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SECTION ON PRACTICE OF MEDICINE.

CHAIRMAN'S ADDRESS—A REVIEW OF ULCERATIVE ENDOCARDITIS.

Read before the Section of Practice of Medicine at the Forty-fourth Annual Meeting of the American Medical Association, held in Milwaukee, Wis., June, 1893.

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Gentlemen:—To begin with, let me thank you for the very great honor that you have done me in electing me your chairman, and also for the ready assent that many of you have given to read papers and to take part in the discussions at this meeting. Your estimable secretary, Dr. Webster, and your chairman have done their best to provide a program that should be of interest to the Section and a profit to the profession, and it is to be hoped that before the conclusion of the session the members will congratulate each other upon the good work that has been accomplished.

In turning to the matter of the address which the chairman, by the requirement of our by-laws, must read before the Section, it has seemed to me better to select a single topic that is likely to be of general interest, rather than to make the vain attempt of reviewing the progress made in internal medicine throughout its wide field. Therefore, as a subject that seems to be as yet very unfinished, and one that has received, and yet will receive much careful study, and one that is likely to provoke differences of opinions, and perhaps interesting discussion, I have selected ulcerative endocarditis and its relations to other inflammations of the endocardium. Only a few years have passed away since the profession was content to say of endocarditis that it was a simple inflammation of the lining membrane of the heart, generally the result of rheumatism. After the appearance of Osler's classical lectures in 1885, it became clear that in some cases at least, the disease was special, and so arose the custom of speaking of simple endocarditis, acute and chronic, and malignant or ulcerative endocarditis. The extremes of this position as a result of further study, have gradually approached each other, until it seems proper to efface the separating line, and to speak of the inflammations of the endocardium not merely as one process, nor as two processes, but as the results of a great variety of specific diseases which express themselves—sometimes by hyperæmia swelling, and connective tissue proliferation, sometimes by vegetations, sometimes by loss of substance and sometimes by combinations of these processes.

Apparently the time has come for abandonment of the term simple endocarditis as a really distinctive term. True, we can not always say just what special infection is at work, nor can we always discover the

path of the invading organisms; but that, we perceive, is unnecessary, since many bacteria remain latent, dormant tenants of the body until the powers of resistance are depressed by some purely incidental influence or affection, upon which the parasites finding the individual no longer refractory, are able to reproduce themselves, and take on hurtful attributes, of which formerly they were not possessed. They naturally select a convenient and fertile soil, and while they occasionally find this in the lungs, liver, spleen, kidneys, the meninges, and the serous coverings of joints, they not infrequently find in the tissues of the endocardium the most appropriate field for their manifestations.

This view of the matter is substantiated by bedside studies and by experiments upon animals, and is apparently satisfactory except when the acknowledged intimate relationship between rheumatism and endocarditis comes up for settlement.

With this rheumatism question there is undoubtedly a difficulty, and it will not be removed until we are able to explain the nature of rheumatism. If we adopt the theory of rheumatism, the cloud becomes dissipated, but if we still cling to the chemical theory of Prout, or the nervous theory of Mitchell, we can not maintain that endocarditis is always infectious. Time and space forbid an adequate discussion of this matter here, but the opinion is offered that while undoubtedly specially favored by certain conditions of the fluids of the body, and exposure to cold and damp, and by unknown hereditary influences, true rheumatic fever can be accounted for better on the supposition that it is an infectious disease than by any other hypothesis so far constructed. Of the irregular, atypical and more chronic forms of the disease it may be said that many of these are not rheumatism at all. No one can safely claim that the arthritic of gonorrhea, scarlatina or dysentery are rheumatic, but how many other specific arthropathies are thus summarily disposed of we do not know. Before leaving this part of the subject, some allusion should be made to endocarditis arising apparently as a direct result of gout, Bright's disease, etc. In such cases it is difficult to determine that the heart involvement is owing to the diseases in question unaided by other factors. Very likely the circulating ptomaines resulting from Bright's, and the nitrogenous waste products belonging to gout may lead to changes in the heart as they do in the arteries. Whatever will produce endarteritis may produce endocarditis. But it is highly probable that this chemical abnormality of the blood is potent in a second way; that is, in making the tissues more vulnerable to other and special influences. We are not in a position to deny that the chemical faults alone are competent to induce the affection; experience leads us rather to affirmation. Still, we are not able to say in a given

case that the toxæmia has not reinforced, rather, and made potential the microbic parasites of the body. And now to ascend from the level of personal opinion it may be held that, in view of facts in our possession, endocarditis is a condition which may arise from any one of a multiplicity of special causes under favorable conditions, and that in its course it may be as variable as the causes are dissimilar.

It will be seen that all forms of endocarditis bear an intimate relation to each other, and that their causes are somewhat interdependent. Nevertheless, it is evident that certain classes of endocarditis are prone to cell proliferations with subsequent adhesions, contractions and further deformities, while others are characterized by ulcerations, soft vegetations and resulting embolic infection, accompanied by severe and somewhat constant constitutional disturbances, and usually having a fatal termination. And so has come about a natural, although somewhat imperfect division of the subject into two classes, one having malignant tendencies and the other not. The former class, with which this paper particularly deals, is now commonly described as ulcerative endocarditis; but the term is faulty for the reason that ulceration may occur in cases following a benign course. The whole matter is too recent for positive assertion.

Cases of ulcerative or malignant endocarditis, depend upon the presence of one or more of a variety of microorganisms. These generally attack the heart as a result of some preceding affection, cardiac or otherwise, and for the most part are capable of exercising their special influence upon various parts of the body.

Of the special causes of endocarditis above alluded to, some excite the disease in a malignant form, and generally induce ulcerative processes. It is of these that I particularly have to speak. We know that it is no longer correct to regard these cases as identical in nature, and the suspicion, first suggested by clinical study, that the cases were open to a kind of classification has been justified by bacteriological investigations. Indeed, certain forms of microorganism have apparently the faculty of inducing endocarditis when introduced into the healthy organism, and a number which have been isolated and cultivated are regarded as special to this form of disease, not having been encountered in other affections.

Weichselbaum has discovered four such, which he calls respectively: *bacillus endocarditis griseus*; *bacillus endocarditis rugatus*; *bacillus endocarditis capsulatus*; and a fourth form which he has neither named nor succeeded in cultivating.

Fraenkel and Saenger have described a motionless fœtid bacillus endocarditis, and Lion and Girode have isolated still another.

Josserand and Roux have found a peculiar staphylococcus larger than the aureus, and Vetti has isolated a septic diplococcus and a micrococcus in cases of this disease.

The *bacillus coli communis* has been found the active agent in the development of several cases of ulcerative endocarditis. Indeed, the *bacillus endocarditis griseus* of Weichselbaum, and the *bacillus endocarditis* of Gilbert and Lion, which have been considered as special to malignant endocarditis, are now thought to be identical with the *bacillus coli communis*, an organism, as is well known, whose pathogenic effects are observed in diverse parts of

the body, and with varying degrees of intensity.

These facts should make us careful as to accepting any single organism as special to endocarditis.

The different varieties of streptococci and staphylococci, either alone or in company, may originate inflammation of the endocardium.

Microbes have been isolated in endocarditis accompanying erysipelas, puerperal fever, typhoid fever, influenza, pneumonia, tuberculosis, gonorrhœa, diphtheria. Interesting in this connection is a case just reported by Dr. W. T. Howard, Jr., of Baltimore, (*Johns Hopkins Hospital Bulletin*, April 1893) in which a malignant endocarditis was found to depend upon a bacillus having morphologically and by culture tests all the characteristics of the bacillus diphtheriæ, although the patient appears to have presented no history of having had diphtheria.

And although the special organisms have not been recognized, it is interesting to remember that the endocarditis either goes with or follows many instances of the eruptive fevers, malaria, rheumatism and malignant neoplasms.

Before the New York Pathological Society, Nov. 9, 1892, Dr. Hodenpyl in presenting two specimens from cases of the disease, spoke of the varied microorganisms found in malignant endocarditis and said that in forty-three reported cases the *staphylococcus pyogenes albus* had been found twice, the *staphylococcus pyogenes aureus* fourteen times, the *streptococcus pyogenes* six times, the *bacillus typhosus* once, the *diplococcus pneumonia* six times, the *tubercle bacillus* once, and the *bacillus fœtidus* (probably the *bacillus coli communis*) three times, while in ten cases the variety of microorganism had not been determined.

We habitually speak of the disease as ulcerative, and yet in some instances there is found very little or no ulceration whatever, but vegetations are luxuriant. A review in *Le Bulletin Medical* (Jan. 13, 1892) says on this matter: "Infectious endocarditis may be ulcerating and vegetating and, to speak the truth, there is no line of demarkation between the two anatomical states. If it is true that in certain affections, acute articular rheumatism for example, vegetating endocarditis ought to be the rule, there can, nevertheless, be produced under the same conditions an ulcerative endocarditis. In the same way puerperal endocarditis, ordinarily ulcerative, may be vegetating. The mode of evolution depends principally upon the medium."

Dr. Frederick Taylor, in the last Guy's Hospital report, presents an admirable contribution on malignant endocarditis in which he says: "From the observations on the bacteriology of this subject already referred to, it appears that the different microorganisms are apt to produce different pathological clinical results. Thus it is stated that some organisms invade the mitral by preference, others the aortic valves; that the conditions of ulceration or vegetation are dependent on the organism."

It will be seen that the French is broader than the English view just quoted; it includes the truth stated by Dr. Taylor, and adds the results of authenticated investigations, showing that the same infection produces results in different individuals.

It therefore seems just to conclude that the nature of the lesion is dependent upon both the infective agent and the condition of the subject infected.

As to the actual seat of the lesions, many careful observations have been reported, and the results

show the interesting fact that in the main the valves are first invaded.

Dr. Taylor remarks that in the majority of his cases, the ulcerative or fungating condition was engrafted upon a preceding valvular disease of the heart. Of the fifty-three cases which he describes, eleven were upon the right side, and the remainder on the left, and in all but one case the process was valvular.

Continental observers have devoted attention to determining whether the malignant process begins upon the surface of the valve or within the structure of the valve.

Saenger maintains that in a pathological state the valves may contain vessels, and in these vessels colonies of bacteria have frequently been found.

So there seems to be ground for the position that the process may be primarily intra-valvular.

Indeed Cornil and Babes have found microbes here when none could be discovered on the surface of the valves, and Hanshalter and Lion were able to discover the organisms in the connective tissue of the valves, when the surfaces were free.

On the other hand, in many cases, the disease undoubtedly first appears upon the free surfaces of the valves, and the invasion is most likely to be at that part where the valves strike together when forcibly closed.

The blood within the heart cavities may be free of bacteria while the diseased valves lodge large colonies, as in the case reported by Sidney Martin in the Gulstonian lectures recently delivered. (*Lancet*, April 9, 1892.) Yet in this case there were found infectious emboli in the cerebral and femoral arteries. Here the disease appeared in the left auricle, and the exciting organism was a staphylococcus growing in clusters and not in chains.

The relative frequency with which this form of endocarditis occurs in the right side is a matter worthy of consideration. The proportion occurring in Taylor's series* practically corresponds with the findings of others, namely: eleven out of fifty-three cases.

Lion has made the suggestion that certain bacteria being aerobic, would grow best in the arterial blood of the left side, and that the anaerobic bacteria would flourish best in the carbonized blood of the right heart, and alludes to the frequency of right endocarditis in the fetus.

However this may be, it will scarcely hold good of all instances, as for example the case reported by J. Jackson Clark at the meeting of the London Pathological Society, November 1, in which an excessively ulcerating and fungating inflammation limited to the right heart and lungs was found to depend upon a streptococcus.

In Martin's Gulstonian lectures above mentioned, he particularly showed that many of the changes and symptoms seen in malignant endocarditis were the result of certain albumoses found in the blood, and more particularly in the spleen. Chemically, these were indistinguishable from similar substances found in subjects of diphtheria and anthrax, although it was not so fatal in the same dose when injected into guinea pigs. It was found, however, to be a potent poison; it excited temperature, and in sufficient amount produced death.

Finally, after these reflections, the claim put forward that, clinically, cases of malignant endocarditis

progress with very different symptoms, will not seem unreasonable.

Those who have observed even a few cases, must have remarked this fact. The physical signs may be of the most striking character or sink into insignificance, and the patient may succumb from the systemic poisoning without evidences of heart lesions or embolic disturbances.

The affection may pass for an acute pneumonia when the invasion is in the right heart and septic plugging of the pulmonary vessels follows; and, as is well known, the distant lesions seen in many cases may distract the attention of men of only ordinary carelessness from the actual seat and nature of the disease.

One often inquires, is the disease uniformly fatal? To my mind the answer must depend upon what one regards as malignant endocarditis. I saw a case succeeding a valvular abscess, and accompanied by a septic inflammation of the neck and right hand, which went on to complete recovery.

Instances of puerperal endocarditis resulting in recovery are reported. Personally, I believe that cases recover, and that it is an error and a misnomer to apply the term simple endocarditis so unhesitatingly to all cases that have a favorable termination.

SOME CONSIDERATIONS BEARING ON THE TREATMENT OF PNEUMONIA.

Read before the Section of Practice of Medicine, at the Forty-fourth Annual Meeting of the American Medical Association.

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The conclusion seems forced upon us, by recent investigations as to the comparative mortality in cases of pneumonia, that the death rate from this disease is on the gradual increase, and has been on the increase since 1822.

When we eliminate all elements of uncertainty and unfairness in the comparative statistics of various hospitals and institutions, we are compelled to admit that if the death rate has not actually very materially increased, it has not been reduced by our modern methods of treatment. Those methods of treatment differ very markedly from those in vogue during the first sixty years of this century. The best authorities during that period insisted that in this disease blood letting was "a remedy of indispensable necessity," and they were almost equally unanimous in their use of cathartics, blisters, and occasionally emetics.

Subsequent to 1860 our treatment has been greatly modified, being less active and heroic, and styled expectant. This expectancy consists in doing little or nothing during the first stage of the disease unless the temperature ranges high and the cough becomes harassing, when antipyretics, such as large doses of quinine, veratrum viride, and later the newer antipyretics of the antipyrine order are given with opium to allay cough. Later in the course of the affection, when the heart begins to show evidences of failure, alcoholics have been chiefly relied upon, being strongly recommended in all the recent text books to which I have had access.

When we bear in mind these striking differences in method of treatment in connection with the fact that the death rate has increased, or at least has not