treatise on the Bilious Remittent Fever (Yellow Fever), with illustrative Tables and Cases. On the Temperature of the System in the Febrile Diseases of Jamaica. London. 1840.

Tabular Statement of the Variations of the Pulse and Temperature in Yellow Fever.

No. of Case.	Temp. and Pulse.	Day of Disease. 1	2	3	4	5	6	7	8	9	10	Results and Remarks.
1	Pulse.	108	118	118								Female. Age 28. Intern. fever. Scarlet color of surface. Death on third day of disease.
	Temp.	103.5°	106.8°	108°								
2	Pulse.	110	110	108	100		120					Male. Death on ninth day.
	Temp.	108°	108°	108°	108°	110°	110°	110°		100°		
3	Pulse.	120	120									Male. Death on seventeenth day.
	Temp.	108°	108°			109°				110°	100°	
4	Pulse.		110	90		96						Male. Death on eleventh day.
	Temp.		106°	107°			108°				98°	
5	Pulse.	110	110									Male. Death on seventh day.
	Temp.	107°	108°									
6	Pulse.	100		120								Male. Death on third day.
	Temp.	107°		107°								
7	Pulse.		110	100	140							Male. Death on sixth day.
	Temp.		109°	109.5°		110°						
8	Pulse.	100	96		90	100	100					Male. Recovered.
	Temp.		105°				100°					
9	Pulse.	110	100	.	120	120	126					Male. Death on sixth day.
	Temp.	109°				100°						
10	Pulse.	90	85	90	85							Male. Death on fourth day.
	Temp.	108.5°										
11	Pulse.	100	90	86	86	86	80	86				Male. Death on eighth day.
	Temp.	107°			107°							
12	Pulse.		110	100	90	110	90					Male. Recovered.
	Temp.	105°	105°	105°	104°	104°	100°					
13	Pulse.			100								Male. Recovered.
	Temp.		105°	100°								
14	Pulse.	118	90	80	76	70	68	60				Male. Convalescent on fifth day.
	Temp.	103.5°	101.9°	101°	99.4°	99.4°	98.8°	98.8°				
15	Pulse.	118	110	78	70	70	68					Male. Convalescent on fourth day.
	Temp.	103°	101.9°	100°	99°	99°	99°					
16	Pulse.	116	82	84	82	78	76	80	74	60	64	Male. Case protracted, on account of formation of parotid abscess. Recovered. During fever, verat. virid. rapidly reduced pulse.
	Temp.	103.2°	101.8°	101.8°	101.6°	101.6°	101.6°	102.2°	100.8°	101.2°	99.2°	
17	Pulse.	86	62	70	60	60						Male. Convalescent on fifth day.
	Temp.	104°	101.2°	101.2°	100.2°	99.2°						
18	Pulse.	102	94	88	80							Male. Convalescent on fourth day.
	Temp.	104.4°	100.6°	99.4°	99°							
19	Pulse.	126	100	90	94	84	80					Male. Aged 67. Death on sixth day.
	Temp.	104.6°	104°	102.2°	102.2°	100°	99°					
20	Pulse.	110	75	60								Male child. Convalescent on third day.
	Temp.	104.5°	101.4°	100.4°								
21	Pulse.	120	106	90	82	92	110	90	80	70	100	Adult male. Case protracted by abscess in elbow, which appeared on third day. Convalescent on seventh day.
	Temp.	104.4°	103.5°	103.6°	104.9°	104.8°	102.8°	101.5°	101.2°	101°	100.8°	
22	Pulse.	120	80	62	80	70	70	70	70			Veratrum viride, in twenty-drop doses, rapidly reduced the pulse.
	Temp.	105°	101.2°	100.4°	101.8°	99.5°	99°	99.5°	99°			Male. Convalescent on seventh day.
23	Pulse.	120	112	110	76	76						Adult male. Age 63. Died fifth day of disease.
	Temp.	105.8°	105°	104°	100.4°	98.5°						
24	Pulse.		100	86	8	70	70					Male child. On fourth day, attack of indigestion caused rise of temperature. Convalescent on sixth day.
	Temp.		101.8°	100°	10.°	99°	98.8°					
25	Pulse.	122	110	102	100	130						Death on fifteenth day of disease.
	Temp.	102.2°	103.2°	101.9°	101.1°	100.9°						
26	Pulse.	150	120	100	90	88	100	70	84			Eruption of urticaria appeared on fifth day, and caused oscillation of temperature. Convalescent on seventh day.
	Temp.	103.4°	104°	102.5°	102.2°	101°	101.4°	100.2°	100°			
27	Pulse.		110	98	84	80	80	76				Male. Age 32. Convalescent on seventh day.
	Temp.		104°	103.5°	102.4°	100.8°	100°	98.8°				
28	Pulse.	110	80	94	82	98						Adult male. Black vomit on fourth day. Death on fifth day.
	Temp.	103.8°	104.5°	103°	101.8°	101.8°						
29	Pulse.	110	100	84	90	92	90	80	104	114	114	Adult male. Died on tenth day of disease. On ninth day, temperature fell rapidly from 102.2° to 98.5°, whilst pulse increas'd to 114.
	Temp.	103.8°	104.4°	103.7°	103.6°	102.2°	101.8°	102.2°	102.2°	102.2°	98.5°	
30	Pulse.	118	116	104	100	98	100					Adult male. Died on seventh day.
	Temp.	104.2°	105.2°	104.3°	104.2°	103°	102.8°					
31	Pulse.	72	68	68	72	64	52	48	48			Male. Age 19. Jaundice on third day. Conval. on ninth day.
	Temp.	101.3°	102.2°	101°	101.5°	99.8°	100°	99.8°	99.5°			
32	Pulse.	108	100	108	99	80	70	70	60	50	44	Male. Age 23. Convalescent on seventh day.
	Temp.	Fever.	102.2°	103.8°	102.2°	100°	100.4°	98.5°	96.8°	96.8°		
33	Pulse.			110	90	74	76	64				Female child. Convalescent on seventh day.
	Temp.	Fever.	Fever.	104.5°	102.6°	102.8°	100.8°	99.6°				
34	Pulse.	130	130	110	100	84						Female. Convalescent on fifth day.
	Temp.	102.2°	104°	104.6°	102°	99.4°						
35	Pulse.		114	113	105	70	63	105	105	112	136	Adult male. Jaundice on 4th day. Black vomit on 6th day. Death on 11th day. After supervention of black vomit, pulse increas. in freq.
	Temp.	Fever.	103.6°	104.8°	104.2°	103°	100.2°	101.6°	101.3°	99.2°	99.8°	
36	Pulse.	120	120	100	90	74	72	68	78	90	80	Adult male. Convalescent on tenth day.
	Temp.	Fever.	105°	105°	103°	102°	102°	101.5°	102.8°	101°	100.2°	
37	Pulse.		108	90	80	62	60	60	54	50	50	Male. Age 27. Convalescent on eighth day.
	Temp.	Fever.	105.8°	105.9°	104.4°	103.4°	101.5°	100°	99°	96.6°	100.5°	
38	Pulse.	116	100	92	100							Male. Age 22. Temperature fell from 106.5°, third day, to 101.5° fifth day. Death on fifth day.
	Temp.	106.5°	106.5°	105°	101.6°							
39	Pulse.		85	96	110							Male. Aged 35. Jaundice and black vomit preceded death. Temperature from 106.5°, 3d day, to 99.2° on day of death, 4th day.
	Temp.	Fever.	105.9°	106.8°	100°							

TABULAR STATEMENT OF THE VARIATIONS OF THE PULSE AND TEMPERATURE IN YELLOW FEVER. (Continued.)

No. of Case.	Temp. and Pulse.	Day of Disease. 1	2	3	4	5	6	7	8	9	10	Results and Remarks.
40	Pulse.		112	104	100	80	80	80	74	74	74	Male. Age 20. Jaundice on fifth day. Pulse became slow, but temperature remained above normal standard. Convalescent fourteenth day.
	Temp.	Fever.	101.8°	104°	104°	102.7°	102.6°	102.2°	101°	102 6°	101.2°	
41	Pulse.	90	70	84	69	70	70	60	50	44		Male child. Under veratrum viride, rapid fall in pulse. Convalescent tenth day.
	Temp.	103°	102°	101.6°	104.4°	103.8	102.5°	101°	99.8°	99°		
42	Pulse.		100	85	94	83	84	84				Female. Age 15. Temperature most elevated on fourth and fifth days. Convalescent on eighth day.
	Temp.	Fever.	103°	102°	105°	104.5°	103.7°	100°				
43	Pulse.	98	80	76	70	74	84	108				Male. Age 40. Jaundice on third day. Pulse depressed during jaundice. Temperature fell from 105°, third day, to 100.2°, day of death, seventh day.
	Temp.	105.1°	105.2°	105°	103.4°	102.2°	101.2°	100.2°				
44	Pulse.		112	110	108	96	86	69	76	80	68	Male. Age 32. Jaundice and hæmorrhage from kidneys. Convalescent on ninth day.
	Temp.	Fever.	105°	104°	101.2°	102°	102°	101°	101°	99.2°	99.8°	
45	Pulse.				82	82	85	80	80			Male. Aged 37. Jaundice, third day. Urine contained albumen and casts. Convalescent on seventh day.
	Temp.	Fever.	Fever.	Fever.	100°	100°	100°	98°	98°			
46	Pulse.						130	140				Progressive diminution of urinary excretion. Death.
	Temp.	Fever.	Fever.	105°	104°	104°	102.5°	103.5°				
47	Pulse.			80	72	80	80					Black vomit. Jaundice. Urinary suppression. Death on seventh day.
	Temp.	Fever.	Fever.	101°	101°	100.8°	101°					
48	Pulse.			84	92	80						Black vomit. Jaundice and urinary suppression. Death on sixth day.
	Temp.	Fever.	Fever.	100.5°	101°	100°						

witnessed, of the pulse progressively decreasing in frequency and even descending below the normal standard, whilst the temperature is maintained at an elevated degree; and, on the other hand, the pulse frequently increases in frequency, but diminishes in force, near the fatal issue; the occurrence of copious hæmorrhages from the bowels or stomach, may be attended with sudden depression of temperature, and increase in frequency, but diminution in the force and fulness of the pulse.

The remarkable progressive decrease in the number of beats of the pulse, after the first stage of active febrile excitement, in many cases of yellow fever, appears to be due to several causes, as the anatomical changes in the heart (acute fatty degeneration), and the retention in the blood of the bile and urinary constituents.

If the temperature of the trunk rises, in the first stage of yellow fever above 105° F., the patient is in imminent danger, and if it reaches 107° to 110° F., death is almost inevitable whatever be the mode of treatment adopted.

In cases attended with the rapid rise of the temperature to 106° and beyond, in the first stage, death sometimes occurs suddenly, and apparently solely from the effects upon the blood and nervous system of the great elevation of the temperature, as in sun-stroke.

In the fact established by the preceding table, that an elevation of temperature, above 106° in yellow fever, was invariably followed by death, we have a powerful argument for the constant employment of the thermometer, in the investigation of the phenomena of this disease, as affording some grounds not only for prognosis, but also for treatment.

In those cases which are attended with great elevation of temperature, the physician should seek to diminish the excessive heat by those measures which reduce the action of the heart, promote free perspiration and directly reduce the heat of the surface; to accomplish these ends, the most efficient remedies appear to be veratrum viride, and the sponging of the surface with water, or with a mixture of water, acetic acid and alcohol.

It appears, also, that the administration of an active purgative, either calomel or castor oil, followed immediately by one or two full doses of quinine, in the first twenty-four hours of the fever, produces beneficial effects, in unloading the portal circulation, and in controlling, to a certain extent, the production of animal heat.

In yellow fever, the profession needs, in future, accurate records of the thermometric changes as influenced in the early stages of the disease, by the measures just indicated.

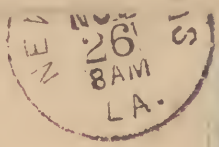
The preceding table also illustrates the fact that jaundice, urinary suppression and black vomit are often accompanied by a slow pulse and but moderate elevation of temperature.

If the thermometric changes of yellow fever be projected upon a chart, and if a comparison be instituted with the thermometric

changes of the other diseases, it will be observed that those of the former disease more nearly resemble the rapid rise and sudden fall of temperature observed in varioloid, without secondary fever, mild scarlatina, and simple uncomplicated pneumonia, which runs its course without fresh accessions of inflammatory action; whilst, on the other hand, they differ materially from the rapid and oft-recurring elevations and depressions of temperature characteristic of the various forms of malarial fever.

The cause of the rapid rise and sudden declension of the temperature in yellow fever must be sought chiefly in the changes induced in the blood, and in those organs upon which the circulation and integrity of the blood depend.

New Orleans, La. July 31, 1873.



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