Reprint from Northwest Medicine
August, 1924

EARLY RECOGNITION OF HEART DISORDERS *

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The importance of early recognition of heart disease is apparent because of its frequency, prevention, prognosis and proper treatment.

Frequency. According to the last census, deaths from circulatory disease are more numerous than from any other cause. Twenty-five per cent of patients in large hospitals are cardiacs; 2 per cent of the population in the United States are affected, or two and one-half million; 200,000 school children have heart disease. Of 550,000 young men rejected for military service 10 per cent were cardiacs.

Prevention. Preventive measures have already been applied in circulatory disease thru intensive study of large groups of cardiac school children. Heart disease in children and adults is often insidious. A child may have rheumatic fever with no apparent heart involvement. Some time later a murmur is found, showing that damage had occurred, and some months or years later undoubted valvular disease is evident, accompanied by cardiac failure. In adults physical signs of heart failure may appear before any subjective symptoms. The recognition of these signs and symptoms of incipient heart failure is imperative. The life history of

* Read before the Fiftieth Annual Meeting of Oregon State Medical Society, Portland, Ore., May 27-29, 1924.

heart disease, with its tendency to recurrence, producing the cardiac cripple, shows that removal of foci of infection, regulation of physical activity and occupation, with little physical strain, may make the cardiac self supporting instead of a burden upon the community. The physician should be alert to the fact that every case of rheumatism in children or young adults is one of potential heart disease. Mackenzie emphasized the opportunity of the family physician in detecting the early stages of chronic disease; thru years of close acquaintance he may observe the progressive stages in its development.

Heart failure should be detected at its onset, long before obvious signs of broken compensation appear. The early symptoms may be slight or moderate, shortness of breath with ordinary exertion, such as climbing stairs, walking against a brisk wind or climbing a moderate incline. Sometimes early heart failure manifests itself first as a digestive symptom, with distress in the epigastrium after a hearty meal and exertion, or a feeling of "gas" in the stomach, not relieved by belching. Examination shows a large, tender liver due to passive congestion, and the heart borders are found increased. Again, the first symptom may be troublesome cough, and not infrequently bloody sputum, so that the patient is fearful of tuberculosis. This condition is not at all uncommon in association with old mitral stenosis which may have been well compensated for years.

In two of my patients, acute pulmonary edema was the first symptom pointing to a heart working under strain; in one, a man of 42, always well and vigorous, it came with moderate overexertion

and in the other, aged 65, a man with arterial hypertension of some years duration, and marked arteriosclerosis, it came after exposure to cold and fatigue. In other cases, the first symptoms pointing to a cardiac breakdown may be anginal pain, moderate or severe. Almost constant factors in angina are its association with exertion (or excitement) or exertion after a hearty meal.

In many patients definite physical signs of heart disease may be detected before subjective symptoms appear. One of the earliest, in my experience, is found on examining the bases of the lungs posteriorly. One obtains a shower of fine rales at the end of deep inspiration, due to early passive congestion.

Another early sign is liver enlargement. Or the heart borders may be found to be increasing from gradual cardiac dilatation. This may be the result of a gradual rise in blood pressure, and tho the heart hypertrophies in its attempt to meet the increased demands made upon it, it finally dilates and fails.

In 100 cases of early heart failure in patients of varying ages, and with varying etiologic factors, the following symptoms were noted first:

Dyspnea on moderate exertion	91
Palpitation and arrhythmia	66
Pain on effort or after hearty meal	50
Dizziness	40
Cough	31
Gastrointestinal symptoms	19
Pulmonary edema	10

In the same series of patients the following frequency of physical signs, singly or combined, is shown:

Heart enlargement	74
Albuminuria	38

Edema	17
Liver enlargement	9
Arrhythmia	36

From the foregoing it is seen that Mackenzie's definition of heart failure is evident—"the heart is unable to maintain an efficient circulation during the effort necessary for the daily life of the individual." This definition applies to beginning and advanced heart failure, but in the instances cited failure has been early. It should be emphasized that it is heart muscle that is at fault.

Factors concerned in heart failure. Of these the most important are (1) the past history, including rheumatism in childhood, heart damage from severe infections such as pneumonia, influenza, scarlet fever or diphtheria; syphilis; cardiac strain from occupation, athletics or long continued high blood pressure.

(2) Age and type of lesions. The heart lesions vary greatly in childhood, youth, middle and old age. (a) In youth there may be evidence of earlier heart damage as shown by mitral insufficiency, but with efficient heart muscle. In such a case one must always be on guard as to the possibility of mitral stenosis, a much more serious lesion, for it is a gradually narrowing, progressive process, while insuffiiency of the mitral valve is a healed process. Another thing to guard against in the interpretation of heart murmurs is the systolic murmur over the aortic area. Organic aortic stenosis is a rare thing. Aortic systolic murmurs are not uncommon in asso ciation with arteriosclerosis; it is not aortic stenosis but sclerosis of the aorta above the valve.

Lewis and others have emphasized the importance of diastolic murmurs in the heart as the only ones of

any importance. It is obvious that progressive scarring of the mitral valve in mitral stenosis on the one hand, or the great disadvantage at which the heart has to work with aortic insufficiency, on the other hand, are much more significant than mitral insuffiency (the least serious of valvular lesions), or the lesion producing an aortic systolic murmur, referred to above. Modern authorities are, therefore, much less inclined to interpret heart failure upon the basis of murmurs than upon the condition of the heart muscle, upon which all depends.

(b) In middle age heart weakness may be traceable to the factors above referred to, but perhaps one of the most important is that of underexercising and overeating. Gradually increasing arterial thickening with hypertension and kidney involvement may be evident. Men, formerly athletic, become sedentary. Coronary thrombosis not infrequently occurs.

(c) After middle age the process in the circulatory system in a degenerative one, most often associated with arteriosclerosis, in which the heart is involved, or is frequently associated with heart strain, secondary to long continued arterial hypertension.

Since the factors governing heart failure vary so greatly with age and past history the following typically illustrative cases are cited:

Group 1. Early heart failure in childhood. Moderate heart failure due to subacute bacterial endocarditis secondary to follicular tonsillitis. Heart failure manifested by tachycardia, cardiac dilatation, moderate liver enlargement, slight cyanosis. Gradual improvement, becoming afebrile, circulation

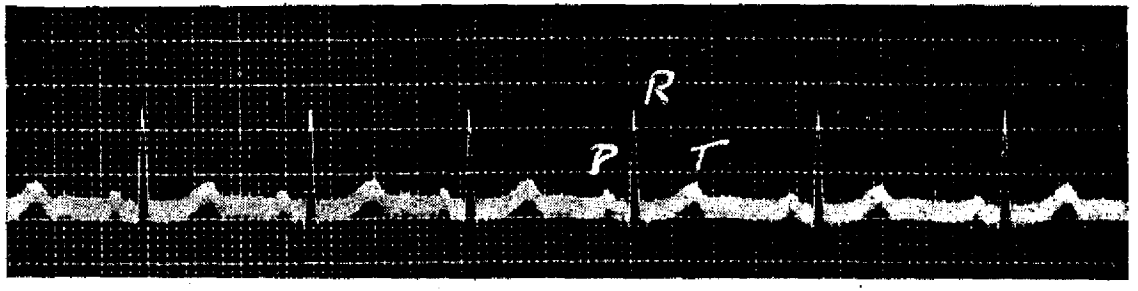

Fig. 1. Showing normal electrocardiogram for comparison with fig. 2.

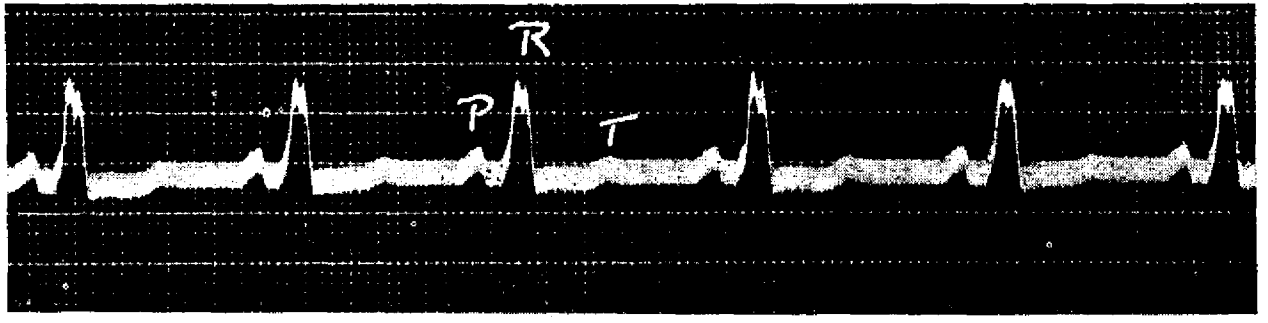

Fig. 2. Electrocardiogram from case 1, group 3, subacute bacterial endocarditis. The wide split R wave indicates disturbance in the right branch of the conducting pathway. Note the width, 4-25 (0.6) seconds, as compared with the normal 1-25 (.04) seconds.

reestablished. Tonsillectomy, severe cardiac emergency as shown by tachycardia, cardiac dilatation, dyspnea, cyanosis; prompt response within two hours and gradual recovery. After five weeks up and about and with only slightly restricted activity.

J. H., age 6. About ten days after acute tonsillitis, remaining febrile, the family physician noted overacting heart, with a soft, tho definite systolic murmur at apex. The boy had never had any serious illness and the physician was sure this was of recent development. Further examination showed the left border of the heart one-half inch outside its normal limits in the sixth interspace, a soft, definite, blowing systolic murmur at the apex. Temperature 101°, pulse 130, marked sinus arrhythmia. The liver was felt two finger breadths below the costal margin in the mammillary line, slightly tender. There were no joint symptoms. The tonsils were moderately enlarged and cryptic. The tonsillar glands were just palpable and slightly tender. There were a few small petechial hemorrhages in the conjunctivae of the lower lids. No other petechiae. The spleen was just palpable. The patient improved steadily on salicylates and moderate amounts of digitalis and, being afebrile, was allowed restricted activities. After three weeks tonsillectomy was done with no trouble, but about five hours later the pulse became rapid, the heart dilated and for a time the patient's condition was serious. Response to stimulation was satisfactory and now, five weeks after, the patient is well.

Group 2. Early heart failure in youth.

A dental student, of 24, was troubled with palpitation, irregular heart action, some cough with bloody sputum on over exertion, recent limitation of effort. Six years ago had tonsillitis, mumps and influenza which led to rheumatic fever, confining him to bed for weeks. Recovery was gradual over a period of five months. His heart trouble dates to that time. Examination showed the left heart borders increased one inch in the sixth space. Precordial pulsations were marked. At the apex, a rough, blowing systolic was heard, at the sternal border in the fifth left space a diastolic murmur was also definite and at the aortic area a rough diastolic murmur was distinct. Blood pressure was 160-45.

Comment. In a young man, previously well, heart disease with moderate failure dates to infection and rheumatism, producing endocardial lesions of the mitral and aortic valves. To the present there have been no serious cardiac breakdowns, due, no doubt, to the oung heart muscle. Preventive measures will do much to avoid recurrences.

Group 3. Beginning heart failure in adults.

Case 1. A woman, of 37, the mother of five small children, came to the cardiac clinic at the Free Dispensary, complaining of precordial distress and shortness of breath on ordinary exertion. She had fever of 99.5°; there were some petechiae in the conjunctivae, the liver was enlarged, she was slightly cyanotic. The heart borders were increased to the left anterior axillary line; there was a rough systolic murmur at the apex and one of different pitch and intensity at the aortic area. She gave a history of rheumatic fever two years before, when she was in bed for some time, and many joints were involved. Blood culture showed pure streptococcus viridans. On salicylates and small doses of digitalis she improved rapidly and was quite relieved of heart symptoms within three weeks. Now, four months since first seen, she has no fever and blood cultures are negative. Her heart is compensating well.

Comment. This woman probably developed endocardial lesions at her former attack of rheumatism. The recurrence was preceded by tonsil infection, and streptococci were found in blood culture. The picture is that of subacute bacterial endocarditis. To prevent her from becoming a cardiac invalid is important. Tonsillectomy should de done, and she should be kept under observation for months to prevent recurrences and to safeguard her heart. Salicylates are almost specific in such cases, controlling fever, relieving joint pains, and probably are bactericidal. Myocardial damage was well

marked in this, Case 1 (Fig. 2) as shown by the electrocardiograms.

Case 2. A vigorous athletic man, of 42, gradually developed an increasing arterial hypertension, with traces of albumin and few granular casts in the urine. After rather strenuous exercise he had an attack of moderate pulmonary edema, with dyspnea, frothy, blood-tinged sputum and mild precordial distress. From this time on symptoms of failing heart muscles developed and he died a cardiac death three months later.

Electrocardiograms showed undoubted myocardial disease similar to that in the preceding case.

Case 3. An athletic man, of 50, former football player and coach had increasing dyspnea for two years, recently so troublesome that walking a few blocks produced great discomfort. Repeated attacks of quinsy sore throat but never laid up with rheumatism. Heart examination showed enlargement of left border to anterior axillary line, vigorous, tho irregular, heaving precordial pulsations. Undoubted mitral insufficiency and aortic insufficiency. Blood pressure 125-40. Electrocardiograms showed auricular fibrillation with marked auriculoventricular dissociation. There was no history of syphillis and repeated Wassermanns were negative.

Group 4. Early heart failure past middle age.

Moderate heart failure in a man of 68, causing limitation of effort for some months before seen. Moderate arteriosclerosis, liver enlargement and kidney involvement, culminating in a serious attack of pulmonary edema with much frothy blood-tinged sputum, dyspnea, auricular fibrillation and prostration.

Now, one and one-half years after this attack, is able to attend to his business and feels well except for dyspnea and palpitation on overexertion.

The cases cited illustrate heart breakdown in its incipiency. One is struck with the ability of young or youthful hearts to withstand repeated breakdowns.

Estimation of heart efficiency. Tho many efforts have been made to devise methods of estimating the

power of the heart, a simple test is desirable. Moderate exertion with dumb bells or hopping is sufficient. The normal heart speeds up under such effort, but there is no marked dyspnea or discomfort, and the heart rate falls to normal in a short time. The heart that is subnormal, however, responds by marked increase in rate and there are associated symptoms of strain, as shown by dyspnea, anxiety and general discomfort.

The heart sounds may be helpful in estimating heart function. A flapping first sound at the apex, of poor quality, may indicate weak heart muscle. Such a person has obvious distress on exercise. It is most common in the middle aged but should not be confused with the distant heart sounds in the emphysematous.

The object of this paper has been to emphasize the prevention of heart failure by early recognition of heart involvement thru early symptoms and signs.