ON THE
RELATION BETWEEN THE
SYMMETRY AND THE DISEASES
OF THE BODY.

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THE relation between the processes of disease and the symmetrical form of the body has usually been studied only with a view to determine the circumstances in which one lateral half of the body is more frequently affected with a given disease than the other is. And, with this view, many interesting facts have been observed: so many, indeed, that they have drawn away the attention of pathologists from those which, though they are less numerous, are sufficient to render it highly probable that it is a law of the animal economy, that, when uninfluenced by disturbing causes, all general or constitutional diseases affect equally and similarly the corresponding parts of the two sides of the body.

Of this last class of facts, the following are examples:—

I. In the body of a woman 51 years old, who

died of a disease in no degree affecting the elbow-joints, I found both of them exhibiting exactly the same morbid changes. In each a portion of the cartilage, of an irregularly triangular form, had been removed by a chronic diseased process from the middle of the great sigmoid cavity of the ulna; and into each of the spaces thus formed, there had grown a process of synovial membrane and fat, which accurately fitted in it. Above each of these larger ulcerations of the cartilage there was a smaller one. The rest of both the joints was healthy, and bore no trace of having been recently affected by any acute disease. On comparing the two ulnæ, the exact resemblance of the alterations in each was most striking: except by the position of the bones, the one could scarcely have been distinguished from the other, for the likeness extended to nearly every one of the numerous minute irregularities in the outline and depth of the ulcerations, and of the processes of membrane that had grown into them. (A preparation of the diseased parts is before the Society.)

II. In two knee-joints from a woman aged 70 I found exactly similar morbid changes. In each, the cartilages of the patella, the femur, and the head of the tibia, were affected with the well-known fibrous degeneration, in precisely the same extent and degree, and in each the edges of the semi-lunar cartilages were similarly and equally affected by the same disease. There was also on each outer condyle a spot of exactly the same form and size,

from which the cartilage was completely removed, and where the exposed and hardened bone formed a shallow depression into which a corresponding elevation on the top of each tibia accurately fitted. There was no morbid change in either joint that was not exactly repeated in the other.

III. A preparation which I made some years ago exhibits similar effects of disease in the heads of two femora from the same subject. From each, the ligamentum teres is entirely removed, and on each there are, just above the cavity in which it had been fixed, two small and almost exactly similar losses of substance in the cartilage. The rest of both joints is healthy.

IV. A similar, but yet more striking instance of symmetrical disease, was presented in two hip-joints (of which the preparation is before the Society,) which I recently examined in the body of a woman aged 68, who died of general dropsy, and of which, as well as of most of the diseases mentioned in this paper, preparations are preserved in the Museum of St. Bartholomew's Hospital. In each of these joints there was attached to the head of the femur a similar, very slender shred of fibrous tissue, the remnant of the ligamentum teres; on each femur there were similar small spots, from which the cartilage had been removed; and more than these, there was a spot on the exactly corresponding part of the neck of each femur, from which the investing fibrous tissue had been removed by ulceration, leaving an aperture into which an irregular elevation of bone

had grown. The aperture and the elevation in each were so alike, that although their forms were far from simple, the naked eye could barely discern a difference between them.

V. The number of examples of similar morbid changes which I have seen in corresponding right and left joints is greater than it can be necessary to detail. I shall therefore mention only three others, in which the symmetry is particularly well marked, and of which preparations have been made. These are, the femora and patellæ of the same subject, on the cartilages of each of which the gouty secretion of urate of soda is deposited in the same quantity, and the same irregular form ; two humeri, on each of which uneven-knobbed growths of bone of the same form and general characters rise up by the sides of the bicipital groove ; and two femora and two patellæ, from which exactly corresponding parts of the cartilage have been removed, and of which precisely similar portions have acquired the peculiar porcelain-like surface.

VI. I have made a preparation of the two hind legs of the same dog, on each of which the femora, patellæ, and other bones, exhibit exactly similar growths, of a coral-like exostosis.

VII. Another preparation exhibits the two ovaries of a woman from whom a carcinomatous breast had been removed some years before death. Both of them are occupied by large growths of cancerous hardness, and exactly alike in size, form, and all other characters. And I have lately met with a

similarly symmetrical development of small carcinomatous tubercles in the ovaries of a woman who died of carcinoma of the gall-bladder.

In advancing these few facts as the chief, though not the only evidence for the existence of such a law as that which is supposed, it must be remarked that each of them involves a coincidence of two events, and a coincidence so exact, that, if often repeated, it is impossible to imagine it to be the result of chance. It is obvious that, if there be no such law, the probabilities are greatly against any slight disease ever occurring coincidently on two exactly corresponding parts of the body, and leading to exactly the same results in each of them. I do not deny that such an accidental coincidence may happen ; and probably an example of it was presented in two exactly similar bands of adhesion which I once found passing from the surface of each lung to the corresponding part of the third rib on each side. Still the chances are almost infinitely against such a coincidence occurring several times in a limited number of cases. But, on the other hand, it is not at all improbable that, although such a law may exist, the numerous disturbing forces to which the economy of the living body is subject, may commonly or even most frequently prevent the law from having effect. It is indeed only reasonable to suppose that such a law would be more often evaded than followed, for its observance requires the exact concurrence of a great number of delicate processes, each of which is liable to be interfered

with by accidents, whose number is incalculable, and of whose mode and extent of operation we are ignorant. This being the case, a single example of symmetry must be of much more weight to affirm the existence of a law of symmetry than a hundred, in which it is absent, are to deny it.

If therefore there were no other facts than those already related, I think the symmetry of certain diseased processes should be regarded as the result of a general law. But the evidence of these facts is corroborated by many others, which, though separately less remarkable, are, when taken together, scarcely less conclusive. For, to establish a law of symmetry in disease, it is not essential that all the facts adduced should be examples of exact similarity in the results of the morbid processes on each side of the body, since a great number of examples of general, or even of slight, resemblance, could not happen by chance. I could add to the instances of symmetry in the chronic diseases of joints already mentioned, many others only rather less perfect than they are. A resemblance more or less exact in the chronic diseases of corresponding bones is also not unfrequently observed; and the fact that the bones of the lower extremities of those who have had rickets are almost always similarly curved, is a proof that those of both sides were affected in an equal degree, and therefore yielded equally under the pressure of the body. It has been often observed, and it is true, that the transparent cysts so commonly found on the choroid plexuses are sym-

metrical in form and arrangement ; and I have often seen an equal resemblance in opaque spots with the Pacchionian glands, as they are called, in the pia mater covering the hemispheres of the brain. I may also refer to the general similarity of the diseased changes in the two kidneys, and the two ovaria, in most of the cases in which they are both affected, and to the occasional, though rare, occurrence of equal degrees of phthisical degeneration, and of pneumonia in both lungs. But the most remarkable example of a general resemblance in the results of disease on the two sides of the body is furnished by the admirable researches of M. Bizot,* which I have in several cases been able fully to confirm. He found that in 2,171 cases of yellow spots in the arteries, a symmetry of the morbid changes was wanting only 62 times ; that in 659 cases of lesions consecutive to such spots, it was wanting only 51 times ; and that many of even these few exceptions were connected with an absence of symmetry in the affected arteries, or some similar modifying circumstance.

I have selected the evidence for the law of symmetry in general diseases from facts of morbid anatomy, because a similarity in the *results* of two diseased processes affords much more reason to believe that those processes were the same in kind and equal in degree than can be afforded by a simi-

* Recherches sur le Cœur et le Système Arteriel. Mém. de la Société Médicale d'Observation, t. i. p. 408.

larity of symptoms. There can be no doubt that the signs of disease in the cases detailed, if they were at all appreciable, were the same on each side of the body ; but there are some affections whose symptoms are more remarkable than their permanent consequences, and of these many afford evidence in favour of a law of symmetry. Such are the cases in which gout and rheumatism pass by metastasis from one part of the body to the corresponding part on the opposite side, but to no other ; cases also in which erysipelas, beginning on the bridge of the nose, pursues a similar course over each side of the face, head and neck ;* inflammations of the tonsils and of the Schneiderian membrane, which often pass rapidly from one side to the other, and of the eyes and testes, in which the same metastasis more rarely occurs, and some others. But the evidence of these similar signs of disease is of less importance than that drawn from similar results, because we cannot accurately appreciate their degree or their nature, and in many of them there is a failure of coincidence in time which, it is probable, did not happen in the first set of cases.

There is yet another class of facts of which the value for my present purpose may be disputed ; those, namely, which relate to changes of structure occurring so commonly in advancing age, that they are not usually regarded as the results of disease. Such are the blanching of the hair, baldness, the

* Dr. Graves' Clinical Lecture, London Medical Gazette, January 14th, 1837, and October 20th, 1838.

arcus senilis, the flattening of the cornea, the falling of the teeth, the atrophy of bones, muscles and other tissues. It may be a question whether these and other changes of the same kind affecting more important organs are not the mere results of regular laws, by which men are late in life as normally degraded towards death, as in earlier years they are developed into manhood, but, if they can be taken in evidence on the present subject, they are all strongly confirmatory of the existence of the supposed law; for in a very large majority of cases, these changes of function and of structure occur equally and similarly on both sides of the body.

On the whole then, I think the evidence adduced is sufficient to prove that, when not disturbed from their natural course, all diseases, such as scrofula, secondary syphilis, gout, rheumatism and others, including all those which are dependent on a morbid condition of the whole economy, or of some part whose influence is felt by all others, such as the blood or the nerves, produce similar local effects in the corresponding parts of the two sides of the body; in other words, that there is the same natural tendency to symmetry in the diseased changes of form and structure, as there is in the normal development of the body. The probability of the existence of such a law is very obvious, for it involves nothing more than this,—that the same influence exerted on two similar parts will produce in both the same results. That it should have been generally lost sight of must be due to the influence of

disturbing causes being so constantly and powerfully exerted on the several portions of the body, that those which are originally formed symmetrical, rarely remain exactly so throughout life, and therefore commonly fail to exhibit the same results when the same morbid influence is exerted upon them.

Should the existence of this law be admitted, there is probably no one in science to which the exceptions are so numerous. But its existence can be no objection against the truth of other general laws, in accordance with which a part on one side of the body is more liable to a particular disease than the corresponding part on the other side ; as the left lung to phthisis, the right to pneumonia, the left lower extremity to phlegmasia dolens, the left testicle to varicocele, &c. Some of these greater liabilities, the two last mentioned for example, are probably the consequences of the peculiar anatomical relations of the part most obnoxious to the disease ; for the relations of the two common iliac and the two spermatic veins are not the same, and the parts from which they bring the blood are hence (if by no other circumstance) not perfectly symmetrical. For others of these diversities, however, I can imagine no sufficient reason ; but it seems very probable that they result, not from a natural and innate tendency to disease in the one part more than in the other, but from various influences acting in different degrees upon them both, and so far destroying the exactness of their symmetry of operation, if not of visible form, that when they are

both subjected to a common excitant of disease, they re-act differently.

From the facts just cited, there appear to me to be at least three different conditions in which diseased changes are symmetrical.

In a first class of cases, they are the result of the gradual degeneration of the tissues in the course of time, or after their functions have ceased, or when, through some general disorder in the economy, the whole body fails of being duly nourished. Such are emaciation, the changes of old age, &c.

In a second class, the symmetrical changes are the result of a morbid condition of the blood, in which some new material bears a peculiar chemical or organic relation to the whole or a part of some symmetrically-arranged tissue or organ, so that when they come in contact, the mode of nutrition in the tissue is altered, or the new material is deposited in it. These changes are symmetrical, because the same morbid material acts similarly with all similar substances. They are symmetrical and general, when the whole of the seemingly similar tissue has really the very same structure and other properties. But, more commonly, they are symmetrical and local, because the corresponding parts on the opposite sides of the body are the only parts in which the symmetry is, in respect of every property of the tissue, perfect. To this class belong the rheumatic, gouty, scrofulous, tuberculous, cancerous, medullary, and some other symmetrical diseases.

In a third class the symmetrical changes are the consequences of diseases passing by metastasis from one part to the exactly corresponding part on the opposite side. In some of these a morbid condition of the blood exists, in others it probably does not. In all, I believe that the influence which determines the situation occupied by the diseased process after metastasis is one conveyed from the part first affected through its nerves (which are in a state of morbid organic excitement) to the nervous centres, and thence reflected and conveyed through *its* nerves to the part secondarily diseased. To this class must be referred the metastatic affections of the eyes, tonsils, testes, and probably some cases of rheumatism and gout.