(a comparatively rare occurrence), but from relative insufficiency of iodine consequent on the presence of an excess of certain edible fats or of free fatty acid (oleic) in the digestive tract; that the food must be considered in relation not only to the normal processes of digestion but in relation to abnormal processes that may arise from the introduction of bacteria into the digestive tube; and that variations in histological types of goitre may result from variations in the composition of a goitre-inducing food. They provide, too, a new point of view from which to consider the genesis of simple goitre, of sporadic goitre, and of exophthalmic goitre.

REFERENCE.

¹ McCarrison, R.: *The Thyroid Gland in Health and Disease*. London, 1917.

THE RECOGNITION OF AORTIC INCOMPETENCE.

BY

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I HAVE on many occasions in recent years, in private and hospital work, found incompetence of the aortic valve which had not been previously recognized or even suspected. It has been present in several soldiers, officers and men, who had been demobilized or discharged as physically fit, although at that time they must have had aortic disease, judging from the condition of the heart when first seen by me. I also meet with it from time to time in insurance work in supposed healthy persons, men and women, and in people with known aortic stenosis but unsuspected incompetence. I think it worth while, therefore, to emphasize the importance of a most careful and systematic examination for this lesion, which is, in my experience, more commonly overlooked or unsuspected in its early stages than any other valvular lesion in proportion to the relative frequency of its occurrence.

The failure to recognize aortic incompetence in its early stages is most unfortunate, because the strain thrown by a leaking aortic valve on the ventricular muscle is greater than that produced by any other diseased valve, and steps should be taken to assist the muscle to withstand this strain at the earliest possible moment.

Aortic incompetence is most likely to be overlooked when it occurs, as it not uncommonly does, without any accompanying obstruction or stenosis to attract attention to the diseased aortic valve by its definite, easily recognized systolic murmur heard over the second right costal cartilage. But even when there is obstruction, and it is remembered that it is unusual for this condition to occur without some leaking of the valve as well, the diastolic murmur of incompetence is sometimes not found.

The chief reason why aortic incompetence is frequently overlooked in its early stages is that then its diastolic murmur—which is short, soft, and blowing in character—is generally heard only, or heard best, not at the aortic cartilage where the systolic murmur is heard, but down the left edge of the sternum, and often only in the fourth intercostal space against the sternum—that is, the so-called tricuspid area of the precordia.

With this source of error it is necessary to adopt some safeguarding rules for examining the heart of every patient, and those which I practise myself as well as teach every day are as follows:

I.

To ascertain as accurately as possible, by palpation and percussion, the position and nature of the cardiac impulse and apex beat, always feeling for the latter well out towards the axilla. To assume invariably that aortic valvular disease is present whenever, with no increase of blood pressure, there is any enlargement of the left ventricle with forcible impulse (even if the enlargement be slight in degree) and the heart's action is moderately slow and regular. The onus of proof to the contrary then rests with the clinician, but the assumption will be justified at least in four out of five of such cases.

Hearts which are enlarged with good compensation in aortic disease generally beat regularly and at a moderate rate as compared with enlarged hearts associated with mitral incompetence and auricular fibrillation.

In advanced cases of aortic incompetence with marked cardiac enlargement and muscle failure there is often considerable irregularity, but then there is no difficulty in recognizing the condition.

II.

To examine, in the first place, over the aortic area for auscultatory evidence of valvular disease—namely, the systolic murmur of obstruction and the diastolic murmur of incompetence.

The diastolic murmur is generally, but not always, heard at the aortic area when there is accompanying actual aortic obstruction and the regurgitation is free. Unfortunately, however, in many cases where there is no obstruction and the regurgitation is slight, and also, but less frequently, when there is obstruction and free regurgitation, the aortic diastolic murmur is not heard at the aortic cartilage. The stethoscope must then be applied down the left edge of the sternum and in the fourth left intercostal space—that is, the tricuspid region of the precordia. In the cases in question a diastolic murmur will very likely be heard in this situation, but if one is not found, further search must be made, for this murmur is occasionally heard at a very limited area of any part of the precordia, sometimes nowhere but at the true apex beat. So when the conditions set forth above, which point to aortic disease, are present, the whole of the precordia, but especially that down the left region of the sternum, must be searched for a diastolic murmur.

If such a procedure be adopted there is little likelihood of aortic incompetence being overlooked. I have known an individual practitioner find it in this way in one of his ex-soldier patients when a medical board has not done so.

A diastolic murmur heard down the left edge of the sternum might, of course, be caused by incompetence of the pulmonary valve. This lesion is, however, very uncommon, but if it were present there would be evidence of pulmonary valve disease, especially of hypertrophy of the right ventricle with a heaving forcible impulse in the left of the epigastrium under the costal arch.

Mitral or tricuspid diastolic murmurs with their associated physical signs need rarely be mistaken for aortic diastolic murmurs.

In several of the cases I have observed there was no previous history of rheumatism in any form, of chorea, tonsillitis, scarlet fever or trench fever, the only illness remembered having been influenza or malaria. In one or two I could get no history of any previous acute illness or of venereal disease, and I was forced towards the conclusion that the very strenuous exertion of physical training and active service had caused some dilatation of the aorta and incompetence of the valve. I did not always use the Wassermann test to check statements, but I felt convinced that some of the young soldiers with aortic disease had not had syphilis.

In some of the soldiers I was much impressed by the fact that when aortic incompetence developed in muscular and vigorous men the heart muscle was evidently able to compensate so well for a time that there was no breathlessness on exertion and no sensation of over-action sufficient to attract attention and cause a visit to the medical officer.

I add notes of a few of the more interesting cases:

CASE I.

J. D., a motor driver, aged 33, who drove a Ford ambulance car in the Expeditionary Force from Mesopotamia to Baku was admitted to the Manchester Royal Infirmary in 1919 for a relapse from malaria. He had a forcible cardiac impulse, with extension of the heart to the left 4½ in. from the mid-sternal line; there was no increase in the blood pressure and no albumin in the urine. On auscultation the only evidence of valvular disease was in the fourth intercostal space at the left margin of the sternum. At this point was a definite soft aortic diastolic murmur, which I demonstrated at a post-graduate clinic. I advised him to inform any medical board before which he went of the existence of the valvular lesion, and I also told him that he was not fit for hard manual labour. He was readmitted to the infirmary the following year, when he informed us that his medical boards had not found the valvular disease. The murmur was more marked and the cardiac enlargement greater then. I saw the man at a later date, when the condition of the heart was worse. He had not had any other illness than the malaria to account for the aortic disease.

CASE II.

R. C., aged 29, served at Salonica, and was demobilized July 7th, 1919. He had had no malaria or other definite illness, but only pain in the back in May, 1919, for which he was given aspirin. He was discharged with "V.D.H." I saw him in November, 1919, at the request of his own doctor, who considered that there was mitral disease and aortic incompetence, although the medical board said there was no aortic disease present. The heart was enlarged, extending 5 in. from the middle line. I found that he had mitral stenosis and aortic incompetence, there being a definite soft diastolic murmur at the left of the sternum in the third intercostal space. There was a crescendo murmur but no diastolic murmur at the apex.

CASE III.

W. D., aged 28, farmer, served under the R.F.A. and was demobilized as fit without asking for any medical board in June, 1919. I saw him on August 22nd, 1919, as he was complaining of great shortness of breath and severe pain over the spleen, which I thought after examination was due to an infarct. I found that his heart was about twice its normal size, extending to the left six inches from the mid-sternal line. There was marked aortic and mitral incompetence, with septic endocarditis. He had had myalgia in the army in 1916, and went back to his duties before he really felt well. He got "all right" afterwards, he thought, and never asked for a medical board or demobilization; but there must have been valvular disease then, and I advised him to claim for it. He died within four weeks of admission to hospital.

CASE IV.

F. W., aged 23, served throughout the war as stretcher-bearer in the R.A.M.C. He had influenza in May, 1918, but did not lie up with it. During the last twelve months of duty he found his heart thumping in a way it had not previously done. He was demobilized as "fit" in June, 1919, without going before a board. He was sent to see me in the following November; I found that he had an enlarged, heaving heart, rate 94, regular. There was a systolic murmur at the apex conducted into the axilla, and a to-and-fro murmur at the aortic area, the diastolic murmur being most distinct in the tricuspid region. He died the year after I saw him.

CASE V.

L., aged 17, examined for insurance in 1918, had an enlarged, regularly beating heart with forcible impulse. In the fourth intercostal space against the left edge of the sternum was a soft diastolic murmur. There was no other evidence of valvular disease. I reported that he had aortic incompetence and advised refusal of the policy. Two years later I was asked to review the opinion as he had been taken to a doctor who said there was no aortic disease. I found the diastolic murmur in the same situation, and my finding was checked by an independent examiner.

CASE VI.

B. F., aged 45, was known to have a faint systolic murmur at the aortic area, and I was asked for my opinion on the value of the case for insurance purposes. I found that the heart was enlarged, with good compensation, the apex being in the sixth space, five inches from the middle line. The rhythm was regular and rate about 88. There was a faint systolic murmur at the aortic area, but there was also a very definite diastolic murmur in the fourth interspace against the left side of the sternum.

CASE VII.

A lady, aged 25, a teacher of physical exercises in schools, who played hockey and looked quite healthy, was an apparently good life. On palpation I was surprised to find that the impulse was regular, forcible and slow (78), and extended four inches to the left from the middle line. The blood pressure was normal. The only auscultatory evidence of valvular disease was a distinct soft diastolic murmur in the fourth left intercostal space against the sternum, which was undoubtedly caused by aortic incompetence.

I can call to mind at least four other insurance cases, all men, in whom I unexpectedly found aortic incompetence with a murmur in the same situation and no other auscultatory evidence of valvular disease.

Conclusions.

When a heart is enlarged, and beating regularly, or fairly regularly, and at a moderate rate, and there is no increase of blood pressure, aortic valvular disease must be suspected and auscultatory evidence sought for, not only over the aortic cartilage but also down the left border of the sternum, and especially over the tricuspid region of the precordia where the earliest evidence of aortic incompetence is most likely to be found.

THE TREATMENT BY REST OF ACUTE INFECTION OF THE KNEE-JOINT.

BY

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A RECENT publication¹ in which active movement has been suggested during the acute stage of streptococcal infection induces me, as a surgeon who, in civil practice since 1896,² has opened and drained all cases met with of streptococcal (including pyaemic) joint effusions, to enter a protest against any form of movement in acute septic arthritis until the microbic fight has terminated. This period may be recognized by the cessation of "discharge," pain, tenderness, fever, and accelerated pulse; then, and not until then, I advocate, and for years have practised, encouraging the patients to move their knee-joint, gently, once or twice daily, and gradually to increase the number and extension of same.

In my opinion the main factor in this, as in most other acute septic problems, is to do everything possible to secure

what is the natural foundation of all rational treatment, rest, as expounded by our master, Hilton. And I maintain that thorough drainage is the natural corollary of Hilton's ideal in that it clears the "field" of the virulent debris of battle, and, if combined with irrigation by suitable antiseptics,³ rapidly destroys the headquarters of the enemy, thus affording the human cells a chance tranquilly to execute their curative function.

I do not hesitate to state that in case the drainage system adopted is so insufficient as to require voluntary traumatism on the part of the patient to expel pus from the recesses of his already belaboured knee-joint, the auxiliary virtues of surgery are sadly discounted by a half-hearted and inadequate operative method which is positively dangerous to life, in that a virulent articular pus bag is formed which is certain to receive further contamination from outside through bacterial trap-doors which do not admit of automatic drainage from within.

Drainage, like many other things, may be classified as good and bad; the former, if properly done, does not necessitate any violation of Hilton's law; but the latter may embrace anything—loss of reason, dismemberment, or death.

A very simple illustration will suffice to demonstrate the effect of voluntary traumatism in a very common septic condition. One sees a boil on the back of the neck time after time converted into a carbuncle by the patient's efforts to squeeze the pus out of it.

It is not an exaggeration to mention that a considerable percentage of my hospital work has been devoted to atone for the mentality of those who are lured to ignore the elementary principles which govern the natural process of repair by the transient complaisance of some temporizing finesse, which, as often as not, redounds to the anguish of their patients, to the detriment of themselves, and to the discredit of their profession. Seldom a week passes by without my being forced to ask myself the question: Why has Hilton's *Rest and Pain* been allowed to go out of print?—a classic which every English surgeon worthy of the name should take national pride in transmitting to posterity. It stands to reason that the greater the evolution in the science of operative surgery the greater becomes the facility for the application of its doctrine.

I am aware that there are different strains of streptococci and different degrees of virulence of each and of the same strain, and that a treatment which might be futile in the superlative might be effective in the positive; yet it is a duty, founded on long experience, to mark the fact that it is infinitely more culpable to mistake the former for the latter than vice versa, and I do not know of anything outside a grave abdominal crisis in which it is more imperative to order a "general attack" than in a pronounced case of septic infection of a knee-joint, remembering that in what is always a life and death struggle the surgeon merits congratulation who ultimately finds that his dispositions exceeded the necessities.

The plan⁷ which I adopt for such cases is as follows:

Ether by the open method is administered to the patient on an operating table heated by electricity. The limb is shaved, scrubbed with soap and hot water, thoroughly washed with alcoholic mercurial solution (1 in 1,000), and then mopped with acid mercurial lotion (1 in 2,000). A tourniquet is then applied round the upper third of the thigh. Two lateral $1\frac{1}{2}$ in. capsular incisions are made above the patella into the synovial pouch. A long pair of blunt-pointed curved scissors is passed upwards through one of the lateral wounds to the apex of the synovial pouch and a similar opening made. The scissors, again as guide, are passed diagonally downwards through each lateral incision behind the patella to the most dependent points of the inferior angles of the capsule, and the same length of incision is made through the capsule on either side.

The joint is thoroughly irrigated with warm hydrogen peroxide lotion (2 oz. to the litre), the tube is inserted in turn through each of the five openings, and this is promptly followed by a good wash-out with warm carbolic lotion (1/2 oz. to the litre).

Firm pressure is then made with large sponges all around the joint so as to make sure that no pockets of pus escape detection. If any suspicious fluid is seen exuding after firm forward pressure in the popliteal space, the patient is turned on his side and a posterior incision made into the capsule of the joint. The tourniquet is then removed, and spurting vessels seized and ligatured with fine catgut.

Wisps of ten to twenty strands of silkworm gut are then