

FORMS OF PULMONARY TUBERCULOSIS IN PUERTO RICO *

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This study is based on the interpretation of X-ray pictures of the chests of one thousand Puerto Rican patients suffering from pulmonary tuberculosis. Only cases where the clinical diagnosis of tuberculosis was fully confirmed by roentgenological examination were included in the study. Over ninety per cent of the cases were moderately and far advanced. Latent apical infiltrations were not included.

Seventy-one per cent of the patients belonged in the age groups between twenty and forty-nine; 81 per cent were of the white race, 16 per cent were mulattoes, and 3 per cent black¹. Fifty-one per cent were females. The detailed classification of the patients as to age, race and sex may be seen in Tables I and II.

LOCATION AND EXTENSION OF THE LESIONS

One or both apices were involved in 82 per cent of the cases, the right apex being affected nearly twice as often as the left. In 18 per cent the apices were clear.

The lesions were limited to the upper third of one or both lungs in 46 per cent, to the middle third in 9 per cent, and to the lower third in 1.5 per cent. Involvement of the upper two-thirds of one or both lungs occurred over fourteen times more frequently than involvement of the lower two-thirds. In 8 per cent both lungs were completely involved.

* This paper was read before the Floating Congress of the Pan-American Medical Association, during the session held at the Insular Sanatorium of Río Piedras, P. R., on July 29, 1935.

¹ According to the U. S. Census, 1930, three-fourths of the Puerto Ricans are white (of Spanish stock) while about one-fourth are colored. There are no Indians in Puerto Rico.

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TABLE I
CLASSIFICATION BY AGE AND RACE

Age Groups	White	Mulatto	Negro
Total.....	809	159	32
0-9.....	14	4	0
10-19.....	142	25	11
20-29.....	339	50	5
30-39.....	174	52	9
40-49.....	77	20	4
50+.....	63	8	3

TABLE II
CLASSIFICATION BY AGE AND SEX

Age Groups	Male	Female
Total.....	493	507
0-9.....	10	8
10-19.....	79	121
20-29.....	188	192
30-39.....	120	110
40-49.....	55	44
50+.....	41	32

FORMS OF THE DISEASE

The preponderant form of tuberculosis was the fibro-caseous. In 48 per cent, exudative infiltration predominated, while in 52 per cent fibrous infiltration was equal in extent or predominated over the destructive processes.

TABLE III
RACE OF PATIENTS IN RELATION TO NATURE OF LESION

	Exudative Infiltration and Cavitation Predominant	Fibrous Infiltration Equal or Predominant
Total.....	455	545
White.....	367	443
Colored.....	88	102

Although patches of caseous pneumonic infiltration were frequent, massive tuberculous pneumonias were distinctly rare. Only one case was found in an adult. Miliary tuberculosis was also rare, only five cases being found in the whole series. No roentgenological evidence of massive caseation of the tracheobronchial lymph nodes could be found in the adults.

No significant differences could be made out between the forms of tuberculosis occurring in white patients as distinguished from colored.

Cavities were found in 56 per cent and occurred in 48 per cent more frequently in the right lung than in the left. The frequent location of cavities was the upper thirds of the lungs; next, the middle thirds. Cavities of the lower thirds were relatively rare. The youngest patient with definite cavitation was nine months old. Among twenty children under ten, cavities were found in 45 per cent.

TABLE IV
CASES WITH CAVITIES

Total.....	558
In the right lung.....	246
In the left lung.....	166
In both lungs.....	146

Peaking of the diaphragm, marked blurring of the cardio-phrenic angle, and similar diaphragmatic irregularities interpreted as adhesions were evident in 59 per cent. They were visible six times more frequently in the right than in the left side, probably on account of the superposition of the heart shadow.

Marked deformities due to fibrous tissue, such as displacement of the heart and trachea, were found in 8 per cent of the cases. Total atelectasis of one lung was present in 40 cases. The diagnosis of total atelectasis was based on the presence of a homogeneous shadow covering the whole hemithorax, with pulling of the heart and trachea to the affected side, rising of the corresponding hemi-diaphragm, and marked diminution in the size of the affected lung.

Pleural effusions were encountered in only eight cases.

TABLE V
AGE OF PATIENTS IN RELATION TO NATURE OF LESION

Age Groups	Exudative Infiltration and Cavitation Predominant	Fibrous Infiltration Equal or Predominant
0-4.....	8	2
5-9.....	11	13
10-19.....	243	162
20-29.....	125	163
30-39.....	61	97
40-49.....	23	62
50+.....	10	20

TABLE VI

DIAPHRAGMATIC ADHESIONS

Total.....	592
Right side.....	386
Left side.....	64
Both.....	142

CONCLUSIONS

In the 1935 edition of "Diagnostic Standards",¹ a publication of the National Tuberculosis Association, one finds the following statement: "The childhood type of tuberculosis is usually found in children, but is not uncommon in adult negroes, Mexicans, American Indians, Puerto Ricans, and Filipinos. It infrequently occurs in white adults."

So far as we know, the assertion that tuberculosis of the childhood type is common in Puerto Rican adults is based on nothing more than a few haphazard observations on a limited number of cases of tuberculosis seen among Puerto Ricans in New York hospitals. Nothing has ever been written to prove that assertion, yet it has appeared repeatedly in the medical literature as if it were a self-evident truth, and finally it has achieved official sanction by appearing in the cautious and authoritative publications of the National Tuberculosis Association.

The data presented in this paper show that pulmonary tuberculosis among Puerto Rican adults assumes the same forms that are common among white adults of the United States or of any other civilized country. E. Koppisch, pathologist of the School of Tropical Medicine of Puerto Rico, arrived at the same conclusions after a study of pathological material derived from 628 autopsies*.

In the light of the newer knowledge concerning the pathogenesis of pulmonary tuberculosis, as stated in the works of Ornstein, Douglas *et al.*, Fischel and others, it is not unreasonable to suppose that the impression gained in the past by American clinicians concerning the frequency of the childhood type of tuberculosis among Puerto Ricans, Mexicans, and Filipinos, and even perhaps among American Indians and negroes, may have been due to a misunderstanding of

* Dr. Koppisch's paper appears in this issue. It was read at the Puerto Rico session of the Pan-American Medical Congress, July 29, 1935.

the essentially acute nature of certain phases of pulmonary tuberculosis.

Undoubtedly, there has been a tendency in the past, on the part of some clinicians, to consider as of the childhood type any form of acute tuberculosis of sudden onset developing in the adults of certain races. To these clinicians, an acute pulmonary tuberculosis developing in a negro, a Filipino, a Mexican or a Puerto Rican was potentially a case of childhood type tuberculosis. Now we know, of course, that acute pulmonary tuberculosis is quite a common occurrence among white adults of the United States. We have come to recognize the acute, rapidly advancing forms of pulmonary tuberculosis as part of the clinical picture of the so-called tuberculosis of the adult type. No longer do we believe that the tuberculosis of the adult must necessarily be an insidious process beginning in the apex and taking years to reach the advanced stage. In a recent report based on 1,000 cases of pulmonary tuberculosis among Americans, Douglas, Nalbant and Pinner² state that 54 per cent of their cases were acute, with sudden onset. They found that 34 per cent of their cavity cases were of less than six months' duration, and make the interesting statement that "of all patients reaching the far advanced stage, the majority do so within the first half year."

There is no question about the much greater frequency of tuberculosis among Puerto Ricans than among Americans, since our tuberculosis mortality rate is about five times higher than that of the United States. Extreme overcrowding in our numerous slums has caused a fair proportion of our people to suffer massive contagion. Many of the Puerto Ricans of the lower classes who migrate to New York City from our slums are heavily infected with tubercle bacilli, and a certain number of them have latent lesions which later break down under the strain of the struggle for existence in a strange environment.

Under such conditions it is not surprising that many of these cases develop the acute forms of the disease, in spite of the undoubtedly high native immunity to tuberculosis which Puerto Ricans have acquired through many centuries of civilization. That the Puerto Ricans are a highly tuberculized group of population is shown by a recent tuberculin

survey of two urban communities covering 4,000 people. Ninety-four per cent of adults from 20 to 30 and 98 per cent from 30 to 40 reacted to the intradermic tuberculin test. Among children, 51 per cent under 10 and 79 per cent from 10 to 15 were reactors³. It is, furthermore, the concensus of opinion among those physicians having the widest experience with tuberculosis on the Island, that cases of tuberculosis, although showing the acute exacerbations that are typical of the disease, usually last for several years, and that the fibroid types of long duration are not uncommon. Our own series revealed 162 cases in which the lesion was essentially fibrous.

SUMMARY

X-ray plates of 1,000 cases of pulmonary tuberculosis among Puerto Ricans were interpreted and classified. Eighty-one per cent of the patients were white, and 19 per cent were colored. Seventy-one per cent were adults above 20. The lesions found in adults, with very few exceptions, were of the fibro-caseous type, involving especially the upper thirds of the lungs. One or both apices were involved in 82 per cent. Fibrous infiltration predominated or occurred in equal proportion with exudative infiltration and cavitation in 52 per cent. No significant differences were noted between white and colored as regards the nature of the lesions.

The general impression gained from this X-ray survey is that the forms of pulmonary tuberculosis found among Puerto Ricans are essentially similar to those that occur among white American adults and among the adult population of other highly tuberculized communities.

REFERENCES

- (1) "Diagnostic Standards", 1935 edition, published by the National Tuberculosis Association, 50 West 50th Street, New York, N. Y.
- (2) Bruce H. Douglas, John P. Nalbant and Max Pinner, *American Review of Tuberculosis*, Feb. 1935, XXXI, 162.
- (3) J. Rodriguez Pastor, P. Morales Otero, George C. Payne, R. Ramirez Santos and E. Silva, *The P. R. Journal of Public Health and Tropical Medicine*, June 1935, X, 514.