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PRACTICAL OBSERVATIONS ON SOME OF THE MORE IMPORTANT POINTS CON- NECTED WITH PHYSICAL DIAGNOSIS.

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(Concluded from page 227.)

DISEASES OF THE VALVES.

I.—CONTRACTION OF THE AORTIC VALVES.

Auscultation.—A superficial bellows murmur, not extensively diffused over the thorax, accompanying the first sound; its maximum over the sternum, a little below the level of the third rib; audible in the course of the ascending aorta, carotid, and subclavian arteries.

Application of the Hand.—A purring tremor sometimes perceptible, but generally rendered indistinct, in consequence of the intervention of the sternum.

Observations.—As stated on a former occasion, a bellows murmur, accompanying the first sound of the heart, having its greatest intensity over the base of the organ, may indicate either structural mischief, or be dependent merely upon inorganic causes. The establishment of a correct diagnosis on this point becomes, in many instances, of such paramount importance, that a brief re-mention of the differential diagnosis between the two murmurs will not, in a practical point of view, be esteemed an unnecessary repetition.

The distinction upon which the diagnosis is founded, rests chiefly upon the following circumstances, viz.:—That although both murmurs accompany the first sound of the heart, the inorganic is limited to that sound, with its maximum over the base of the organ; that it does not extend up the arteries; that it is of a soft blowing character; that it is attended frequently by musical venous murmur, or hum, in the neck; that it occurs frequently in anæmic individuals; and, lastly, that it is amenable to treatment. Organic murmurs, on the contrary, are more harsh and persistent; are propagated along the course of the arteries of the neck; and when not indicative of sigmoid stricture, may occur indifferently with either sound. The diagnosis between an organic murmur of the sigmoid valves, co-existing with the first sound of the heart, and a similar murmur proceeding from the ascending aorta above the valves, is not at all times easily effected. In the latter case, the maximum of the murmur is situated above the valves, diminishing in intensity as we approach the arterial orifice; its sound, also, is louder, clearer, and more superficial, than when depending upon valvular origin.

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Unless the obstruction be extreme, the pulse, in stricture of the aortic valves, is not necessarily affected.

2.—INSUFFICIENCY OF THE AORTIC VALVES.

Auscultation.—A soft, but distinct bellows murmur, sometimes becoming musical, or cooing, coexisting with, and more frequently obscuring, the second sound; maintaining the same situation as the systolic murmur; equally propagated to the large arteries, but diffused somewhat more extensively downwards over the left ventricle.

Application of the Hand.—No vibratory fremitus is perceptible in this lesion.

Observations.—In aortic regurgitation, the pulse is weak and jerking; at the same time a distinct interval not unfrequently obtains between the systole of the heart and the pulsation at the wrist.

DISEASE OF THE PULMONIC VALVES.

Obstructive and regurgitant disease, obtaining to the outlet of the pulmonary artery, occurs under similar circumstances in reference to the two sounds of the heart, as the lesions situated at the aortic orifice. The following circumstances will serve to guide the diagnosis in reference to murmurs seated in the pulmonic valves. Pulmonic murmurs are in general louder, more superficial, and of a somewhat hissing character; they are distinctly audible for the space of two or three inches up the course of the pulmonary artery, (to the left of the sternum,) while in the aorta, and arteries of the neck, if heard at all, they are very obscure; they are diffused with diminished intensity downwards, over the right ventricle, in addition to which, the extreme infrequency of pulmonic disease, as compared with lesions of the aorta, together with general symptoms, will, for the most part, readily establish a correct diagnosis.

It would appear from the observations of Dr. Hope and others, that patency of the foramen ovale, or any communication existing between the two sides of the heart, is very generally accompanied by contraction of the pulmonic outlet.

I.—CONTRACTION OF THE MITRAL VALVE.

Auscultation.—A bellows murmur accompanying, but not often obscuring, the second sound of the heart; its maximum a little below, and to the sternal side of the nipple; not transmitted to the large arteries.

Observations.—In consequence of the comparatively feeble power exerted by the left auricle, the physical signs of obstructive disease of the mitral orifice are rare; the force of the current in the majority of cases

proving insufficient for the production of the morbid sound. Under these circumstances the diagnosis must be based upon collateral evidence, more especially that derivable from general symptoms.

2.—INSUFFICIENCY OF THE MITRAL VALVE.

Auscultation.—A superficial bellows murmur, of varied degrees of harshness, co-existing with, and very frequently completely masking the systolic, or first sound of the heart; its maximum, as in the former, towards the base of the organ; not propagated to the arteries of the neck.

Application of the Hand.—A palpable vibratory tremor is a very constant accompaniment of this lesion, especially under the influence of exaggerated action.

Observations.—With due attention to the situation at which the morbid phenomena, accompanying the valvular lesions of the heart, present their greatest intensity, and also to the sound with which they coincide, the student will distinguish with comparative facility, the nature of the disease on which they more immediately obtain. In considerable disease of the mitral valve, whether of an obstructive or regurgitant nature, the pulse, for the most part, becomes a valuable criterion, being "small, weak, irregular, intermittent, and unequal." (Hope.)

DISEASE OF THE TRICUSPID VALVES.

Lesions of the right auriculo-ventricular valves are of extreme rarity, in comparison to the frequency of their occurrence on the left side of the heart. The murmurs, which are by no means constantly present, maintain their maximum, as previously stated, over the left edge of the sternum, on the same level, and under like conditions, in reference to the sounds of the heart, as obtains to their counterpart, in diseases of the mitral valve. In tricuspid regurgitation, the pulsation in the jugulars, and general embarrassment of the circulation, will materially assist the diagnosis. From the extensive observations of Dr. Hope, it would appear that purring tremor is never generated by lesions of the tricuspid valve.

DISEASES OF THE ARTERIES.

The diseases to which the large arteries, proceeding directly from the heart, are more especially prone, are simple dilatation, and sacculated aneurism.

DILATATION OF THE ARCH AND ASCENDING AORTA.

Inspection.—If the enlargement be considerable, a visible pulsation over the sternal extremities of both clavicles, preponderating on the right side, if the ascending portion be alone implicated.

Application of the Hand.—In addition to palpable pulsation in the above situation, a purring tremor, generally permanent in duration, may be felt above the clavicles. By directing the patient to suspend his breathing for a few seconds, the danger of mistaking an aneurismal tremor for the fremitus depending upon the rhonchi of bronchitis, will be avoided.

Auscultation.—A loud, harsh, respiring murmur, audible above the clavicles, in the carotid and sub-clavian arteries, and often at the upper part of the back; louder on the right of the sternum, if the dilatation be confined to the ascending portion of the arch. Under the sternum this sound partakes of a hissing or whizzing character, terminating abruptly, and feebly, if at all, audible over the heart.

Percussion.—Diminished sonoriety may obtain over the upper portion of the sternum.

Observations.—Regurgitation through the aortic sigmoid valves, especially under the excitement of cardiac palpitation, has sometimes been confounded with the phenomena caused by dilatation of the aorta. Independently of the greater roughness and hoarseness of the murmur, as it presents in the latter lesion, the maximum of its sound will be situated above the sigmoid valves, decreasing in loudness as we proceed downwards towards that orifice, and over the heart; the reverse of which will be found to obtain in the phenomena of aortic regurgitation.

SACCULATED ANEURISM OF THE ARCH OF THE AORTA.

Inspection.—If the tumour be large, a pulsation, both above and below the clavicles, is visible; on the right side principally, and at the top of the sternum, if the enlargement be situated on the ascending or middle portion of the arch; or, if on the other hand, the left side of the arch, or descending aorta be mainly implicated, the pulsation is either chiefly perceptible on that side, or altogether absent, in consequence of the diseased vessel being largely covered by lung. Intumescence around the base of the neck, and enlargement of the superficial veins, on one or both sides, not unfrequently accompany this affection.

Application of the hand.—A purring tremor, of less intensity than obtains to simple dilatation, is felt above the clavicles. If the sac be lined with dense coagula, this sign becomes extinct.

Auscultation.—A short abrupt murmur, its maximum over the seat of impulse, less harsh and rasping than the murmur of dilatation, propagated to the large arteries, and often audible down the back; indistinct or abolished over the heart itself. The second sound which is occasionally heard, is the diastolic sound of the heart, communicated from the aortic valves, whence it originates along the course of the artery to the seat of the enlargement. The same cause which sometimes obscures the purring tremor, viz., the existence of dense fibrinous coagula within the sac, will often render the aneurismal murmur dull, indistinct, and distant. Respiratory murmur more or less deficient around the seat of the disease.

Percussion.—Loss of sonoriety, in proportion to the size of the tumour, and its proximity to the surface.

Observations.—If the aneurism be seated in the descending aorta, an examination of the anterior part of the chest will often fail to give evidence of the existence of the disease. Under these circumstances auscultation of the dorsal region, more particularly along the left side of the vertebral column, will sometimes reveal both murmur and impulse.

The differential diagnosis between aortic aneurism, and a greatly enlarged heart, will rest principally on the following circumstances:—1st. The aneurismal impulse will possess its maximum over the tumour, progressively diminishing as we recede from that point towards the heart; the impulse of the heart, on the contrary, will maintain the greatest intensity over the apex of that organ. 2nd. The aneurismal tumour is attended, during some period of its course, by a loud bellows murmur; this phenomenon in simple hypertrophy, does not obtain. In the event of valvular

implication, the maximum of the abnormal sound being situated over the diseased valve, and progressively becoming weaker on receding from that spot, will, with care, sufficiently distinguish it from the louder sound of aneurism. 3rd. In aneurism there obtain purring tremor and pulsation above the clavicles. In simple enlargement of the heart these phenomena are wanting.

Aneurismal enlargement of the descending aorta behind the heart is rare. In a case related by Dr. Hope the physical signs were:—1st. Absence of murmur. (This, however, must not be looked upon as a constant accompaniment to this form of the disease, depending as it does upon the density and contents of the sac.) 2nd. Signs of tumour within the chest, indicated by deficiency of breath sound, and dulness on percussion, occurring independently of any previous affection of the respiratory organs. 3rd. A vigorous double jogging impulse of the heart, its diastole, as well as systole, successively producing a strong, smart impulse, constituting a "double jog." This latter sign, when not depending upon displacement of the heart backwards upon the spine, in consequence of adhesions of the pericardium, was considered by Dr. Hope as strongly presumptive evidence of a tumour situated behind the heart; the aneurismal nature of which would be further indicated by the more characteristic phenomena of that disease.

The presence of an intra-thoracic aneurism may in general be diagnosticated with considerable certainty, if, in addition to the preceding physical signs, there co-exist more, or fewer, of the following general evidences of the disease, viz.:—A sensation of tightness about the trachea; alteration in the tone and character of the voice; a frequent, short, hacking cough, sometimes accompanied by mucous expectoration; a feeling of weight, constriction, and general uneasiness within the chest, and over the sternum; more or less dyspnoea; pain in the neck, across the upper part of the thorax, in the shoulder, and down the arm, more especially of the left side; numbness and formication of the affected extremity; gnawing pain in the spine; dysphagia; difference of the two pulses; and in the event of the disease partially interrupting the circulation of the vessels proceeding from the arch, we may have, in addition, absence of pulse in the radial, subclavian, or carotid arteries of one or both sides; impaired vision, save in the horizontal posture; seizures resembling epilepsy; imperfect articulation; with partial paralysis of the upper extremities, but seldom dropsy.

In the event of a pulsatile tumour combining an expansive, as well as heaving impulse, perforating the ribs or sternum, and presenting externally, a correct diagnosis will in general be readily effected.

In aneurism of the subclavian or carotid arteries, the physical, as well as the general phenomena, are less intense, more superficial, and confined to the affected side.

Enlarged glands, or tumours, situated over the artery, and becoming pulsatile, will be distinguished by the signs being limited to the seat of disease; by the murmur, if any exist, having the soft bellows, rather than the whizzing or rasping, sound of aneurism; and lastly by the non-expansive character of the pulsation, with its total extinction, provided that the tumour can be pushed aside, or raised from the subjacent artery. Notwithstanding the long category of

signs and symptoms above enumerated, more or fewer of which are generally present in thoracic aneurism, the student must never lose sight of the important fact, that rare instances do sometimes occur in which very few of the distinctive phenomena present, even at an advanced period of the affection, and which circumstance consequently requires, on the part of the observer, the greatest attention, as well as caution, both in reference to diagnosis, and also to the subsequent management of the case.

DILATATION OF THE PULMONARY ARTERY.

Inspection.—A visible pulsation, confined to the left side of the sternum, between the cartilages of the second and third ribs, which, in extreme cases, are rendered more or less prominent.

Application of the Hand.—A purring tremor, limited to the seat of impulse, and not existing above the clavicles.

Auscultation.—A loud, harsh, superficial sawing murmur; its maximum over the above situation, to the left of the sternum; more feebly audible above that bone, and over the præcordial region; but not propagated to the large arteries.

Percussion.—Diminished sonoriety over the seat of impulse.

Observations.—Aneurismal enlargement of the pulmonary artery is exceedingly rare. The disease with which it is most likely to be confounded, is a similar lesion of the arch of the aorta. From this, it will be distinguished by the locality of the physical signs, and also by the presence or absence of pulsation, and purring tremor, in the region above the clavicles.

ANEURISM OF THE ABDOMINAL AORTA.

Inspection.—If the aneurism be very large, an external pulsating tumour may present in the dorsal or lumbar regions.

Application of the Hand.—A fixed, rounded, and more or less compressible tumour, offering a full, swelling, expansive, as well as heaving pulsation, generally located to the left of the vertebral column, and sometimes accompanied by a purring tremor.

Auscultation.—An abrupt, short, moderately loud, and deeply-seated bellows murmur; less harsh and grating than in thoracic aneurism; sometimes audible over the back; limited transversely to the seat of the disease; propagated more extensively below than above that spot; inaudible over the heart.

Percussion.—If the tumour be large and superficial, a dull sound will be elicited, corresponding to its size. This, however, is often obscured by flatulent distension of the intestines.

Observations.—The differential diagnosis between an aneurism of the abdominal aorta, and some other diseases situated in that cavity is, in many instances, extremely difficult, requiring repeated examination, care, and watchfulness on the part of the observer, on whose mind, notwithstanding the greatest attention, a degree of uncertainty in reference to the correctness of his opinion, will sometimes unavoidably remain. The diseases most liable to be confounded with abdominal aneurism, are tumours connected with the viscera, situated immediately over the aorta, and receiving from that vessel the impulse of its pulsations; and often by compressing the artery, either by their own

density, or in consequence of pressure exerted by the stethoscope, giving rise to a bellows murmur.

In making the examination, the recollection of the following circumstances will materially tend to facilitate the diagnosis :—

1st. That tumours contiguous to, and receiving pulsation from, the aorta, obtain more frequently than aneurism of that vessel.—2nd. That the impulse propagated through a tumour is more feeble than when occasioned directly by an aneurism.—3rd. That the murmur of a tumour, compressing the artery, is weak, short, and whiffing, often ceasing on change of position. 4th. That both impulse and murmur are not unfrequently susceptible of undergoing temporary suspension by applying the stethoscope laterally, and displacing the tumour from off the aorta. In the case of aneurism, both the lateral impulse and murmur will remain unaffected by this proceeding.—5th. That tumours simulating aneurism, arising from fecal accumulation, will be entirely dissipated by full and free purging.—6th. That the previous history of the case, the age of the patient, and especially the existence of malignant disease in other and external parts of the body, will materially co-operate in directing the diagnosis.—7th. That the patient be examined in the horizontal posture, with the knees well drawn up towards the abdomen, instituting at the same time a carefully conducted antero-posterior, as well as lateral investigation.

Nervous pulsation of the abdominal aorta, occurring in dyspeptic and anæmic subjects, especially if it obtain in connexion with a circumscribed flatulent distension of the intestine, closely resembles, on a cursory examination, and has been frequently mistaken for, an aneurism of that vessel. This functional disorder will be recognised by its concomitant, nervous, or anæmic symptoms; by its aggravation on slight exciting causes, and want of permanency; by its sound and impulse being short, abrupt, and jerking, neither heaving, as in aneurism, nor confined to any particular portion of the artery; by the frequent co-existence of venous murmur in the neck; and, lastly, by the generally successful result of treatment.

In bringing to a close the consideration of the more important physical phenomena, with which it is both the duty and advantage of every medical practitioner to make himself acquainted, I cannot refrain from once more urging the necessity of establishing, (particularly in obscure and doubtful cases,) a full and complete investigation of every circumstance, collateral and direct, in connexion with the disease, prior to hazarding a decided opinion. By neglecting this precaution, the medical observer not only risks his own reputation, but brings the important diagnostic aid derivable from auscultation and percussion, into unmerited disrepute.

CASE OF COMPOUND FRACTURE OF THE LEG, IN A PATIENT OF THE HÆMORRHAGIC DIATHESIS.

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Henry Hanson, aged 27, a tall and not very muscular man, a harness-maker by trade, was admitted into the hospital of the Union Workhouse in this town, under my care, on Sunday, the 24th of September, 1843, with a very severe compound fracture of the left leg

about its middle. I found both bones broken, the tibia obliquely, and the upper portion protruding about three inches on the inner side of the leg, through a wound five inches in length. The man was faint from loss of blood, but as far as I could gather from him, his general health was good, although he was decidedly of the scrofulous diathesis.

My colleague, Mr. Place, being too ill to attend, I had to decide on my own responsibility whether or not the leg could be saved. On the one hand was the little trouble of an easy operation, and the enormous trouble required to save the limb; but on the other, was the grievous injury to the patient. I determined therefore, if possible, to save the leg, seeing no surgical reason why it should not be done, even in the hospital of a Union Workhouse, notwithstanding the low estimation such establishments are held in by his Grace the Duke of Richmond. The protruding end of the tibia was so wedged in by the skin, that in order to return it to its place I found it necessary to remove about half an inch of it with the saw, and a small splintered portion with the cutting forceps, after which I was enabled to bring the edges of the wound together. I placed the man on his left side, applied a piece of lint dipped in blood to the wound, and put up the leg in a many-tailed bandage, with two splints, keeping the leg constantly wet with cold water. The further treatment was such as is usual in similar cases of severe injuries.

The man went on well, the leg remaining in a most excellent position, till the 21st of October, when I was suddenly called to him early in the morning in consequence of considerable hæmorrhage from the wound. I found that the blood welled out at one corner of the wound, and that he had lost at least a pint. I ordered the constant application of cold water, and two tablespoonfuls of the following mixture every three hours :—Dilute sulphuric acid, one drachm and a half; tincture of opium, twenty drops; water, six ounces.

These measures had the desired effect of stopping the hæmorrhage, but on several occasions during the next month I was much troubled by similar attacks which, although not so severe, greatly impeded the progress of the case, and at last reduced the strength of my patient to an alarming degree.

After one or two of these attacks I was led to make particular enquiries of the man on the subject, and found that when he was in good health he always experienced the greatest difficulty in stopping the bleeding, from even the smallest cut, not being able to remove the dressings from it for ten days or a fortnight, without the recurrence of the bleeding, and that, on one occasion, he lost nearly a quart of blood from a small cut in the wrist before it could be stopped.

With the exception of this bleeding, every thing went on favourably till the 7th of January, when my patient was attacked with scarlet fever. At this time the wound in the leg was smaller than a fourpenny piece, and in every respect the man was progressing as well as I could wish. The fever was mild for the first three days, when it assumed a typhoid type, and the man became insensible, and remained so for ten days. The effect of the fever on the leg was most striking; the healed portion of the wound, nearly five inches in extent, turned quite black, and the cuticle peeled off; the bones, which were by this time firmly united,