

## UNTREATED SYPHILIS IN THE MALE NEGRO

A COMPARATIVE STUDY OF TREATED AND UNTREATED CASES.<sup>1</sup>

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A determination of the effectiveness of treatment in preventing the transmission of syphilis is one of the basic problems in the control of this disease. Second in importance to it is the effect which treatment has in preventing late and crippling manifestations. The administration of adequate treatment in early syphilis is recognized as the most important factor in the prevention both of communicable relapse and of the early complications so detrimental to the health of the individual patient. As the result of surveys made a few years ago in southern rural areas it was learned that a considerable portion of the infected Negro population remained untreated during the entire course of syphilis. Such individuals seemed to offer an unusual opportunity to study the untreated syphilitic patient from the beginning of the disease to the death of the infected person. An opportunity was also offered to compare the syphilitic process uninfluenced by modern treatment, with the results attained when treatment has been given.

The material included in this study consists of 399 syphilitic Negro males who had never received treatment, 201 presumably nonsyphilitic Negro males, and approximately 275 male Negroes who had been given treatment during the first two years of the syphilitic process. All of these individuals were more than 25 years of age. The percentage of persons in each age group is comparable. The method of case finding and study has as far as possible been comparable and nonselective. The Negroes with untreated syphilis and the presumably nonsyphilitic Negroes were chosen primarily by the use of the Kolmer complement fixation and the Kahn standard flocculation tests for syphilis and subsequently by the presence or absence in the history of the early manifestations of syphilis. A total of 1,782 male Negroes aged 25 years or more were serologically examined in a rural county. Of these, 472 gave at least two positive serologic tests for syphilis. From this group the 399 cases of untreated syphilis were taken for this study. Only individuals giving a history of infection who submitted voluntarily to examination were included in the 399 cases. Of the 1,782 persons examined, 1,258

<sup>1</sup>The authors are indebted for cooperation and assistance in conducting this study to the personnel of the John A. Andrew Memorial Hospital, Tuskegee Institute, Ala., the U. S. Veterans Administration Facility, Tuskegee, Ala., the Macon County Health Department, Tuskegee, Ala., and the State Department of Health, Montgomery, Ala.

were found to be serologically negative for syphilis. Persons in age groups comparable with the persons with untreated syphilis were taken from this serologically negative group, provided a subsequent serologic study gave no evidence of syphilis and a history of infection was absent.

The examinations included a careful history, a detailed physical examination, routine teleoroentgenologic study of the heart and great vessels in the anteroposterior position, roentgenologic study of the osseous system if indicated, and a spinal-fluid examination in 271 of the 399 cases of untreated syphilis. The routine examinations were performed by physicians trained in clinical syphilology. The assistance of specialists was sought when manifestations were such as to require unusual examinations.

The case records of patients with syphilis who received varying amounts of treatment during the first two years of their disease were available for this study. These case records were from the syphilis clinics of five universities which have undertaken retrospective clinical studies under the guidance of the United States Public Health Service. Roentgenologic study of the chest was not routine in this group although such studies were made when indicated. The spinal fluid was examined in a larger percentage of the untreated syphilitic cases than in the treated syphilitic group.

The present study presents the physical and mental condition of a cross section of the untreated seropositive syphilitic male Negro population. The problem offered by those individuals who had been infected with syphilis but who had spontaneously become serologically negative will not be discussed here. No data are available which indicate the frequency with which negative serologic tests spontaneously develop in the Negro with latent or late syphilis. Reports from the current medical literature indicate that approximately 75 percent of patients with active late syphilis have positive serologic reactions, regardless of whether or not they have received previous treatment. In the recent studies<sup>2</sup> of the Committee on Evaluation of Serodiagnostic Tests for Syphilis, 3,961 specimens from 307 patients with latent and late syphilis were examined by thirteen participating serologists. Most of these patients had received varying amounts of treatment; a few were untreated. Among the 3,961 specimens examined, 2,976 or 75.1 percent were positive. The present study, therefore, represents the condition of at least three-fourths of the untreated syphilitic Negro population.

## MORBIDITY IN UNTREATED SYPHILIS

A comparison of the physical and mental condition of the untreated syphilitic patients with the apparently nonsyphilitic Negroes in the general population permits an estimate of the effect of syphilis in the production of morbid processes involving the various systems of the body. Only 16 percent of the 399 untreated syphilitic Negroes gave no evidence of morbidity as compared with 61 percent of the 201 presumably nonsyphilitic Negroes. The effect of syphilis in producing disability in the early years of adult life is to be noted

<sup>2</sup>Cumming, H. S., and others: The evaluation of serodiagnostic tests for syphilis in the United States: Report of results. *Ven. Dis. Inform.*, Washington, June 1935, 16: 180. Also J. A. M. A., Chicago, June 8, 1935, 104: 2083.

by comparing the cases with no demonstrable morbidity under 40 years of age. This comparison shows that only one-fourth of the Negroes with untreated syphilis had no manifestations of disease whereas three-fourths of the uninfected persons were free of manifestations.

TABLE I.—Comparison of physical findings made on examination of untreated syphilis and presumably nonsyphilitic Negro males in similar age groups

Type of abnormality found	Percent syphilitic			Percent nonsyphilitic		
	Age at time of examination			Age at time of examination		
	25-39	40 and over	Total	25-39	40 and over	Total
Diseases of circulatory system:						
Definite cardiovascular disease.....	25.3	63.1	46.6	5.7	37.7	23.9
X-ray evidence alone or incomplete clinical evidence of uncomplicated aortitis.....	30.5	18.2	23.6	7.0	3.5	5.0
Central nervous system.....	23.0	28.4	26.1	1.1	3.5	2.5
Skin and adnexa.....	12.6	22.7	18.3	2.3	7.9	5.5
Bones, joints, and bursae.....	12.1	12.9	12.5	4.6	4.4	4.5
Respiratory system.....	1.1	2.2	1.6	2.3	6.1	4.5
Genito-urinary system.....	4.0	2.7	3.3	2.3	.....	1.0
Eye and adenexa.....	.6	3.1	2.0	.....	1.8	1.0
Ear, nose, and throat.....	4.6	.9	2.5	.....	.9	.5
Digestive tract.....	.6	.4	.5	.....	.9	.5
Cases with no morbidity.....	25.3	8.4	15.8	77.0	49.1	61.3
Total number of cases.....	174	225	399.	87	114	201

With an increase in age there is, as one would expect, an increase in the frequency of manifestations of cardiovascular involvement due not only to syphilis but also to arteriosclerosis and hypertension. Modern diagnostic methods have not as yet progressed to such an extent that most signs and symptoms of cardiovascular disease are recognized as pathognomonic on an etiologic basis. This is especially true for the earlier manifestations of disease involving this system of the body. The manifestations of aortitis here recognized were those which have been generally accepted as diagnostic for several decades, as well as those which have more recently been emphasized by Carter and Baker,<sup>3</sup> and Moore, Danglade, and Reisinger.<sup>4</sup> Roentgenologic manifestations of increased aortic width and the presence of two of the remaining six signs of the above investigators were considered to be diagnostic evidence of aortitis. The roentgenologic readings were based upon the interpretation of findings as outlined by Vaquez and Bordet.<sup>5</sup>

Study of the untreated syphilitic and presumably nonsyphilitic individuals under the age of 40 years indicates that syphilis in this period tends greatly to increase the frequency of manifestations of cardiovascular disease. It is to be noted that of 174 syphilitic individuals under 40 years, 25.3 percent had definite manifestations of cardiovascular disease as compared with 5.7 percent of 87 individuals in the same age group who were nonsyphilitic. A difference may still

be noted in individuals over the age of 40 although this difference is not so pronounced. Of 225 untreated syphilitic patients over 40 years of age, 63.1 percent had definite manifestations of cardiovascular disease as compared with 37.7 percent of 114 nonsyphilitic individuals.

Perhaps the most interesting group of patients in the study, because of their potential amenability to treatment, are those who have presumptive evidence of uncomplicated aortitis. Because of the strictness of present-day criteria those cases could not be definitely diagnosed. Of the untreated syphilitic patients 23.6 percent had presumptive evidence of uncomplicated aortitis while only 5.0 percent of the nonsyphilitic patients presented such evidence. In the early years of adult life, especially among untreated syphilitics, it is more common to have either roentgenologic or clinical evidence of increased aortic width alone than it is to have a combination of the two. In later years, however, the corroborative evidence more frequently permits a definite diagnosis of uncomplicated aortitis. This fact is so striking that presumptive evidence of aortitis should be regarded as of great importance and patients with such findings should be subjected to long periods of observation and treatment. The exact interpretation of these manifestations awaits more definite proof which it is hoped may be accumulated by following the untreated syphilitic individuals over a period of years, ultimately bringing a number to autopsy. Such an attempt is now being made with the assistance of a philanthropic organization. The purpose is to confirm the presumptive manifestations of cardiovascular disease if possible and to corroborate the accuracy of clinical observations in general.

The incidence and character of syphilis of the central nervous system in the Negro has been a controversial issue for many years. Generally speaking, one group of observers believes that dementia paralytica and tabes dorsalis are not particularly common in the Negro race. A second group is of the opinion that parenchymatous neurosyphilis occurs almost as frequently as in the white race. In this study 26.1 percent of 399 untreated syphilitic Negro males had either clinical or serologic evidence of central nervous system involvement. On the other hand, only 2.5 percent of the 201 nonsyphilitic Negroes had any disease of the central nervous system.

Analyzing our data further, we find that of the 399 untreated syphilitic patients 7.8 percent had definite clinical evidence of central nervous system syphilis while in an additional 18.3 percent the diagnosis of central nervous system involvement was based upon serologic evidence only. The untreated syphilitic cases included 3.0 percent of a relatively benign parenchymatous type and 4.8 percent with all other forms of central nervous system involvement. In the latter group the most serious type was the vascular form.

With regard to the benign parenchymatous type, such cases did not appear to run the usual classic course of dementia paralytica or of tabes dorsalis. The manifestations which were common included positive findings in the spinal fluid and changes in the pupillary reactions and tendon reflexes. No typical cases of dementia paralytica or tabes dorsalis were noted, but one case of simple dementia was found. In order to be certain that there was no selection of cases through loss to institutions for the insane, it was learned that

<sup>3</sup> Carter, E. P., and Baker, R. M., Jr. Certain aspects of syphilitic cardiac disease. Bull. Johns Hopkins Hosp., Baltimore, 1931, 48: 315.

<sup>4</sup> Moore, J. E., Danglade, J. H., and Reisinger, J. C. Treatment of cardiovascular syphilis. Arch. Int. Med., Chicago, June 1932, 49: 879.

<sup>5</sup> Vaquez, H., and Bordet, E. The heart and the aorta. New Haven. Yale Univ. Press, 1920.

not a single male Negro over 25 years of age was confined with syphilis of the central nervous system in the Searcy Hospital at Mt. Vernon, Alabama, where the Negro insane in this State are hospitalized.

In the group of 399 untreated patients with syphilis, 46 (11.5 percent) gave evidence of late involvement of the bones, joints, and skin. Of these 36 cases (9.0 percent) showed periostitis, osteitis, or Charcot's joints. Two patients, or less than 1 percent, presented late syphilis and 8 (2 percent) had both a late skin and a bone or joint involvement.

#### EFFECT OF TREATMENT

All sphilologists recognize the great importance of treatment during the first two years of the syphilitic process, and all are likewise of the opinion that treatment during this period should be adequate. An accurate evaluation of the modern treatment of syphilis is, however, made difficult by many factors. First of all adequate treatment has not been freely available to most indigent citizens for a period longer than a decade. Furthermore, not until about twenty years ago was the administration of the arsphenamines started in this country on a large scale. In comparing the results obtained by modern treatment with those in untreated cases, it is important that both groups be observed for a definite period. An observation period of at least 20 or more years is necessary to give a true picture of the value of therapy. The incompleteness of records of patients treated in the past often does not permit such a comparison. Final evaluation of treatment must await the accumulation of well-kept records of cases treated and observed over a sufficiently long period.

In connection with the administration of adequate treatment, the tendency of all patients, whether they be white or colored, is to become dilatory in returning to the attending physician during the observation period. If the individual remains symptom-free and the physician has assured him that adequate treatment has been administered, repeated return for observation soon becomes irksome. The consequent lapse tends to distort the results obtained with adequate treatment since patients who suffer no relapse fail to return, while those presenting intractable manifestations are prone to return for long continued treatment.

In the following discussion 20 doses of an arsphenamine with accompanying heavy metal is arbitrarily classified as minimum adequate treatment. Less than this amount is called inadequate. Among 68 individuals who were adequately treated during the first two years of their infection not a single one returned with any of the manifestations of late syphilis. The fact that none of these patients returned up to the fifteenth year of observation with a late syphilitic manifestation indicates that effective treatment has definite preventive value against the crippling manifestations of late syphilis. The degree of protection is even more manifest if a comparison is made with the cases of untreated syphilis during comparable periods.

Table II permits a comparison, at intervals of 3, 6, and 9 years after the syphilitic infection began, between untreated patients and those receiving inadequate treatment. Among 86 inadequately treated male Negroes whose infection was of three years' duration as

compared with 26 untreated patients in the same chronologic period, 12 percent of the former had evidence of a cardiovascular involvement as compared to 7.7 percent of the latter. Syphilis of the central nervous system was present in 9.3 percent of the inadequately treated cases in this period as compared with 30.8 percent of the untreated cases. The preponderance of the late manifestations of syphilis in the untreated cases as compared with the inadequately treated continues throughout the years of observation. Nine years after the onset of the syphilitic infection, the inadequately treated cases had 6.9 percent cardiovascular involvement and 13.8 percent central nervous system involvement as contrasted with 41.9 percent and 29.0 percent respectively among the untreated syphilitic Negro males.

TABLE II.—Comparison of findings made on examination of untreated syphilitic male Negroes 25 or more years of age, with those in a similar group of treated syphilitics, showing duration of infection

Treatment	Type of manifestation	Duration of infection in years		
		Three	Six	Nine
None.....	Cardiovascular.....	7.7	12.0	41.9
	Neurosyphilis.....	30.8	36.0	29.0
	Asymptomatic.....	15.4	20.0	12.9
	Symptomatic.....	15.4	16.0	16.1
	Total number of cases.....	26	25	31
Inadequately treated during first two years of infection.	Cardiovascular.....	1.2	6.1	6.9
	Neurosyphilis.....	9.3	18.4	13.8
	Asymptomatic.....	2.3	6.1	3.5
	Symptomatic.....	7.0	12.3	10.3
	Total number of cases.....	86	49	29

#### CONCLUSIONS

1. The clinical and laboratory findings in 399 adult male Negroes with untreated syphilis and 201 presumably nonsyphilitic adult male Negroes in comparable age groups permit a determination of the extent of morbidity due to untreated late syphilis.
2. The findings indicate that the cardiovascular system is the most commonly involved in the late syphilitic process and the aorta is the most commonly involved structure in latent syphilis in the adult male Negro.
3. Morbidity in the male Negroes with untreated syphilis far exceeds that in a comparable presumably nonsyphilitic group.
4. Adequate antisiphilitic treatment prevented all forms of clinical relapse during the first fifteen years of the infection, whereas only one fourth of the Negroes with untreated syphilis were normal.
5. Cardiovascular and central nervous system involvements were from two to three times as common in the untreated syphilis group as in a comparable group receiving even inadequate treatment.