

INCIDENCE OF HEART DISEASE AMONG FILIPINOS A STATISTICAL STUDY BASED ON 10,437 AUTOPSIES

by

AGERICO B. M. SISON, M.D., VICENTE B. JIMENEZ, M.D.,
and VIRGINIA S. RODRIGUEZ, M.D.

*Dept. of Medicine, College of Medicine,
University of the Philippines and the
Philippine General Hospital*

MATERIAL—This series covers the period from 1932-1941 and is based on the clinical and autopsy records of patients from the different wards of the Philippine General Hospital. These records were totally destroyed by enemy action during the Battle of Manila.

DISTRIBUTION: In a total of 10,437 autopsies, from 1932-1941, 1,464 were cardiac cases. Of these, 55.6% were males and 44.4% were females. The yearly average of cardiac cases was 14%. The incidence of the various forms of heart disease is shown in Table I.

Since 1939, cardiac cases have been considered as a group; more detailed and extensive studies, especially with reference to etiology, age, sex, symptomatology, electrocardiography, etc., were carried out. Table II shows the age incidence.

CRITERIA FOR GROSS STRUCTURAL DIAGNOSIS:*

I. Arteriosclerotic Heart Disease:

1. Coronary Arteriosclerosis of all degrees varying from intimal sclerosis to atherosclerosis with calcification and/or erosion.
2. Presence of recent or old thrombi partially or completely occluding the lumina of the coronary vessels.
3. Presence of myocardial infarction to the exclusion of other extra-cardiac causes of infarcts, e.g., trauma.
4. Obvious changes affecting the myocardium in the form of fibrosis which may acquire a diffuse or a limited distribution.

* Modified from "Criteria for Diagnosis" of the New York Heart Association.

5. The size of the heart is not greatly altered and may even be relatively small unless passively dilated.
6. There may be a ventricular aneurysm, the result of a previous myocardial infarction.

II. Hypertensive Heart Disease:

1. Cardiac hypertrophy and dilatation particularly of the left ventricle associated with any of the following conditions known to give rise to hypertension:
 - a. Chronic nephritis (glomerular or arteriolosclerotic)
 - b. Polycystic kidneys.
 - c. Coarctation of the aorta.
 - d. Chronic pyelonephritis.
 - e. Prolonged obstruction in the urinary passages, etc.
2. Absence of true myocarditis or true myocardial degeneration in spite of the hypertrophied muscle fibers.
3. Dilated aorta.
4. Normal valves.
5. Presence of known hypertensive condition before death.

III. Arteriosclerotic and Hypertensive Heart Disease:

The diagnosis rests upon the association of the conditions enumerated in both I and II.

IV. Rheumatic Heart Disease:

1. Presence of verrucose vegetations with tendency to affect particularly the mitral cusps at the line of closure with frequent development of mitral stenosis.
2. Endocarditis with subsequent scarring involving particularly the wall of the left auricle (auriculitis) just above the valves.
3. Occasionally, the presence of fibrinous or sero-fibrinous pericarditis.
4. Rarely, thrombotic occlusion of the smaller coronaries or "Rheumatic Arteritis". Coronary arteriosclerosis must be excluded.
5. Dilated and enlarged left auricle and right ventricle.
6. Dilated pulmonary artery.
7. Chronic passive congestion, etc.

V. Bacterial Endocarditis:

1. Presence of vegetations in the valves or endocardium (consisting of fibrin, leucocytes, red cells, bacteria, etc.)

2. Evidences of an antecedent rheumatic valvulitis or endocarditis or a congenital lesion in the heart.
3. Petechial hemorrhages in the skin and mucus membranes.
4. Secondary anemia.
5. Enlarged spleen, cloudy swelling of the viscera, etc.

VI. Infantile and Adult Beriberi Heart:

1. Dilatation and hypertrophy of the right side of the heart.
2. Prominent trabeculae and papillary muscles of the right ventricle.
3. Normal valves.
4. Chronic passive congestion and anasarca.
5. Absence of other findings to account for the death.

VII. Cor Pulmonale:

1. Right-sided hypertrophy and dilatation (with or without left ventricular enlargement) ~~in~~ association with the
2. Presence of a *primary* lung condition known to be able to give rise to increased pressure in the pulmonary circuit:
 - a. Emphysema.
 - b. Bronchiectasis.
 - c. Obliterative pleuritis.
 - d. Extensive fibrosis, adhesions, etc.
3. Spinal deformities.
4. Pulmonary embolism or thrombosis.
5. Dilated pulmonary artery.
6. Chronic passive congestion, etc.

VIII. Syphilitic Heart Disease:

1. Aortitis with dilatation, and atheromatous deposits in the intima.
2. Longitudinal wrinkling or ridging of the intima with often a sharp demarcation of the extent of the lesion in the thoracic aorta.
3. Mesaortitis.
4. Aortic insufficiency.
5. Cardiac hypertrophy especially of the left ventricle.
6. Presence of an aortic aneurysm.

7. Frequently, obstruction of the orifices of the coronary arteries (Coronary Ostial Stenosis).
8. Rarely, myocardial gummata.

IX. Congenital Heart Disease:

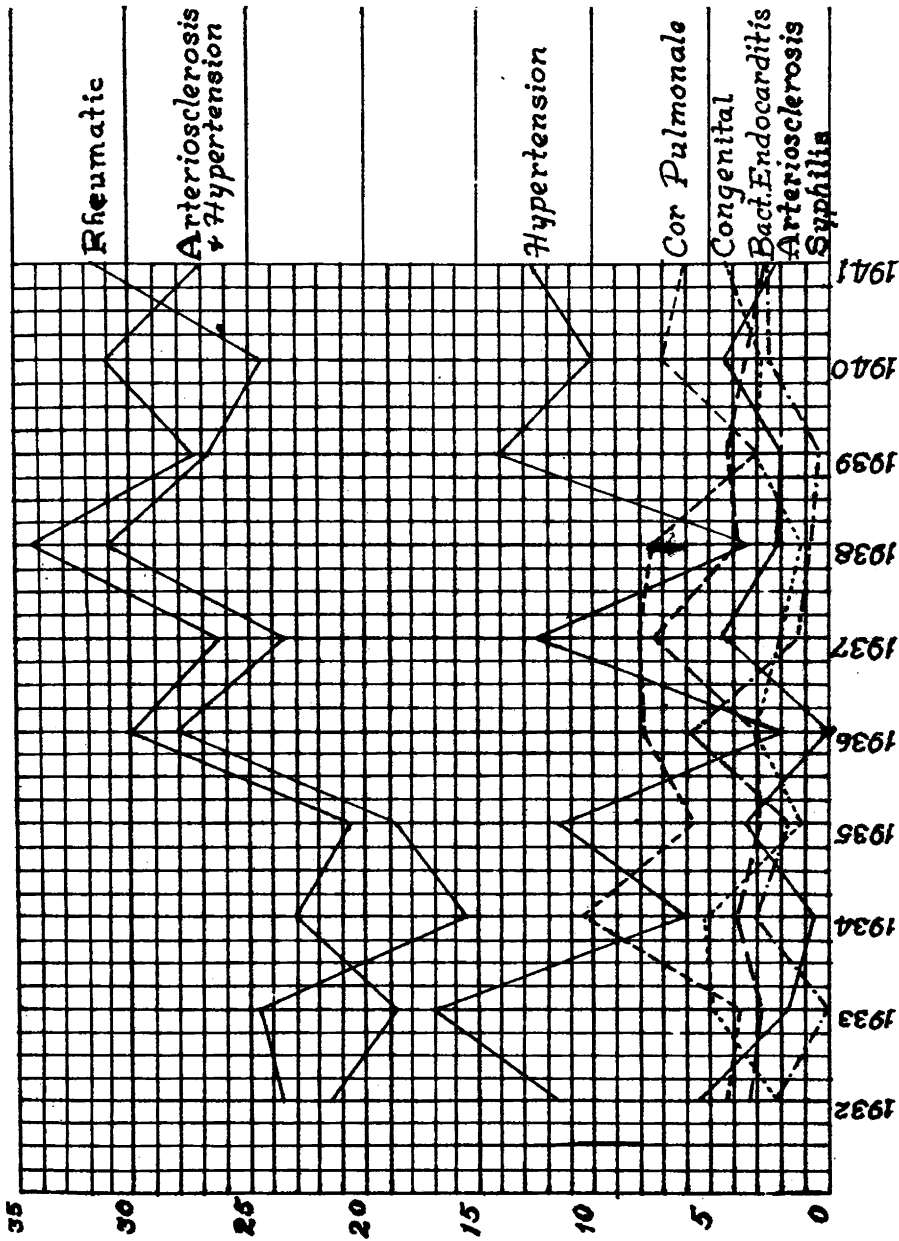
The diagnosis of congenital cardiac conditions rests upon the presence of abnormalities in the anatomical structure of the heart obviously dating from birth (Abbott).

COMMENTS

Many textbooks still teach that hypertension and rheumatic infection are seldom seen in the tropics. We hope this study will correct this impression. In the Philippines, at least, these two conditions are the most important etiologic agents in the causation of heart disease. Thus for a period of 10 years, 1932-1941, rheumatic heart disease comprised 3.4% of deaths from all causes and 24.7% of all cardiac cases. Hypertension was not far behind and actually, from 1939 to the first half of 1942, surpassed rheumatic infection, being found in 3.8% of all autopsies. More surprising than the total number of cases is the trend, which has been going up since 1932.

Comparison with the statistics of other workers in temperate countries points up the need of revision of the belief that these two diseases are seldom found in the tropics. Maher, Sittler and Elliott in Chicago reported an incidence of 50.3% for arteriosclerosis and hypertension; Coffen in Portland gave 56.3% in 1929; Stone, Vanzant, 61.4%; Schwab and Schultze, 77.4% in 1931; Hedley in Washington, D.C., 61.4% in 1935 and White and Jones in New England, 64.9% in 1928. For rheumatic heart disease, the difference between our incidence and that of other workers is much smaller. Maher and Sittler reported 29.3% in Chicago, Cabot in Boston reported 39.5% and Hamilton and Hallisey, 46.4%.

Syphilis as a cause of heart disease in the Philippines is infrequent and has remained steadily so throughout the period of this study. Thus while Flaxman in Cook County Hospital report 10.9%; Stone Vanzant, 19.3% in Galveston; Schwab and Shultze, 12%; Hedley, 12% in Washington and Glazer, 14% in Cincinnati, our average for the ten-year period is 1.8%.



1932-1941

TABLE I
INCIDENCE OF HEART DISEASE

| YEAR | ARTERIO- SCLERO- SIS AND HYPER- TENSION | | ARTERIO- SCLERO- SIS | | HYPER- TENSION | | RHEU- MATIC | | BACTE- RIAL EN- DOCARDI- TIS | | INFAN- TILE BERIBER. | | ADULT BERIBER | | COR PULMO NALE | | SYPHILIS | | CONGEN ITAL | | VARIOUS | | UNDE- TER- MINED | | TOTAL | | |
|--------------|-----------------------------------------------------|------------|----------------------------|-----------|-------------------|-----------|----------------|------------|---------------------------------------|-----------|----------------------------|-----------|------------------|-----------|----------------------|-----------|-----------|-----------|----------------|-----------|----------|-----------|------------------------|-----------|------------|------------|---|
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M |
| 1932 | 12 | 8 | 2 | 3 | 6 | 5 | 6 | 16 | 2 | 1 | 4 | 6 | 3 | 4 | 4 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 5 | 1 | 47 | 45 | |
| 1933 | 9 | 11 | 1 | 1 | 10 | 8 | 10 | 16 | 1 | 2 | 9 | 10 | 0 | 2 | 3 | 1 | 0 | 0 | 2 | 3 | 0 | 1 | 3 | 3 | 48 | 58 | |
| 1934 | 21 | 10 | 1 | 0 | 5 | 3 | 13 | 8 | 1 | 4 | 21 | 17 | 3 | 2 | 8 | 6 | 0 | 4 | 3 | 4 | 0 | 0 | 1 | 0 | 77 | 58 | |
| 1935 | 23 | 15 | 5 | 1 | 12 | 8 | 19 | 14 | 2 | 3 | 29 | 14 | 4 | 4 | 8 | 4 | 1 | 2 | 2 | 1 | 0 | 0 | 7 | 0 | 112 | 66 | |
| 1936 | 20 | 11 | 0 | 0 | 2 | 0 | 13 | 16 | 3 | 0 | 8 | 6 | 1 | 1 | 1 | 7 | 3 | 3 | 2 | 1 | 0 | 1 | 2 | 2 | 55 | 48 | |
| 1937 | 24 | 15 | 5 | 2 | 9 | 10 | 16 | 19 | 6 | 5 | 10 | 6 | 1 | 0 | 6 | 6 | 1 | 1 | 2 | 1 | 0 | 0 | 2 | 2 | 82 | 67 | |
| 1938 | 31 | 24 | 3 | 2 | 3 | 4 | 20 | 30 | 3 | 3 | 5 | 4 | 2 | 2 | 6 | 6 | 1 | 0 | 1 | 1 | 1 | 0 | 6 | 2 | 82 | 78 | |
| 1939 | 36 | 18 | 5 | 1 | 21 | 6 | 19 | 33 | 5 | 3 | 11 | 8 | 1 | 1 | 5 | 3 | 1 | 0 | 5 | 3 | 1 | 1 | 5 | 2 | 115 | 79 | |
| 1940 | 47 | 16 | 4 | 5 | 14 | 6 | 23 | 26 | 3 | 4 | 8 | 3 | 2 | 2 | 11 | 3 | 3 | 2 | 6 | 2 | 0 | 2 | 4 | 6 | 125 | 77 | |
| 1941 | 30 | 9 | 1 | 2 | 8 | 10 | 13 | 32 | 3 | 1 | 4 | 4 | 1 | 1 | 5 | 4 | 3 | 0 | 4 | 2 | 1 | 4 | 0 | 2 | 73 | 71 | |
| 1942* | 10 | 4 | 4 | 1 | 0 | 2 | 7 | 8 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 21 | 23 | |
| Total | 263 | 141 | 31 | 18 | 90 | 62 | 159 | 218 | 29 | 28 | 109 | 78 | 18 | 19 | 57 | 42 | 15 | 13 | 28 | 21 | 3 | 10 | 35 | 20 | 837 | 670 | |

* First 6 months only.

TABLE II

AGE INCIDENCE OF HEART DISEASE FOR THE YEARS 1939, 1940, 1941 AND FIRST HALF OF 1942.

| | ARTERIO- SCLEROSIS AND HYPER- TENSION | ARTERIO- SCLEROSIS | HYPER- TENSION | RHEUMA- TIC | BACT. ENDOCAR- DITIS | INFAN- TILE BERIBERI | ADULT BERIBERI | COR. PUL- MONALE | SYPHILIS | CONGEN- ITAL |
|-------------|---------------------------------------------------|-----------------------|-------------------|----------------|----------------------------|----------------------------|-------------------|---------------------|----------|-----------------|
| Below 1 yr. | | | | 1 | | 29 | | | | 6 |
| 1-10 | | | | 15 | 2 | 9 | | 1 | 1 | 8 |
| 11-20 | | | 4 | 46 | 3 | | | 5 | | 5 |
| 21-30 | 17 | | 7 | 38 | 5 | | 4 | 6 | | 1 |
| 31-40 | 10 | 1 | 11 | 38 | 6 | | 1 | 6 | 3 | 2 |
| 41-50 | 36 | 6 | 12 | 16 | 4 | | 2 | 4 | 4 | |
| 51-60 | 53 | 9 | 11 | 7 | | | 1 | 7 | 2 | |
| 61-70 | 40 | 5 | 16 | | | | | 2 | | |
| Over 70 | 23 | 2 | 4 | | | | | | | 2 |