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Mr Wood,

Reverdy

A satisfactory description of the symptoms, physical signs, etc of the disease.

Correctly says that the pre-hom sounds are not heard except over, or close to the heart, while endocardial murmurs ascend the course of the aorta - Omits notice of a valvular murmur due to disease affecting the mitral - when heard - at last

On Pericarditis; its general history, and treatment.

Pericarditis: its general history, and treatment.

The disease known at the present day under the name of Pericarditis cannot be accurately described in terms concise enough to be presented in the form of a definition; and it will, therefore, be better to follow out in detail the various features of its general history, whereby the nature of the disease, as it is known to us, will gradually become apparent. The disease has long been carefully studied by physicians of the greatest eminence; and their labours, aided by rapidly increasing acquaintance with the sciences of anatomy, physiology, and morbid anatomy, together with increasing skill in diagnosis, have been gradually adding to our knowledge

of this, as of most other diseases. Although the nature of the malady would lead us to believe that it must have existed as a disease to which the human race was liable from the earliest ages of the race, and to expect to find it described in the earliest records handed down to us by physicians, it appears that there is no disease treated of in the works of these writers which can be said to indicate the disease as it is known to us. Various passages in the works of the ancient Greek physicians have been viewed as descriptive of such a disease; but none of the descriptions can be said fully convey the impression that the disease was recognised. It has been said that what they called *paraphrenitis* must be held as approaching somewhat closely to it. Something very similar to it seems to have been described by the Arabian physicians: but it is only in comparatively recent times that anything like a scientific acquaintance with it has been attained.

Pericarditis is a disease of an inflammatory nature, ~~primarily taking effect~~ in the pericardium, as its name implies; ~~and~~ and accompanied

by symptoms more or less marked in different cases, by which it can be recognised with greater or less certainty in most cases. It is believed to occur only as a sporadic disease; and this may be affirmed with considerable certainty of the disease when it occurs separately from other diseases. But it is more frequently, perhaps, met with in connection with other diseases, and with certain diseases in particular, to which it sometimes owes its origin. Although the idiopathic form of the disease, then, may be held to a purely sporadic disease: but it has been said to prevail in an endemic form, so far, in some parts of the world; namely, in the districts of Finland and Courland, and in other parts adjacent to the Baltic Sea. It is said to occur in these countries in an endemic form with scurvy. No particular time of life can be said to be exempt from it; although some periods are more prone to its attacks than others. It may occur as a severe, acute, disease; or as a chronic, and less intense, affection; the former generally, but not always, more apparent in its action; the latter more insidious in its operation, but not always less fatal.

What are the symptoms presented by the disease in its acute form? A certain series of phenomena are to be observed by taking into account the general manner of the patient labouring under this disease, as well as from his own account of his sensations, which it is proper to enumerate, supposing a typical case of pericarditis before us. We shall find the patient restless, complaining of pain, difficulty of breathing, perhaps troubled with cough, and several other ailments which sufficiently betoken that he is labouring under disease. If interrogated as to how the attack came on, he will probably state that the present symptoms were ushered in by general uneasiness, pain in the chest and feverishness. Several symptoms have been laid down as constituting a group of premonitory symptoms, or initiatory symptoms, as they would be more correctly called. It is said that a peculiar expression of countenance is observed: but Hunaud

and other symptoms shewing themselves at the very outset of the disease are probably too vague and indistinct to be of much use to the physician; for he will seldom have an opportunity of seeing them. Moreover, these symptoms are likely to be common to many other diseases, not only of the chest, but of other parts of the body. Supposing, then, that the disease has fairly commenced, the first prominent symptom which comes under our notice is the pain. The pain is seated in the cardiac region, and is referred to that region by the patient himself; but it may extend to a considerable distance beyond it, to the shoulder of that side, and sometimes down the arm. Conjoined with it, there may be a degree of stiffness about the shoulder and arm: but I should think that the stiffness is only observable in rheumatic pericarditis, which is a form very often brought under the notice of the physician.

The pain is found to be increased on pressure upon the precordial region, or upon the epigastrium. It is not likely that pain can be absent in the acute disease; although it may be in the chronic form. The pain is also increased upon taking a full inspiration; a fact to which the imperfect breathing is partly owing. It is a pain of a severe character, in many cases causing the patient to cry out, or at least to moan now and then. Accompanying the pain and tenderness about the epigastrium we may have a sensation of oppression there.

The manner in which the patient breathes no less indicates Disease. His breathing is more hurried than usual. The inspirations are effected in an imperfect, hesitating manner, as if the patient feared to draw a full breath; which is really the case, as he finds it occasions an increasing of the pain, with often a bounding of the heart, which greatly alarms him, as it causes him to feel as if he would be

suffocated. The pain, then, is one cause of the difficulty of breathing in the earlier stages of the disease: but genuine dyspnœa seems to exist, independant of the studied manner in which the pain causes the patient to conduct his respirations. In the more advanced stages of the disease, when certain morbid processes have taken place, such as that which consists in the effusion of serous or other fluid into the cavity of the pericardium, in such quantity as to distend it greatly, the pressure thus exercised must of course considerably influence the inspirations. In such cases as those which are mentioned by some observers, in which the distension had taken place until the effused fluid extended up to the level of the second rib, the Dyspnœa is well accounted for. It would appear to depend, in some degree, upon reflex causes; inasmuch as the Dyspnœa is not mitigated when the patient is fortunate enough to be able to snatch a little sleep, when the pain

may be supposed not to influence his breathing, and at a stage previous to distension by effusion of fluid.

The difficulty of breathing is also attended by a cough of an abrupt, hacking, kind, said to be peculiar, but perhaps resembling that of some other thoracic diseases. It is not generally followed by any expectoration.

The attitude of the patient is peculiar, and is due to the pain and difficulty of breathing just described. To avoid the pain caused by pressure upon the ribs, he carefully avoids lying upon the left side; and to facilitate his breathing he prefers to lie with his head and shoulders somewhat raised. But he may be restless, and may try a new position every few minutes.

The countenance wears an anxious and distressed expression; sometimes betokening the acutest suffering; and sometimes distorted into the peculiar expression commonly called the 'sardonic grin;' which is occasionally marked. In one case

of acute pericarditis which I had an opportunity of watching, this expression was more or less visible during the whole of the acute attack, and it was slightly marked several months after the recovery of the patient, or at least his temporary recovery.

The patient will also complain of a feeling of anxiety, and of palpitation and fluttering of the heart. Sometimes the heart 'leaps to his throat' as he may call it, and he feels as if about to choke. This symptom is increased by certain attitudes. The general system of the patient will indicate that fever is present; which may be the fever caused by the severe local disturbance or it may be the fever of some other disease, such as rheumatism. The pulse will indicate the febrile state; and there will be irregularity of the pulse, corresponding to the boundings and flutterings of the heart. It will be quicker than usual, sometimes jerking, and in the acute disease nearly always betokening

severe disturbance. In a more advanced stage, it may be scarcely perceptible. In the rheumatic forms the disease, there is often a profuse sweating: the sweat having a peculiar sour odour, which is very disagreeable, and the patients' underclothing may soon be saturated with the excretion.

The patient will be found to suffer much from want of sleep in the acute disease, owing to the fever, and to the localised pain; and it is so far a favourable symptom if he can procure natural sleep to refresh him. It is probable that want of sleep may have a good deal to do with the termination of the disease in a favourable or unfavourable manner.

The bowels will generally be found to be constipated and the tongue loaded, as might be expected.

Lastly, there is an outward sign which is sometimes presented, betokening the violence of the local disease; namely visible bounding of the heart in a violent manner.

A very serious set of symptoms which may present themselves in pericarditis yet remain to be considered; namely, symptoms of cerebral disorder. They may appear when the pericarditis is uncomplicated, unless with endocarditis, or when the inflammation has extended into the muscular substance of the heart itself — an extension of the disease which is probably very frequent in rheumatic pericarditis. But is in cases of pericarditis occurring with renal disease that such symptoms may be expected to show themselves with more certainty. In such cases, it is a question which has yet to be decided, whether the head symptoms be due to the pericarditis, or to the effects of the renal disease, or to both affections.
These head symptoms have long been observed in connection with pericarditis, whether complicated or uncomplicated. It is not easy to explain them. The theory of <u>metastasis</u> was long held to afford sufficient explanation of them; and some physicians

still adhere to this explanation. They do not by any means always occur in connection with pericarditis: and it must be held to be a fortunate circumstance; for those cases in which they are present are certainly of a more aggravated kind. Symptoms of cerebral disorder must be held as of serious import in any disease. These indications of disturbance of the functions of the brain may present themselves in various forms, and in various degrees of intensity. The danger of the case may be held to be great in proportion to the severity of the cerebral disorder, when that is present. In some cases the patient will be observed to undergo a change in his manner, as the disease advances. Hitherto he may have been moderately patient under his suffering, quiet, and rational in his conversation and actions. But he may now be observed to become restless; the expression of his face undergoes a marked change, perhaps assuming a vacant, dreamy look.

The eye may indicate a more perturbed state of mind than existed hitherto; or it may assume the dreamy look, and remain fixed on vacancy. Before, he was quite rational; and answered clearly every question put to him. Now, he may remain obstinately silent to every question, only staring at the speaker. He may remain silent, stubborn, and abstracted, yet quite conscious to the very last. Again, the merely restless manner of the patient may become more excited; he will look and talk wildly; and attempt to spring out of bed. He will resist every attempt to give him medicine, or food, or drink; and will sometimes display considerable cunning to avoid taking these substances. The delirium may not go beyond this: but it very often reaches a more demonstrative condition. The patient may now become quite furious, and may exert much strength, in resisting the attendants who endeavour to restrain him. His talk is now utterly incoherent; and everything betokens

intense excitement of the nervous centres. Convulsions may now supervene, if they have not done so already; and they may be mere twitchings of the muscles of the face, or even spasms of a tetanic character. Coma now approaches; and the scene, more or less gradually, is brought to a conclusion. The above-mentioned symptoms may, or may not, occur; and, when they do occur, they may be infinitely modified in individual cases. As they are of serious import, they ought to be carefully kept in view in a case of advancing pericarditis: while on the other hand, care must be taken that they are not permitted to engage so much of the physician's attention as to lead to forgetfulness of the primary disease, or even to its being overlooked altogether — a result which has happened in many cases. They seem, in many cases of pericarditis, to be the immediate cause of death — or, rather, death is often caused by the cerebral disturbance which they indicate.

It may be that cerebral symptoms are the only signs of disease; or they may, at least, be so very prominent, as to appear the only outward manifestations of disease. Certainly, cases have been described, in which acute physicians have recognised no other signs; and yet these cases have turned out to be cases of pericarditis.

It was mentioned above that the theory of metastasis had been adduced in explanation of these cerebral symptoms. By that theory we were led to suppose that the disease which had attacked the pericardium shifted to the brain, and gave rise to the symptoms alluded to. Now, as to the disease affecting the pericardium, we have the physical signs and the post-mortem appearances to assure us of the existence of structural change in the tissue attacked by the disease. The disease is inflammatory; and, as such, must leave its marks behind it. But in the cases of the so-called meta-

stasis, do we find evidence of the disease in the cerebral structures? There would seem to be but very slender evidence indeed for answering this question in the affirmative. As far as I am able to ascertain, the majority of cases in which head symptoms became manifested presented little or no disease in the cerebral structures at all; and if any, certainly not the disease existing at the part first attacked, that is, at the pericardium. If there has been metastasis, it certainly is not metastasis of the inflammation; not metastasis in the ordinary acceptation of the term. There is no migration of the disease. It is still raging at the original spot. There may be a change in the state, condition, or character of the disease: but we cannot believe that; since the primary disease remains, intensified, and only changed in degree.

In the cases recorded and carefully described by Andral, Latham, and others, these symptoms seem to have been

developed with sufficient distinctness. Indeed, in some of the cases, no other symptoms were observed, or recognised, so prominent were the cerebral symptoms. The cardiac symptoms were masked. Yet we are told by these authorities that, after death, no structural changes were found in the brain, which might enable us to explain the marked, even violent, functional disturbance which had manifested itself so unmistakably during life. In most of the cases no decided diseased condition of the encephalon was found; and in some cases it might be possibly affirmed that no disease was found at all — which is all the length we can go at present; since we can scarcely take upon us to assert that it is impossible that disease could have existed at all, because it was looked for and was not found. In all, or nearly all of the cases of which I have read, the heart or its membranes presented

signs of the disease with which they had been attacked. They presented products of inflammation in some shape or other. One case I beg to mention, as it is a very striking one. It must be owned that it is one of the most striking of the class. It is related by Andral:— The patient, a woman, was first seen by M. Andral when in the delirious condition, which shewed itself in obstinate taciturnity, which lasted for two days longer. Then convulsive movements set in. The taciturnity gave place to rambling talking, which, with the eye and the manner, sufficiently denoted the mental disorder. The delirium ceased after a time; but the convulsive movements remained, and became aggravated. Tetanic spasm ensued; and at last the patient sank into a comatose condition, and died on the fifth day. The post-mortem examination revealed no disease of the cerebral structures whatever, but

abundance of evidence of disease in the pericardium, which was adherent to the heart, and contained a considerable quantity of serous effusion.

Dr. Watson says of this description of cases;- "In all detailed cases of this kind that I have met with, and in those which I have myself watched, there were certain points of similarity —— the pulse was extremely rapid; the delirium, though ~~rapid~~ violent and active at intervals, was characterised for the most part by a singular, and, as it seemed, a perverse taciturnity; even when the patient was evidently able to speak, and understood the questions put to him, he maintained a sullen silence. In most of these patients, also, not long before the fatal event, a brief interval of amendment took place, and encouraged some hope of recovery. In many of them various convulsive movements were observed; and in two of the cases the head symptoms, and probably the heart disease also, supervened after a relapse

of the Articulations of the joints."

As not one, perhaps, of all the above-described symptoms can be said to be characteristic of Pericarditis alone; we can only view them as important in connection with the physical signs soon to be considered. In order that the value of the physical signs may be understood, upon which the treatment must be mainly based, it will be better to discuss the morbid processes whose signs we are to look for.

The pericardium is a membrane composed of two layers, a fibrous and a serous layer; and is liable to be affected with two different forms of inflammation; inflammation as it operates upon fibrous tissues, and in inflammation as it acts upon serous membrane. These two forms of disease run on to different

results in the two tissues just mentioned. A knowledge of the respective products is of service in diagnosis, and must not be lost sight of.

When the pericardium is subjected to the inflammatory process, effusion more or less abundant takes place in due time. The effused fluid may consist mainly of serum, or of serum mixed with a considerable proportion of liquor sanguinis, which adds greatly to the plastic properties of the exudation. Occasionally a little blood is effused. The effusion of plastic matter takes place both upon the external and internal surface of the membrane. The amount of plastic matter in the exudation will depend, as has been remarked, upon the constitution of the patient, which gives a character to the inflammation. In a robust man we may expect an exudation of highly plastic properties; and vice versâ. When a pericardium is seen after an exudation has been formed of a plastic character, it will be found to present an appearance more or less villous.

This appearance would seem to be produced by the rubbing of the heart in its movements against the pericardium, over the surface of which has been spread the organisable matter. The first step in the process of organisation of this fluid substance would seem to be the parting with a portion of its watery or serous constituents; whereby it becomes as it were more glutinous, and adheres for a to the surface of the heart; the tendency of the semi-fluid substance to adhere being increased gradually and slowly by the continual attrition. Laennec's comparison of its appearance to the appearance seen upon suddenly separating two slabs of stone, between which soft butter has been placed, is well known; and several observers have given similar comparisons. By some it has been seen to present an appearance like the surface of a piece of tripe: and others have found it formed into nodules more or less polished by attrition. The organisable lymph may also be present in the form of flakes floating in serum.

The lymph thus poured out as a product of inflammation may undergo changes; either towards a higher organisation; or it may remain almost stationary; but, more likely than the latter case, it may undergo wasting or absorption. The further organisation of the coagulable lymph, one of the forms in which the disease may terminate, is effected in the usual way. Supposing it to be adherent to the surface of the heart, or to a layer of similar substance effused upon the surface of the heart, the formation of a membrane out of these layers, by the formation of bloodvessels, will be as easily understood as in the case of similar effusions in other parts of the body. The foreign matter being spread generally over the two surfaces, and becoming duly organized into a membrane, the viscus and the shut-sac investing it will be intimately agglutinated; so that the viscus no longer moves in its investing membrane. But the adhesion may take place in all degrees from universal adhesion, to the most

limited. The viscus and the sac may be adherent at one considerable spot only; or they may be glued together by numerous small adhesions of the villous kind already spoken of. If there be much adhesion the result is, of course, a corresponding amount of interference with the liberty of the heart's action. The patient may recover so far with a partial adhesion; and its effects may not be much felt for the remainder of his life: but more generally it will be productive of much discomfort; and to it may attributed palpitation and flutterings of the heart, and further changes in the heart's action, which may ultimately produce a fatal result. One way in which it may do this is stated by some authors to be by its producing hypertrophy of a portion of the heart, or of its entire muscular substance; the clogged action of the organ rendering greater muscular development necessary to enable it to fulfil its functions. Again, it is said that if the adhesion should be formed in early youth, atrophy of the organ will be the result,

owing to the further growth of the organ being prevented by the pressure of the pericardium. But the authors who speak of this result seem to overlook the circumstance that if the heart is growing in youth, so is its investing membrane. If atrophy be a result at all, it seems to me that it is fully more likely to result from adhesion in adult life or in advanced life than during adolescence. It may be confidently affirmed that a man with an adherent pericardium will, at least, have a shorter term of life owing to that circumstance, 'other things being equal'.

As to the effusion of serum which may result as a consequence of pericarditis; it is difficult to say what amount is incompatible with health. The amount actually poured out varies very much, according to the intensity of the disease. When there is a great effusion of serum, the inflammation is viewed as of a more asthenic kind. Serum to the amount of many ounces has been found in the pericardium.

ten ounces, twelve ounces of this fluid have been found: and it is even said that the amount has been measured by pints; but these latter must have been extreme cases, in which probably there was a pre-existing morbid condition, or a morbid condition, of the pericardium. As to the dangers arising from effusion: these will be greater in proportion to the quantity of the effusion; the fluid pressing upon the heart and the roots of the great vessels. Death may take place directly from effusion; when a large amount has been rapidly poured out, and no corresponding absorption taking place.

Pus may be formed in the pericardium as a result of the inflammatory process. If in large amount, pyæmia is apt to prove fatal. It is not so common as the other products in pericarditis.

Besides the changes which have been described above, there are several others which deserve notice. The pericardium may present the spots called 'milk patches', and cream-coloured patches. These latter may not be confined

to the pericardium, being found in the heart also. Mr. Paget is inclined to view the 'milk patches' as products of true inflammatory action. Dr. Hodgkin and others attribute them to the effects of the rubbing of the pericardium against the wall of the chest, on which surface they are most abundant, if they are not exclusively found on the anterior surface of the parietal layer of the pericardium. Their origin has not yet been made out with sufficient certainty; and this remark applies equally to the above mentioned cream-colored patches.

Pericarditis, in the great majority of cases, is a serious disease. It can seldom be otherwise, considering the effects of the inflammatory process acting upon the membrane inside of which the heart plays. But it is very often rendered more serious by complications. The head symptoms described above may be viewed as a complication of the primary disease; since they frequently rise to a severity greater than that of the primary disease.

Again, it is liable to be complicated in a very serious manner by the inflammation extending to the substance of the heart, and to its lining membrane, and valvular apparatus. It will be a wise precaution on the part of the physician to watch carefully for the signs of carditis, endocarditis, and valvular disease; especially in rheumatic pericarditis. There is reason to believe that most such cases tend to become complicated by the extension of the inflammation in this manner.

As to the causes to which pericarditis is generally ascribed,— they may be enumerated as follow:- wounds of the region of the pericardium from external violence, fracture of the ribs or sternum, rheumatism, Bright's disease, scurvy, pyæmia, injury of œsophagus, &c. These accidents and diseases from which the pericarditis may arise, will in themselves constitute complications as concerns the treatment, which will be modified to a very important extent by some of them. Another morbid condition ought to have been mentioned, which may be the cause

in some cases, and in others may constitute an important complication; namely, pleuro-pneumonia of the left side. It is said to be a pretty frequent cause and complication. The tendency of the enquiries into the subject of pericarditis of late years has been to throw considerable doubt upon what was once considered quite undeniable, that pericarditis may occur as an idiopathic disease.

The dangers and terminations of pericarditis of the acute form are such as are to be surmised in a general way from a consideration of the morbid changes. In a few cases the patient will die suddenly, under the acute attack; a result which appears to be more commonly due to large serous effusion. But sudden death may take place in patients labouring under acute pericarditis; and yet it may be found that there has been no effusion to any great amount. In such cases it is to be suspected that the inflammation

Dr. Watson says, "Inflammation thus affecting both the external and internal membranes of the heart, in acute rheumatism, I would call rheumatic carditis". Of course the term is somewhat incorrect according to the explanation he gives of it; but he seems elsewhere to imply that the heart itself is affected.

has extended to the substance of the heart and to its lining membrane. Indeed, some observers speak of 'rheumatic carditis' as a disease including inflammation of the heart and inflammation of its membranes. Dr. Watson seems to use the term in this sense; owing to his having observed so many cases to present signs of this extention of the disease. He speaks of having seen six or eight fatal cases in which the disease had left traces in the inside of the heart, which would give reason to suppose that the fatal result had, in greater likelihood, proceeded from the endocarditis rather than from the pericarditis. In his "Lectures", Dr. Watson speaks of the appearance which these cases presented, and which he seems to discovered independantly of other observers. They have since been repeatedly verified. In such cases, the organizable exudation appears to be deposited principally around the

the valves of the heart, and in their neighbourhood. The valves may be thickened, rendered opaque, and puckered; changes which are, according to the observer just mentioned, due to the deposit of lymph beneath the membrane. "Sometimes they are "folded down, and glued, as it were, "to the opposite surface." "This must be "by coagulable lymph deposited on "the outer surface of the membrane. "But more frequently they present more or "fewer of these wart-like excrescences — and "which are upon the free surface of the "membrane". In a fore-going part of his work he describes them as being sometimes separate, sometimes arranged in rows like beads; sometimes presenting a cauliflower shape. At other times they are found in the form of strings, and in the form of cylindrical excrescences.

In cases in which the inflammation has produced such results in the interior of the heart, there is little

but that much impairment of the functions of the valves will exist; and careful examination will enable the physician to satisfy himself of the extension of the disease. Such cases, of course, are seriously endangered by the additional morbid products in such an important locality. There is reason to believe that such results are very common in cases usually looked upon as cases of simple pericarditis. It appears that the very first fatal cases of rheumatic pericarditis which fell under Dr. Latham's notice, after Dr. Watson had pointed out the abovementioned excrescences to him, were cases in which the same results had taken place. They also had become cases of endocarditis. Thus, then, the presumption is strong that pericarditis is liable to merge into, or to be complicated with, endocarditis, and perhaps carditis; in which case the dangers of pericarditis are obvious

much increased; and sudden death may take place during the acute illness; or the patient may recover with the valves of the heart more or less injured, and he may at no distant date, die from the effects of the traces which the disease had left.

The termination in <u>adhesion</u> may also be a dangerous one. It is the opinion of many eminent authorities that its results are always serious, and that it must always tend to prove fatal sooner or later. Dr. Hope, for instance, is of opinion that it is always a formidable result, and that it very often proves fatal. But many equally good authorities hold the contrary opinion, and say that a considerable proportion of cases which have terminated in adhesion were to be regarded as favourably and fortunately terminated. Cases of this kind are those in which adhesion had manifestly taken place, yet in which little or no

inconvenience was felt during the remainder of life. Morgagni is of opinion that if adhesion takes place, the patients life will not necessarily be curtailed. Laennec speaks of cases in which no complaints existed in after life; and in which no physical signs of disease were detected, except that the contraction of the auricles took place with a different sound from that heard in health.

Of the forms of the disease in which a large amount of fluid is poured out into the cavity of the pericardium, that in which the fluid is mainly or altogether serous is perhaps the most prominent, as it is the most frequent. As has been mentioned above, death may be caused during the acute period of the disease, if the effusion be suddenly poured out in large quantity, and if no absorption take place. The death may be very sudden, in the form of syncope, from severe pressure upon the heart and origins of the great bloodvessels. But absorption of the fluid may take place; giving a good

chance of at least temporary recovery; and leaving behind perhaps only a small quantity of organizable matter to form partial adhesion: or the serum may be all absorbed, and yet so much lymph may remain as to suffice for complete adhesion being produced.

It ought to have been mentioned before, with regard to the occurrence of adhesion, that the agglutination may take place at almost any part; at the base of the heart, at its apex, over the right ventricle, over the left ventricle, over the auricles, and at the roots of the vessels. It is stated, how correctly I do not know, that the most frequent sites are at the base and about the origins of the vessels. The bands of adhesion may be thick and strong; or they may be thin and lax: or the medium of adhesion may be too extensive to be termed a band.—

I believe it is held that death may occur in pericarditis from pyæmia. This form is, however, much less common than the others.

Death may also result from effusion of a

mixed fluid, consisting of serum mixed with a greater or smaller quantity of pus. In this case the chance of the fatal result is twofold; the serum acting by its pressure; the pus as a poison which may be received into the circulation.

Death may take place in pericarditis from a cause upon which the head symptoms already spoken of depend, whatever these causes may be. This result may be produced by violent sympathy of the nervous centres, the brain and spinal cord, induced by the severe local disease— but this is a vague hypothesis, and leaves us as ignorant as before: or it may result from an altered state of the blood, which acts as a poison upon the nervous centres— also an hypothesis, although perhaps a plausible one. Lastly, the death beginning at the nervous centres, in the form of coma, convulsions, or tetanic spasm, may be the result of metastasis, according to the theory already mentioned.

It would appear that death is seldom traceable to the effects of the fever of the acute disease.

Finally, it is probable that the pericarditis may terminate in recovery, in so far that the only traces of the disease may be the condition already spoken of under the name of 'milk-patches'. But, as was mentioned at that place, it is not by any means certain that these appearances are due to inflammation.

In obedience to a law of universal application, the duration of the disease is influenced by the essential nature of the malady; and, if it be a true inflammation, and if it become really developed, it will run a certain course; subject, however, to modifications from the peculiarities of the constitution of the individual, from his period of life, from his habits of living, &c.; and subject, there is reason to believe, to modifications arising from remedial interference. The disease having once attacked an individual, the chance is that it will leave its traces behind; and the parts in which the morbid products are implanted are, according to a law of disease, be thereby rendered more liable to the action of morbific

influences. They may be attacked by the same disease again, or by other diseases; or they may act as predisposing or as exciting causes of subsequent morbid processes to be developed in them or in other parts.

The physical signs of Pericarditis must now be alluded to; although but briefly. The morbid processes and their results having been pretty fully discussed, it will not be necessary to say much more of the physical signs than to state what they are. The physical signs, then, are chiefly those elicited by auscultation and percussion. Let us suppose that auscultation is practised over the heart, at the period of the disease when the lymph has been effused upon the surfaces so as to roughen them; then a characteristic sound will be heard. This sound has been variously termed a 'friction' or 'rubbing' sound, a 'rasping' sound, a 'grating' sound, and a 'to and fro' sound. It is to be supposed from this

apparent discrepancy, that the sound varies considerably in intensity and in other respects in different cases, and at different periods of the disease. All these circumstances must be kept in view by the auscultator. It may disappear more or less gradually, after it has been once heard; indicating, probably, that adhesion has taken place; or, as some think, owing to the lymph having been removed by the large effusion which may have followed it. It is first best at the apex, and then at the base. It may vary according to the position of the patient.

The chief difficulty which exists in the case of a murmur being heard in such circumstances as the above is, that the sound may not be a pericardial one, but may proceed from the interior of the heart.

The pericardial murmurs are to be recognised by their independance of the sounds of the heart, by their not being heard much beyond the heart itself, by their not being heard along the aorta. These are negative characters distinguishing them from the

endocardial and aortic murmurs; which the auscultator ought to be weigh against the characters of other sounds which he may hear along with them in a great many cases. As has been mentioned before, the auscultator may hear sounds belonging to endocarditis and carditis, as well as the sounds of pericarditis. Some observers speak of a sound attending the initiatory stage of the process, namely, when the membrane is dry.

The aid we derive from percussion in the detection of the changes which take place in this disease is very important: inasmuch as we can pretty safely determine whether effusion has taken place or not, and to what extent; as well as when it begins to disappear; all which it is very important to know in the treatment of the disease. The occurrence of effusion then, is known by a dull sound being elicited on percussion over a space, corresponding to the pericardium, and varying, of course, in size with the amount of the effusion, but the dull space will be larger than in health.

When the effusion proceeds to a great extent, and if pressure be thereby be effected upon the heart, we shall have the pulse to inform us; as well as palpation over the cardiac region itself, to acquaint us of the danger. The mode of palpation may be often advantageously used in detecting the existence of rough deposit of lymph; a peculiar thrill being communicated to the hand if friction is going on.

Treatment. The indications will be to attend to the local and the general disease – to the pericardial disease, and to the fever. Physicians have long striven to cut short this, as well as other inflammations. But it may be safely said that the disease will run a certain course in spite of what we can do, short of killing the patient outright. But it may be as safely said that the inflammation may be greatly moderated. In doing what we can to moderate the inflammation, care

must be taken that we do not run to opposite extremes of treatment, that we neither use such violent means as to endanger the patients life of themselves, nor yet allow the morbid processes to take their own way. Very few people would care to use venesection at all now-a-days in pericarditis, except the few advocates of the extremely heroic treatment. The greater number of physicians will only employ it in the severer cases; when there is a strong fever, in a robust constitution, and at a favourable period of life. In such cases, doubtless, it is capable of being used with much benefit, if employed at the proper time, and to a proper extent. Those who advocate and practice the heroic treatment err less in using a dangerous remedy, than in applying that remedy to every case. There is little doubt that there is no one remedy which deserves to be vaunted as universally applicable in that way: and it is the merit of modern practice that such opinions are gradually losing ground, and are but seldom acted upon.

Statistics prove to a certainty that cases of

this, or of any other similar disease, treated in the indiscriminating way alluded to, have more fatal ones among them, than an equal number of cases of a similar kind treated according to the peculiarities presented by the individual cases. A more generally applicable means of limiting, to some extent, the morbid processes of exudation and effusion, will be found in the local abstraction of blood, by means of leeches, or by cupping. These remedies seem to answer the purpose well in some cases; and had better be tried before the more serious remedy of general blood-letting, should the case prove such as to render the latter advisable at all. These remedies may of themselves produce some abatement of the disease: or may require to be supplemented with such medicines as are held to exercise some influence in restraining inflammation. Among these are calomel and opium, mercury applied by inunction, antimony carefully employed, and several others more or less applicable in similar circumstances. The property attributed to iodide of potassium and other medicines of promoting absorption may recommend them in such cases. Other local

means than those mentioned above may be used; such as blisters, repeated if necessary, various medicated ointments, dry-cupping &c. I believe the seton has been employed. All the above mentioned remedies may prove valuable in suitable cases; but it is too true that they will not unfrequently prove unavailing. They must be employed with a watchful eye to the ordinary constitution of the patient, his time of life, the state of his health previous to the acute attack, and various other circumstances which will suggest themselves to the thoughtful practitioner. Above all, particular attention must be directed to ascertaining the complications, what other diseases are coexistent, and what modifications or additions will require to be made to suit them conditions. Of course, along with the remedies directed to the local disease, if that be of an acute form, the state of the system must be carefully attended to; the usual antiphlogistic regimen being employed, with purgatives and other medicines, if necessary; and this part of the treatment also being conducted with an eye to the nature of the complications, should any such exist.

Of the treatment of the disease in a chronic form, it is sufficient to observe that the case will not call for the more active remedies; and that slight local abstraction of blood, dry-cupping, counter-irritants, and such like will generally be found to give as much relief as the case is capable of. The internal administration of mercury is employed by many; but its effects are not very satisfactory. General blood-letting is clearly out of the question.

Some authors speak highly of the benefits of opium in some cases of pericarditis; and say that there is a marked toleration of the remedy. It must be carefully employed of course; especially in those cases in which the head-symptoms threaten.

Should the effusion be so extensive, and should it appear that no absorption is likely to take place before the effects have reached such a height as to produce paralysis of the heart, the operation of paracentesis pericardii is recommended. Of course, it must be viewed as a last resource; as it involves much responsibility.

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