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Paul B. Cornely

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Morbidity and Mortality From Scarlet Fever in the Negro

PAUL B. CORNELY, M.D., DR.P.H., F.A.P.H.A.

Department of Bacteriology, Preventive Medicine and Public Health, School of Medicine, Howard University, Washington, D. C.

SCARLET fever is one of the communicable diseases which have been said to be less prevalent in the Negro than the white population. Ever since the census of 1879,[1] when for the first time comparative statistical data over any extensive area showed a ratio of 69.2 deaths from scarlet fever in the Negro to 1 in the white as compared with the ratio of 6.3 to 1 for deaths from all causes, various observers have commented on this difference. However, most of these investigators have based their statements on the recorded mortality rates for the southern states published annually by the Bureau of the Census. These differences for scarlet fever are well shown in Table I.[2]

No one has made a comparison of the scarlet fever experience of the Negro population in the South with that of the North, nor has this been contrasted with that of the white population in these two regions. In order to study this problem, questionnaires requesting the number of deaths and cases for certain age groups for each year from 1930 through 1934 were sent to the health officers of 13 southern states, 10 northern cities with large Negro populations, and 10 southern cities. Because the Bureau of the Census has not published estimates of population according to race since 1933, rates were only computed for the 4 year period, 1930–1933. There are still several cities and states which do not compile their cases or deaths from scarlet fever according to age or race, and therefore in one or two instances, the interpretation of the data must necessarily be limited.

The data in Table II show the mortality rate from scarlet fever for both races in certain states and cities. For both races the death rates in the southern states and cities are lower than in the northern communities. In practically all instances, the colored mor-

TABLE I

Mortality Rates from Scarlet Fever Among Colored and White of 10 Southern States, 1920–1933

	Scarlet Fever	
	Colored	*White*
1920	0.54	2.09
1921	0.57	2.12
1922	0.42	1.97
1923	0.51	1.78
1924	0.36	1.47
1925	0.38	1.39
1926	0.45	1.56
1927	0.30	1.56
1928	0.42	1.45
1929	0.37	2.27
1930	0.44	1.81
1931	0.36	2.17
1932	0.29	1.60
1933	0.47	1.99

tality is also lower than the white, but this difference is greatest in the southern states, where the ratio of Negro to white deaths is 3.7 to 1; less marked in the southern cities, 2.4 to 1, and least in the northern cities where the ratio is 1.8 to 1.

TABLE II

Mean Mortality Rates from Scarlet Fever for All Ages of White and Negro Population in Certain States and Cities, 1930–1933, inclusive

	Mean Mortality Rates per 100,000 Population for 4 Year Period, 1930–1933	
	White	*Colored*
Southern Cities:		
Atlanta	3.9	1.6
Baltimore	2.6	1.2
Birmingham	1.8	0.3
Louisville	2.8	0.5
Memphis	2.3	...
Nashville	1.9	...
New Orleans	1.2	0.7
Norfolk	0.3	1.7
Richmond	0.8	1.4
Northern Cities:		
Chicago	5.0	3.1
Cleveland	4.1	1.3
Detroit	2.6	1.5
Newark	1.2	...
New York	1.2	0.4
Philadelphia	2.3	2.4
Pittsburgh	2.5	1.7
St. Louis	3.9	2.0
Southern States:		
Alabama	1.7	0.2
Arkansas	1.3	0.2
Florida	0.6	0.2
Georgia	1.5	0.4
Kentucky	3.1	1.6 *
Louisiana	0.8	0.2
Mississippi	0.9	0.2
North Carolina	1.9	0.2
South Carolina	1.3	0.3
Tennessee	2.0	0.6
Virginia	1.9	0.6

* 1930-1932

The question whether this disparity in mortality may not be due to differences in the age distribution of both races may well be discussed at this juncture. This factor does not seem to have any influence whatsoever. Pevaroff and Hindman [3] investigated this matter and demonstrated that the disparity in mortality from scarlet fever in the two groups existed even after the rates were adjusted for differences in age distribution. Table III shows this well.

The distribution of deaths in the different age groups seems to be very similar for both races in the North and South. The significant fact, shown in Table IV, is the marked concentration of deaths in the age group 0–5 years in both races in most of the cities and states. In practically all of the communities from one-half to three-fourths of all the deaths among white and colored persons occurred in children under 5 years. Doull [4] was among the first to call attention to this phenomenon in the white population in temperate and tropical climates. He explained the occurrence in the North on the basis of the degree of aggregation of population; while in the South he attributed it to one or all of 3 factors: a corresponding concentration of cases, an increase in the relative case fatality in the younger ages, or a development of an early and widespread immunity of the southern population.

When we turn our attention to the case fatality rates, certain differences are to be recorded. In Table V, it is observed that in 12 of the 16 communities, the case fatality rates are higher for the Negro than for the white. As with the mortality rates, the inequality in the case fatality rates for the two races is greater in the southern states and cities than in the northern cities. For the southern states the group fatality rates are 1.5 and 3.1 for white and Negroes respectively; for the southern cities, 1.1 and 1.9, and for the northern cities, 1.3 and 1.2. One could well ask whether the higher case fatality rate in the Negro in the South is not due to

TABLE III

Scarlet Fever Mortality in Whites and Negroes in 10 Southern States

State	Period	Average Annual Death Rate per 100,000 *	
		White	Colored
Florida	1919–1929	0.89	0.26
Georgia	† 1922–1929	1.11	0.28
Kentucky	1917–1929	2.15	1.14
Louisiana	1918–1929	0.63	0.14
Maryland	1917–1929	2.38	0.81
Mississippi	1919–1929	0.97	0.31
North Carolina	1917–1929	1.59	0.36
South Carolina	1917–1929	0.86	0.25
Tennessee	1917–1929	1.99	0.71
Virginia	1917–1929	1.83	0.44
Average for 10 States		1.63	0.36

* Rates adjusted for differences in age distribution, standard population used being that of continental U. S. A., 1910.

† Out of registration area 1925–1927, inclusive.

TABLE IV

Percentage of Deaths from Scarlet Fever Occurring in Different Age Groups, 1930–1933

	Per Cent Deaths Under 5 Years		Per cent Deaths 5–9 Years		Per cent Deaths 10 and Over	
	White	Colored	White	Colored	White	Colored
Southern Cities:						
Atlanta	52	67	24	..	24	33
Baltimore	43	57	36	..	21	43
Birmingham	42	100	42	..	17	..
Louisville (1933)	29	..	14	..	57	..
Memphis	27	..	33	..	40	..
Nashville	67	..	33	..	..	..
New Orleans	31	..	38	50	31	50
Norfolk	..	67	..	..	100	33
Richmond	25	33	75	67	..	..
Northern Cities:						
Cleveland	40	75	32	25	28	0
Detroit	41	38	41	50	18	12
Newark	58	..	21 *	..	21 †	..
New York	46	50	27	17	27	33
Pittsburgh	43	50	31	..	26	50
St. Louis	19	50	23	..	58	50
Southern States:						
Alabama	70	71	22	29	8	..
Arkansas	67	50	21	50	11	..
Florida	48	25	16	25	36	50
Georgia	61	60	23	..	16	40
Louisiana	50	20	29	20	21	60
Mississippi	55	40	37	30	8	30
North Carolina	55	29	27	28	18	43
South Carolina	61	50	24	38	15	12
Tennessee	56	46	29	27	15	27
Virginia	48	21	28	43	24	36

* 5 to 14 † 14 and over

TABLE V

Mean Fatality Rates from Scarlet Fever for All Ages of White and Negro Population in Certain States and Cities, 1930–1933, inclusive

	Mean Fatality Rates for 4 Year Period, 1930–1933	
	White	*Colored*
Southern Cities:		
Atlanta	1.4	4.7
Baltimore	1.0	1.9
Birmingham	1.2	1.8
Louisville	1.0	1.2
Memphis	0.9	...
Nashville	1.4	...
Northern Cities:		
Chicago	1.9	2.2
Cleveland	1.2	0.4
Newark	0.5	...
Philadelphia	0.8	1.7
Pittsburgh	0.9	1.1
St. Louis	2.4	1.8 *
Southern States:		
Alabama	2.0	2.7
Louisiana	1.5	2.6
Mississippi	1.0	5.1 †
North Carolina	1.4	1.9

* 1932–1933
† 1931–1933

poorer reporting of cases in this region. The fatality rate for different age groups is also of interest, although interpretation is limited here because of the meagerness of data. For both races, North and South, the fatality rates are higher under 5 years of age. This is very well shown for the white population. The data in Table VI seem to show, however, that in both regions the rate is higher in Negro than in white children under 5 years of age.

It has been repeatedly said that scarlet fever is less prevalent in the South than North, and less in the Negro than in the white population. The data in Table VII do not seem fully to support these contentions. It is true that for both white and colored the morbidity rates are lower for the South than North; however, the white morbidity rates are very low in the 4 southern states; but in the 9 southern cities, the rates are very nearly as high as those of the 6 northern cities. Turning to the differences between the two races, it is found that in the southern states and cities this is quite marked. For the southern cities as a group, the

TABLE VI

Fatality Rates from Scarlet Fever in Different Age Groups, 1930–1933

	Fatality Rates Under 5 Years		Fatality Rates 5–9 Years		Fatality Rates 10 and Over	
	White	*Colored*	*White*	*Colored*	*White*	*Colored*
Southern Cities:						
Baltimore	2.1	4.1	0.7	...	0.8	2.7
Birmingham	2.3	7.7	0.9	...	0.8	...
Memphis	1.2	...	0.7	...	0.9	...
Nashville	3.2	...	1.0	...	...	...
New Orleans	1.6	...	0.8	4.2	1.2	5.9
Richmond	0.3	1.4	0.5	2.5	...	...
Northern Cities:						
Cleveland	2.7	1.1	0.8	0.2	1.1	...
Pittsburgh	1.9	2.7	0.5	...	0.7	2.2
St. Louis	2.1	3.0	1.2	...	4.2	3.5
Southern States:						
Alabama	4.6	7.0	1.0	1.5	0.6	...
Mississippi	1.7	9.1	0.9	1.9	0.3	7.1
North Carolina	2.7	1.8	0.8	1.2	0.9	2.9
Virginia (1933)	3.1	2.9	1.3	3.2	0.8	3.5

TABLE VII

Mean Morbidity Rates from Scarlet Fever for All Ages of White and Negro Population in Certain States and Cities, 1930–1933, inclusive

	Mean Mortality Rates per 100,000 Population for 4 Year Period, 1930–1933	
	White	*Colored*
Southern Cities:		
Atlanta	283.3	34.7
Baltimore	256.4	61.6
Birmingham	146.2	13.6
Louisville	251.0	38.7
Memphis	326.9	19.5
Nashville	144.9	3.5
New Orleans	113.2	21.9
Richmond	260.3	93.9
Northern Cities:		
Chicago	259.4	141.1
Cleveland	338.9	325.1
Newark	233.7	162.7
Philadelphia	284.6	139.2
Pittsburgh	298.1	152.0
St. Louis	88.3	109.1 *
Southern States:		
Alabama	82.9	6.9
Louisiana	52.6	6.2
Mississippi	83.9	3.8 †
North Carolina	136.8	10.1

* 1932–1933
† 1931–1933

morbidity rate is 6.2 times higher than that of the Negro, while for the southern states the ratio is 13.1 to 1. On the other hand, this does not seem to be the case in the northern cities. The ratio of white to Negro morbidity rate in these 6 cities is only 1.5 to 1. Thus, as with the mortality rate and the case fatality rate, the morbidity rate shows the greatest inequalities in the southern states, less in the southern cities, and least in the northern communities. It is also to be noted that there is as much disparity between the morbidity rates of the northern and southern Negro as between the southern white and Negro. The rates for the Negro in the northern cities were on the average 4.8 times higher than that of the Negro in the southern cities, and 25.2 times higher than that of the Negro in the 4 southern states.

The distribution of cases according to age groups does not seem to show any essential differences between the two races. The only noteworthy fact in Table VIII is the concentration of cases not in the 0–5 year group as would be expected on the basis of the concentration of deaths, but in the age group 5–9 years. From 40 to approximately 60 per cent of the cases of scarlet fever fell in this age group in both races and geographical areas. The uniformity of these percentages is rather striking. Thus, the opinion of Doull that the concentration of deaths in the younger ages in the South may be partly due to a concentration of cases in this period does not seem to find support in Table VIII.

DISCUSSION

The marked differences in the mortality and morbidity from scarlet fever in the white and Negro population in the South have led investigators to state that this disease is not common in the Negro and that therefore he is highly resistant to it. This resistance has been explained on the one hand on his resistant ectoderm,[5] and on the other hand, on the assumption of a longer racial experience than that to which the white race has been subjected.[6] These two explanations, however, do not seem to hold true when two facts are considered. In the first place, our data show that although there are great differences in the South, there is in the northern cities very little inequality in the mortality and morbidity rates from scarlet fever in the white and colored populations. If the Negro were highly resistant to this disease, even though his mortality and morbidity in the North and South might not be similar, the disparity between the two races

TABLE VIII

Percentage of Cases from Scarlet Fever Occurring in Different Age Groups, 1930–1933

	Per cent Cases Under 5 Years		*Per cent Cases 5–9 Years*		*Per cent Cases 10 and Over*	
	White	*Colored*	*White*	*Colored*	*White*	*Colored*
Southern Cities:						
Baltimore	21.2	27.1	50.0	41.8	28.7	31.0
Birmingham	22.9	23.6	52.7	60.0	24.4	16.4
Louisville	17.9	24.3	43.2	45.9	38.8	29.7
Memphis, 1931–33	20.8	27.4	41.5	50.0	37.7	22.6
Nashville	28.9	16.7	45.4	50.0	25.6	33.3
New Orleans	21.3	29.3	50.0	41.4	28.7	29.3
Richmond	24.0	35.7	43.6	40.2	32.4	24.1
Northern Cities:						
Chicago	23.4	30.2	47.9	41.6	28.7	28.2
Cleveland	18.1	28.1	51.7	52.9	30.2	19.0
Newark	23.7	8.9	49.0	32.1	27.3	58.9
Philadelphia	32.8	25.7	55.2	57.5	11.9	16.9
Pittsburgh	19.4	22.3	49.3	51.3	31.3	26.4
St. Louis, 1932–1933	21.9	30.7	45.2	42.8	32.9	26.5
Southern States:						
Alabama	31.1	26.9	44.6	49.4	24.3	23.6
Georgia, 1932–1933	28.9	24.2	39.9	45.5	31.1	30.3
Mississippi, 1931–1933	28.0	18.8	47.0	45.3	24.9	35.9
North Carolina	28.3	28.8	45.8	43.5	25.8	27.7
Virginia, 1933	22.3	22.7	43.1	38.8	34.6	35.6

would be just as great in the North as in the South. This has not been shown in our data.

Secondly, the idea of racial susceptibility must be discarded when the results of Dick test surveys are considered. Pevaroff and Hindman [7] in Cleveland, Smythe and Nesbit [8] in Gary, and others have shown that there is no significant difference between reactions of white and Negro children to the Dick test.

The recorded low mortality and morbidity from scarlet fever in Negroes in the South may be explained on two facts—(1) the occurrence of very mild and subclinical cases which are not recognized and not reported; and (2) on the very poor reporting of typical cases and deaths in the rural areas of the South where almost 70 per cent of the southern Negroes are to be found.

That very mild and atypical cases of scarlet fever must occur widely in the South draws support from the results of Dick test surveys made in certain tropical countries. Doull [9] in Rio de Janeiro, Dubois [10] and Van Slype [11] in Belgian Congo, and Nazario [12] in Puerto Rico, have shown the higher prevalence of negative Dick tests and the earlier appearance of this immunity in children in the tropics. No differences were found between Negroes and whites. Mayer and Davison [13] have similarly shown that although in North Carolina, the number of cases reported was less than half that in New York City, yet the rate of susceptibility was much lower than that found in various other comparable groups in the United States. Thus, it must be assumed that there is a wide prevalence of mild and atypical cases in the South.

Of more importance in accounting for the low recorded mortality and morbidity from scarlet fever in the Negro in the South is the poor reporting of

cases and deaths of typical scarlet fever. It was noted in our data that more cases and deaths were reported in the southern cities than in the states. Lack of medical facilities must account in a large measure for this disparity. Seventy per cent of the Negroes of the South live in the rural areas, and it is in these regions that the lack of hospitals and physicians is greatest. For example, the 4 states, Pennsylvania, Ohio, New York, and Illinois, with a population of about 2,000,000 Negroes, have 900 Negro physicians; while the states of Georgia, Mississippi, Alabama, and North Carolina, with twice as large a Negro population, have but half as many Negro physicians. In the United States as a whole, there is 1 physician for every 785 persons, but in the State of Mississippi, there is only 1 Negro physician for every 14,000 Negroes.[14] Thus, many typical cases and deaths from scarlet fever must occur in the Negro which are not seen by physicians and, therefore, not reported.

Poor reporting of deaths and cases in the Negro in the South is substantiated from another angle by the investigations of Puffer [15] and Gover.[16] Puffer states that there seems to be marked incomplete registration of colored deaths in the rural area as shown by the large variation in the colored death rates in the counties of Tennessee. She also observes that in 15 rural counties of West Tennessee where the colored population is large, 17.7 per cent of the death certificates were not signed by physicians, and, further, that the colored death rates from ill-defined and unknown causes of death for 1933 for Mississippi, Alabama, Tennessee, South Carolina, Georgia, and Arkansas were over 100 per 100,000 population. Thus, in Mississippi, the cause of death was unknown in 1 in 5 deaths. Discussing this same fact, Gover states that the rate for ill-defined causes for 1931–1933, in 14 southern states, for the age group under 5, was 4 times higher in the Negro than in the white.

SUMMARY

1. The differences in scarlet fever mortality and morbidity rates between the Negro and white is greatest in southern states, and least in northern cities. In the latter, there is very close approximation between the Negro and white rates.

2. The case fatality for all ages seems to be higher for the Negro in all communities both North and South. This is true particularly in the age group under 5.

3. The concentration of deaths for Negroes and whites in practically all communities is in the age group 0–5 years while the cases are concentrated in the period 5 to 9 years. There are no significant differences in the two races.

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