Original Communications.

THE PATHOLOGY, DIAGNOSIS, AND TREATMENT OF CARDIAC DISEASES.

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V.—GENERAL SYMPTOMS OF PERICARDITIS.

THE general symptoms attending acute pericarditis vary considerably. They are, as might be supposed, for the most part, merged in the symptoms of the particular inflammatory, or other disease, with which the pericarditis happens to be associated. The pericarditis of rheumatic fever, indeed, often supervenes in the progress of the fever without in any degree adding to or altering the general symptoms of it. Sometimes, but not always, local pain, and a feeling of oppression about the region of the heart, point to that organ as the part upon which the inflammation has fallen. Every stethoscopist is aware that as a general rule it is by the physical signs—the friction sounds—that we gain the earliest intimation of the existence of the pericarditis; a fact which shows how important it is ever carefully to watch for these signs during the progress of all those diseases in which, as experience teaches us, pericarditis may possibly arise.

Moreover, in severe cases of pericarditis, inflammation of other parts and organs frequently coexist—endocarditis, pleuritis, and pneumonia, for example—and necessarily modify and complicate the character of the symptoms. Hence we may conclude that there are no general symptoms which can be considered as special indicators of the existence of pericarditis. In advanced periods of the disease, however, where the inflammation has been severe, and its products are considerable, general, as well as local, indications of serious impediments to the respiratory and circulating organs arise.

The symptoms here given are such as are usually met with in a typical case of rheumatic pericarditis.

The *pulse* at the wrist varies much in its characters, for the most part corresponding to the nature of the heart's impulse. At first hard, frequent and strong, it becomes weak, fluttering, and irregular in the latter stage of the disease, when the pericardial effusion is large.

Sometimes it remains of a natural strength, even when the impulse of the heart is hardly perceptible; or it may be very weak when the heart's impulse is violent, in which case we may expect the coexistence of hypertrophy of the left side of the heart, with valvular disease. A weak, fluttering, irregular and intermittent pulse is ever an anxious sign, for it indicates an advanced condition of the disease, and an enfeebled state of the vital powers.

In advanced stages of the disease, the pulse is subject to sudden changes; the least movement or mental excitement raising its frequency in a remarkable degree. When neither pleurisy nor pneumonia coexist, the pulse may be more frequent than natural, in proportion to the number of the respiratory movements.

The Respiration. Several causes tend, directly and indirectly, to quicken the respiratory movements, and impede the respiration in pericarditis; and these causes act conjointly or separately. The due expansion of the thorax is prevented by the pain to which its movements give rise; and the free return of the blood from the lungs is impeded by the pericardial effusion, which restrains and weakens the action of the heart, and compresses the auricles, as already explained. The motion of the diaphragm, the pleuritic surface of which is often involved in the inflammation, is also frequently affected, in consequence of the pain which it occasions. Pleurisy and pneumonia, moreover, are almost constantly associates of acute pericarditis in its advanced stage; and when present, they also necessarily interfere with, and increase the disturbance of, and embarrass the respiration; and more or less so according to their degree and extent. And again, where the pericardial effusion is considerable, it mechanically presses upon the lungs, particularly upon the left lung.

In consequence of these disturbances of the respiration, we find that the respiratory movement of the upper part of the

chest is sometimes increased, and that of the epigastrium arrested. The expansion of the ribs over the heart and left side of the chest is also partially arrested, particularly when the costal pleura participates in the inflammation. The difficulty of breathing is, under such circumstances, apt to be much increased by the slightest motion, or mental agitation. Sometimes, even when the exudation is small, the patient breathes much quicker than natural.

Hence the obstruction of the respiration which results from the pericarditis depends upon many different circumstances:—upon the amount of pericarditic and pleuritic effusions; upon the degree of pain; upon the condition of the muscular structure of the heart; upon the inflammation and paralysis of the diaphragm; upon the presence or absence of pneumonia and pleurisy; and upon the extent and degree of these different affections.

Difficult respiration is an important symptom when it comes on suddenly. The fluttering, faltering heart, and the respiratory anguish, as Dr. Latham remarks, almost always occur late in the course of the disease.

Pain, when of an acute kind, is generally severest at the onset of the inflammation; but of all the symptoms of pericarditis, it is the most inconstant, and therefore the least trustworthy.

It is not improbable that in some cases, when the rheumatic pains are very severe, and the præcordial pain slight, it may not be noted by the patient though actually present. The pain is felt chiefly about the præcordia and at the scrobiculus cordis, and is increased on deeply breathing, and by pressure—particularly by pressure at the epigastrium; it is increased also by motion. Sometimes it reaches to the shoulder and down the left arm.

The pain attending pericarditis is of a twofold nature. There is the distress, the anguish, and the stifling feeling—the modified angina—which result from the oppression of the heart—the congestion—and there is the sharp, acute, and cutting pain, which, probably, in the greater number of cases depends upon the accompanying pleurisy.

It seems probable, indeed, that mere inflammation of the pericardium will not, of itself alone, occasion pain. The pain may be well accounted for by the pleurisy which is so frequent an attendant upon pericarditis.

The tongue is at first moist, and coated with white epithelium; in the later stages of the disease it often becomes dry and red. The thirst is great, and there is much general fever. The distress of the patient is often extreme when the symptoms are severe. In such case he is sometimes very restless, and if rheumatic pains hinder him not, frequently varies his position in bed; but with the progress of the disease movement is restricted, and then he lies for the most part on his back. Often he requires his head and shoulders to be raised, feeling that he breathes more freely when he is high in bed. If one lung is much compressed by the pericarditic or pleuritic effusion, he tends to lie rather towards that side where the effusion is. Whatever position he assumes is painful and irksome to him, and yet some impending dread forbids him to change it. In the worst stages of the disease cold sweats come over him, lividity of face, rapid respiration, feelings of suffocation, and then, at length, coma closes the struggle for life.

Cerebral Symptoms. In pericarditis when symptoms arise indicative of disturbance of the nervous centres, they are always of very serious import. The pathology of these affections has yet to be written, for their nature is not explained by any local changes hitherto discovered to which they can be ascribed. When they appear, they are generally the precursors of a fatal termination of the disease; in young persons they present themselves under the form of choreal symptoms. Sudden movements of the body, twitchings of the limbs, throwing about of the head, great restlessness, delirium, distortion of the features, startings in the sleep, tetanic spasms, are the usual manifestations of these disturbances of the nervous centres. "Wild delirium, epileptic or tetanic convulsions, chorea, coma, fatuity, are the greatest and the rarest of these symptoms; and mutterings, reveries, transitions from torpor to excitement, subsultus, are the least and most frequent, but they are all akin one to another. The least may mount up to the greatest, and the greatest run down to the least." (Latham.)

In pericarditis associated with Bright's disease of the kidney, the head symptoms may, in some cases, be attributed to the uræmic condition of the blood; * but their cause, as said before, in rheumatic pericarditis is obscure.

* It has been thought that in Bright's disease of the kidney the head symptoms do not depend upon the uræa in the blood, but upon the æmæmic.

The old doctrine of metastasis gives no explanation of the cerebral symptoms.

It is possible, as has been suggested, that the poisonous agent in the blood may act directly upon the nervous centres; or that the excitement may arise in a secondary or reflex manner, as a consequence of the local disease. But it seems more in accordance with modern pathology, to consider that these nervous derangements result from profound alterations in the condition of the blood, which have been produced either by the disease, or by the treatment adopted for its cure. I have elsewhere observed that since venesection and mercury have ceased to be considered as necessary remedies in this disease, the nervous symptoms alluded to seem to be less frequently met with by practitioners.

The furious delirium which sometimes arises in pericarditis may be regarded in some cases as the consequence of exhaustion of the nervous power. It is in the advanced stages of the disease, indeed, that these nervous symptoms supervene.

The following case, which lately came under my observation, is a good illustration of this condition of disease in its typical form.

A. B., a painter, aged 37, had for several weeks suffered from great dyspnoea, in connection with pericardial disease. Three days before his death, he became delirious, and for the last two days of his life was furiously maniacal. His brain was found to be perfectly healthy; but a large amount of serous, sub-arachnoid effusion surrounded it. The pericardium contained three pints and a quarter of fluid, and stretched twelve inches across the chest.

The heart was thickly covered with freshly deposited villous fibrine. The lungs were compressed backwards towards the spine; but were healthy.

This seems to have been a case in which, if in any, paracentesis pericardii is justifiable. We may fairly conclude that here the mechanical pressure of the fluid upon the heart, and upon the lungs, was the chief immediate promoting cause of death. The delirium may be ascribed to these facts, and to exhaustion, the patient having taken very little food during his lengthened suffering.

Difficulty of swallowing is occasionally observed when the pericarditic effusion is considerable; the difficulty being increased when the patient lies recumbent. It depends, in all probability, upon the pressure of the fluid in the pericardium, exerted on the oesophagus, whereby the passage of the food into the stomach is mechanically impeded. The same pressure has been thought, also, in rare cases, to have acted upon the trachea, and so to have interfered with the respiration; this I have never observed.

The condition of the skin depends, in great part, upon the nature of the pericarditis, whether rheumatic or not. When the disease is of rheumatic origin, the state of the skin, as well as many of the general symptoms, are those peculiar to acute rheumatism.

In some rare cases of rheumatic pericarditis, the inflammation of the pericardium has been known to precede the affection of the joints. Sometimes it comes on when the arthritic affections have already ceased to exist; but much more frequently the pericardial inflammation supervenes during their continuance.

It has not yet been clearly ascertained whether the severity of the articular bears any relation to that of the pericardial inflammation. "Sometimes we find the one affection is violent and the other absent or slight; and then again both the rheumatism and the pericarditis are violent, and their symptoms increase and decrease in force together. The fact is, that pericarditis may be looked for whether the acute rheumatism be severe or mild,—whether its seat be fixed or shifting, and at the beginning, as well as during the progress of the disease." (Latham.)

Such seems the experience of physicians in London; but it does not correspond with that of Dr. Stokes, in Dublin, who says: "The liability to all forms of carditis in rheumatism is in proportion to the severity and obstinacy of the fever." The question is one which is manifestly very difficult of solution. In accordance, however, with what I have already said in speaking of the causes of pericarditis, it is certain that the mildest form of rheumatic fever in the young is more likely to be attended with cardiac affections than the severest form of the fever in persons advanced in life.

condition of the blood. In a rapidly fatal case of this disease, which I lately witnessed, characterised by extreme anæmia and highly albuminous urine, the patient was perfectly sensible to the last, and never had any cerebral disturbance.

It is unnecessary for me to indicate especially the signs and symptoms of *non-rheumatic pericarditis*. The physical signs, when they are recognised (and I have already observed that they are frequently altogether overlooked during life by reason of the obscurity of the disease), will be found to resemble those here detailed. The general symptoms which accompany the pericarditis will be those of the particular disorder, in conjunction with which the pericarditis exists.

Pericardial adhesions. Adhesions of the pericardium do not offer any positive signs by which we can with certainty recognise their existence during life; but when we have observed the progress of the pericardial inflammation from its commencement, and have witnessed the gradual departure of the friction-sound, and of the other symptoms of pericarditis, in any particular case where the disease has been extensive, we may anticipate, with tolerable certainty, that adhesions have taken place.

It would appear that complete union of the pericardial surfaces is, for a certain time at least, compatible with the integrity of the heart's action, and that the subjects of such a condition of the membrane have existed, even for years, without manifesting any symptoms of cardiac disease, and have died at last of other affections; but cases of this description are very rare, and we find, as a rule, that whenever old pericardial adhesions exist, some other abnormal condition of the heart is likewise present.

The abnormal conditions of the heart most frequently met with in association with pericardial adhesions, are—its dilatation, hypertrophy, and atrophy. Each of these conditions has been supposed to result immediately, as a consequence of the adhesions; the hypertrophy, from the stimulus to muscular growth, caused through the impediment to the heart's action; and the dilatation and atrophy, from weakness and deterioration of its muscular structure, which have been indirectly produced by the pericardial inflammation.* It is very probable that these different conditions may all result from the pericarditis, as explained under the head of its pathology; but even though they were positively proved to be the immediate consequences of pericarditis, it must be remembered that they are not peculiar to it alone, and are therefore, as far as diagnosis is concerned, not distinctive signs of pericardial adhesions.

As regards the *diagnosis* of pericardial adhesions, we may remark, that no reliance can be placed upon the abrupt, jogging, tumbling, double motion of the heart, described as a sign by Dr. Hope; for this motion is the result simply of irregularity of the heart's rhythm, and may be associated with many other of its diseases.

Nor is it necessary to do more than merely refer to the fact that depression and pulsation at the epigastrium, during the heart's systole, have been suggested as signs of pericardial adhesions. An irregular, small, unequal pulse, præcordial anxiety, dyspnoea, tendency to fainting, dropsical swellings, and many other like symptoms, though present when pericardial adhesions exist, are symptoms of many other conditions of the heart, and therefore not distinctive of this one. Certainly, wherever such symptoms remain after an attack of pericarditis, or arise consequent to it, and no endocardial murmur is present at the same time, we may very fairly consider them as caused by pericardial adhesions.

Skoda has pointed out signs which he considers indicative of pericardial adhesions; and these I will shortly mention. It must be premised, however, that where these signs exist, union is supposed to have taken place, not only between the pericardial surfaces, but also between the external parts of the pericardium, the neighbouring pleural surfaces, and the walls of the thorax.

His diagnosis is based upon the signs which show that the heart's apex is drawn *upwards and to the right* during the systole, being prevented from moving downwards and to the left.

The heart's apex gives no systolic beat; it is either not to be felt, or seems to cause a shock during the diastole.

During the systole, depressions are visible in the intercostal space corresponding to the apex, and frequently in one or more spaces above it.

Systolic retraction of the left intercostal spaces, does not of itself enable us to diagnose adherent pericardium; it must also be shown, that, simultaneously with the retraction, the heart's apex is nowhere urged against the thoracic walls.

The systolic retraction of the lower half of the sternum, is a

* The hypertrophy and dilatation are no doubt, in the majority of these cases, the consequences of the valvular diseases, resulting from the endocarditis, which so frequently accompanies pericarditis.

certain sign of adhesion of the heart and pericardium, and of their attachment to the vertebral column.

The limits of dull percussion remain the same during inspiration and expiration, because the lungs, during inspiration, are prevented by the adhesions from dilating over the pericardium.*

The nature of the sounds of the heart gives us no aid in the diagnosis.

Dr. Law, in the *Dublin Quarterly Review*, vol. 22, p. 81, gives as a sign of adherent pericardium: "the persistence of the same extent of dulness to percussion in the præcordial region, no matter what position the individual may assume."

The only one of these signs which I have been able to verify, is the permanence of dull percussion over a given part, during inspiration as well as expiration; but this fact necessarily indicates also exo-pericardial adhesions.

[To be continued.]

A BRIEF REVIEW OF THE PATHOLOGY OF ANGINA PECTORIS: WITH CASES.

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It must be but seldom that a number of cases of angina pectoris are presented to one practitioner. Opportunities of autopsy, in fatal instances, must yet more rarely occur—the irregular paroxysmal character of the disorder conducing to its infrequent appearance in hospitals and other public medical institutions, and, when encountered in private practice, the prejudices of relatives and friends for the most part opposing a barrier to inspections after death.

I therefore venture to publish the following cases, and previously to cite various eminent authorities as to the nature of the disease, the difference of opinion and statements amongst which, to my mind, leads to the irrefragable conviction, that we either know very little about its pathology, or that it is an *accidental phenomenon, independent of and superadded to the special organic affections with which it has been observed to be associated*. Dr. Heberden's description is generally regarded to be correct, as he was the first to draw attention to the disease, and his account is most usually followed, although it may be remarked that Dr. Parry and others differ from this physician as to the nature and symptoms of the malady in question.

According to Heberden (*Commentaries*, art. *Pectoris Dolor*) "There is a disorder of the breast marked with strong and peculiar symptoms . . . not extremely rare. The seat of it, and sense of strangling and anxiety with which it is attended, may make it not improperly be called *angina pectoris*. Persons are seized whilst they are walking, more especially if it be up hill, and soon after eating, with a painful and most disagreeable sensation in the breast, which seems as if it would extinguish life . . . but the moment they stand still all this uneasiness vanishes. . . . Males are most liable to the disease, especially such as have passed their fiftieth year. . . . Varieties may be met with. Some are seized standing still or sitting, or upon first waking out of sleep, and the pain sometimes reaches to the right arm, as well as to the left, and even down to the hands." Heberden saw nearly one hundred cases, one of which was in a boy of twelve. He believed it to belong to the class of spasmodic, not of inflammatory complaints. He adds, "in one case a very skilful anatomist could discover no fault in the heart, valves, or arteries, or neighbouring veins, in opening the body of one who died suddenly of the disease, except some small rudiments of ossification in the aorta."

Dr. Parry, of Bath (*Edinburgh Medical and Physical Dictionary*), differed from Heberden, and called the affection "syncope anginosa." He maintained, in the true disease, that there is neither dyspnoea nor palpitation of the heart, and that angina pectoris is a mere case of *syncope* or fainting, differing from common syncope only in being preceded by an unusual degree of anxiety or pain in the region of the heart, and in being readily excited during apparent health, by any general exertion of the muscles, more especially that of walking. He ascribed it to ossification of the coronary arteries.

Dr. John Wall, of Worcester, in a letter to Dr. Heberden in 1772, reminded the latter that he (Dr. Heberden) acknowledged he never saw any one opened who had died of this disease.

Dr. Wall then proceeds to detail the appearances presented on examination of the body of a person who had died of the affection, and as his statement of the symptoms and *post mortem* inspection is remarkably exact, I deem no apology requisite for the transcription.

Dr. Wall lays great stress "on the pain under the sternum, extending on each side across the breast in the direction of the pectoral muscle, and affecting one or commonly both arms, exactly where the muscle is inserted into the os humeri." This physician met with thirteen cases, and of these ten died suddenly.

"The subject examined was sixty-six years of age, and had been six or seven years subject to the complaint. He was a short, well-made man, inclined to be fat, who, in the former part of his life, had had several very severe attacks of the rheumatism. For two or three years he only felt a very slight pain and tightness across the breast and arms, upon walking a little faster than ordinary. By slow degrees this increased, till at last he could not walk, but in a very slow pace, and with great difficulty. He could not go up stairs, nor lie down without bringing on a dyspnoea, or rather a sense of suffocation. He was free from cough till towards the latter end of his illness, and then a very troublesome one came on, attended with a hoarseness. His pulse was never irregular, but always small, and during the paroxysms it sank so much under the finger, that it could hardly be felt. He died after having struggled in the fit about two hours.

"On inspection, the surface of the pericardium was covered with fat, nearly an inch in thickness. The lungs were greatly distended with very dark blood. They were full and hard, and in the cavity of the thorax was a very considerable quantity of an aqueous fluid. Cutting into the lungs, frothy mucus, mixed with something purulent, and of a foetid smell, issued from every part, but chiefly from the divided bronchi. . . . Upon opening the pericardium, the heart appeared of an enormous size, and was covered with a great quantity of fat. The pericardium contained not less than a pint of fluid. Upon examining the heart, no part appeared diseased, till we opened the left ventricle, and there the semilunar valves placed at the origin of the aorta were found to be perfectly ossified. They did not, as usual, lie flat upon the divided orifice of the vessel, but stood erect, and appeared to be immovable. They were entirely osseous through their whole substance, but the ossification was formed unevenly, and as it were in spines, some parts being near a line in thickness, and others thin, like a connecting membrane, but perfectly bony. The aorta at its curvature was considerably enlarged, and for near an inch from the heart was in part ossified, there being several bony scales or laminae on it, but not connected with one another.

"The origin of the disorder," says Dr. Wall, "is here evidently to be traced from the induration of the semilunar valves, which existed probably in a less degree for several years, and increased gradually till it came to a bony hardness and immobility. It is possible that this induration of the semilunar valves may not always be the cause of the disease, though it seems not improbable that some malformation in the heart, or vessels immediately proceeding from it, may be so. Indeed, when we consider how frequently such indurations in the valves of the heart have been found, that the disease in question does not come on till a person is advanced in years, and consequently until a rigidity in every part naturally comes on, we shall be inclined to imagine that a preternatural induration of the parts necessary to the circulation of the blood, through the heart, may be the predisponent, if not the efficient cause of the disorder."

In a fatal case of Dr. Fothergill, "the only morbid appearance was a small white spot near the apex of the heart;" and in an instance recorded by Dr. Haygarth, "the heart, lungs, and pericardium were perfectly sound."

Referring to more modern authorities, we find that Laennec arranges angina pectoris under *neuralgia of the heart*. He says "it is a spasmodic affection, which returns in paroxysms after longer or shorter intervals. . . . Angina pectoris, in a slight or middling degree, is extremely common, and exists very frequently in persons who have no organic affection of the heart or large vessels. It is certainly true that this affection frequently coincides with organic disease, but nothing proves even then, that it depends upon such diseases, inasmuch as they are of various kinds, and as the angina exists without any of them. Of subjects examined, who had laboured under this disease, in none did I find the coronary arteries ossified. One died suddenly during an attack of angina, and such a result need not surprise us, when so severe a nervous affection co-

* This sign was long ago pointed out by Dr. Sibson.