

THE INCIDENCE OF HEART
DISEASE IN THE PACIFIC
NORTHWEST

T. HOMER COFFEN, M.D.
Portland, Ore.

From the Oregon State Board of Health

Reprinted from
THE AMERICAN HEART JOURNAL
St. Louis

Vol. V, No. 1, P. 99, October, 1929

THE INCIDENCE OF HEART DISEASE IN THE PACIFIC NORTHWEST*

T. HOMER COFFEN, M.D.

PORTLAND, ORE.

WITH increasing interest in heart disease it is apparent that certain cardiovascular lesions may be more prevalent in one part of the country than in another. It has been shown that acute rheumatic fever is more prevalent in rigorous climates than in equable ones.^{1, 2, 3} Syphilis in a charity hospital in the South is more common (largely because of negro admissions) than in other localities.⁴ In regions where goiter is endemic the cardiovascular symptoms due to this condition can be studied to advantage. One would expect the more common forms of heart disease, such as those associated with arterial hypertension, to be equally distributed regardless of locality. A comprehensive report of the work recently carried out in New York State⁵ serves as an example of the value of local studies.

In attempting a study of the incidence of heart disease in the Pacific Northwest, we are aware of the size of the problem and the inadequacy of material for careful and comprehensive statistical value but have obtained, we think, a preliminary cross-section of the material at hand.

For comparison with other parts of the country as to mortality from all causes and mortality due to diseases of the circulatory system, the following tables are presented: †

TABLE I
DEATH RATE PER 1000 DUE TO ALL CAUSES

OREGON	CALIFORNIA	WASHINGTON	MAINE	NEW YORK
Average for 10 yrs. to 1927	Average for 9 yrs. to 1926	Average for 9 yrs. to 1926	Average for 9 yrs. to 1926	Average for 9 yrs. to 1927
11.4	14.2	10.52	13.8	13.7

TABLE II
DEATH RATE PER 1000 DUE TO DISEASE OF THE CIRCULATORY SYSTEM

OREGON	CALIFORNIA	WASHINGTON	MAINE	NEW YORK
Average for 10 yrs. to 1927	Average for 9 yrs. to 1926	Average for 7 yrs. to 1926	Average for 7 yrs. to 1926	Average for 7 yrs. to 1926
1.9	2.62	1.62	2.77	2.74

*Read at the Fifth Annual Scientific Session of the American Heart Association, Portland, Oregon, July 9, 1929.

†From the Oregon State Board of Health.

MATERIAL STUDIED

To obtain a cross-section of data for study composed of patients presenting themselves in private practice and in hospital admissions the following sources were used, comprising a total of 28,661 cases, of whom 13,258 were medical patients. While these figures are all obtained from one locality in the Pacific Northwest, many of the patients came from adjacent states. To make the figures more comprehensive, figures from the larger cities of the state of Washington are desirable. The relation of cardiovascular disease to total admissions and to medical admissions is shown in Table III.

TABLE III

TOTAL ADMISSIONS	MEDICAL	CARDIO-VASCULAR DISEASE		RHEUMATIC HEART DISEASE				GOITER		
				ACUTE		CHRONIC				
				Per cent of medical patients	Per cent of medical patients	Per cent of medical patients	Per cent of medical patients			
Private patients	5,489	1,673	30	9	0.10	125		113	8.6	
Multnomah patients	3,851	1,210	62	0		325		44		
U. S. Veteran Hospital	1,003	445	151	0		0		20		
Good Samaritan Hospital	8,452	3,650	208	5	3	57		161		
St. Vincent's Hospital	8,590	1,318	230	18	4	0.11	45	479		
Doernbecher Memorial Hospital for Children	1,276	417	16		6	0.12	0	4		
Totals	28,661	13,258	3,488	26	18	0.11	552	4.9	821	6.1

The Multnomah County Hospital is the teaching hospital of the University of Oregon Medical School and is affiliated with the Out-patient Department, the Portland Free Dispensary. The patients are mostly past middle age: therefore the incidence of cardiovascular disease is high (60 per cent). Patients with chronic valvular disease are also probably more numerous than in other hospitals. The Good Samaritan and St. Vincent's hospitals are private institutions, the majority of patients being surgical (59 per cent, Good Samaritan; 86 per cent, St. Vincent's).

Of the 13, 258 medical patients, 3,488 or 26 per cent showed cardiovascular disease. Acute rheumatic fever shows a low incidence, which suggests error. In the private patient group but few children are seen, which would lower the figure, but the Doernbecher Hospital for Children shows only a slightly higher figure. Pediatricians in the Pacific Northwest are of the opinion that the disease is quite rare, though no

published studies are available. Here the incidence of acute rheumatic fever was 0.12 per cent. Climatic factors, as brought out by the authors referred to,^{1, 2, 3} may be assumed to explain this, for the climate of this territory is mild.

Faulkner and White¹ found the incidence of rheumatic fever and chorea to vary from 0.2 to 5.8 per cent of medical cases. Chronic valvular disease, as seen in their study, is no criterion as to incidence, for many of these patients date their trouble to rheumatic fever in childhood. They are not natives of this part of the country. Goiter in this region is endemic. The figures take into account only goiter patients in whom circulatory symptoms were prominent.

CLASSIFICATION OF VARIOUS TYPES OF HEART DISEASE

While hospital records were found satisfactory for the above, they were disappointing for use as to structural or etiologic classification because of methods of indexing diseases. One finds such ambiguous terms as "heart failure" and "broken compensation" and "dilatation"

TABLE IV

CLASSIFICATION OF VARIOUS TYPES OF HEART DISEASE OF PRIVATE PATIENTS, ETIOLOGICAL AND STRUCTURAL, TO CONFORM WITH OTHER REPORTS

CLASSIFICATION	TOTALS	PER CENT OF TOTAL CARDIOVASCULAR DISEASE	
"Heart pain" group	237		
From syphilitic group	1		
Total		238	14.2
Goiter, producing cardiac symptoms	133		
With fibrillation	10		
With flutter	1		
Total		144	8.6
Rheumatic heart disease (including 5 cases of rheumatic fever, and 1 case of subacute bacterial endocarditis)	134		
With fibrillation	34		
With heart-block	1		
Total		169	10.1
Hypertensive cardiovascular disease (including 33 cases showing hypertensive menopause symptoms)	604		
Heart pain and hypertensive cardiovascular disease	227		
Auricular fibrillation and hypertensive cardiovascular disease	103		
Total		942	56.3
Syphilis of the cardiovascular system	70		4.1
Irritable heart	285		17.0
Pericarditis (including 1 case of Pick's disease)	3		0.1
Auricular fibrillation	150		8.9
Auricular flutter	3		0.1
Dextrocardia	1		0.06
Functional murmurs (congenital?)	44		2.6
Auriculoventricular block	9		0.5
Total	1,673		

tion" with no cross index as to type of heart disease present. Nor is it possible to get accurate figures as to hypertensive cardiovascular disease for these are classified as "arteriosclerosis," "hypertension," "apoplexy" or "hemiplegia." We venture to say that this condition is not peculiar to these hospitals which are all class-A institutions.

We should like to know the incidence of heart disease in surgical patients, or what percentage of elderly patients with pneumonia shows evidence of cardiovascular disease.

Records of 1,673 private patients with cardiovascular symptoms were studied as to etiological, structural and functional diagnoses. The results are shown in Table IV.

DISCUSSION

In the "heart pain" group we are aware of the difficulty of separating these into coronary occlusion, coronary sclerosis, aortitis, etc., because of confusion in differentiating them as noted by us in a former paper.⁵ In all these patients, however, pain was brought on by effort and relieved by vasodilators. Electrocardiographic records were often typical, and a fair proportion were verified at autopsy. Syphilitic cardiovascular disease is not included in this group. The coronary thrombosis cases were typical, with significant history, physical findings, electrocardiograms, and, in some instances, with autopsy; 19 developed auricular fibrillation, 13 developed right bundle-branch block, and 2 right bundle-branch block with later complete block.

TABLE V

Total autopsies	465	
Goiter heart, toxic		4
Pericarditis		
Acute fibrinous		3
Adhesive, chronic		3
Purulent		3
Endocarditis		
" Malignant "		2
Subacute bacterial		2
" Rheumatic "—acute*		7
" Rheumatic "—chronic		2
Aortic stenosis		2
Coronary disease		
Thrombosis		20
Thrombosis with heart rupture		1
Hypertensive cardiovascular disease		35
Arteriosclerosis		3
Syphilis of aorta		3
Aneurysm		1
Myocarditis		
Acute toxic		2
		96

*Not acute rheumatic fever, but acute endocarditis on the basis of old rheumatic lesions of the endocardium.

In the goiter group there were 144 patients who showed various degrees of effect upon the heart. Many simple goiters were seen which are not included.

In addition to these classified cardiovascular patients, 651 patients came for heart examination in whom no heart disease was found.

Hypertensive cardiovascular disease shows a high incidence, as in other localities. This term is used to include those cases with peripheral arteriosclerosis, retinal arteriosclerosis and aortic sclerosis as shown on physical and x-ray examination rather than to attempt to separate those with slight or doubtful arteriosclerosis from those with obvious evidence of arterial thickening. It is the commonest type of circulatory disease, resulting in cardiac, renal or vascular involvement.

In 465 autopsies at the Good Samaritan Hospital 96 showed cardiovascular lesions as the cause of death. They are grouped in Table V.

CONCLUSIONS

1. Heart disease as seen in the Pacific Northwest shows a low incidence of acute rheumatic fever (0.1 per cent, while in other localities the incidence varies from 5.8 to 0.2 per cent).

2. Hypertensive cardiovascular disease is the most frequent of all types (56 per cent).

3. Goiter, being endemic, shows an incidence of 6.1 per cent of medical patients producing cardiovascular symptoms severe enough to send the patient to the physician.

4. Hospital records, though of standard type for indexing, are entirely inadequate for statistical study as to etiologic and structural diagnosis of heart disease. They are satisfactory, however, as to incidence of cardiovascular disease as compared with total medical admissions. It is hoped that studies such as this may lead to more careful supervision of hospital records by medical boards or committees of physicians who will see to it that obsolete terms are eliminated.

5. Carefully studied patients in private practice with complete records offer a satisfactory basis for statistical study but may not give a true index as to incidence in relation to total population.

REFERENCES

1. Faulkner, J. M., and White, P. D.: Rheumatic Fever, Chorea and Rheumatic Heart Disease, *J. A. M. A.* 83: 425, 1924.
2. Harrison, T. R., and Levine, S. A.: Notes on the Regional Distribution of Rheumatic Fever, Chorea and Rheumatic Fever in the United States. *South. M. J.* 17: 914, 1924.
3. Greenwood, M., and Thompson, T.: On Meteorological Factors in the Etiology of Acute Rheumatism, *J. Hyg.* 7: 171, 1908.
4. Stone, C. T., and Vanzant, F. R.: Heart Disease as Seen in a Southern Clinic, *J. A. M. A.* 89: 1473, 1927.
5. Report of the Committee to make a study of heart disease in the State of New York, of the Medical Society of the State of New York, May, 1928.
6. Coffen, T. H., and Rush, H. P.: "Acute Indigestion" in Relation to Coronary Thrombosis, *J. A. M. A.* 91: 1783, 1928.