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ORIGINAL COMMUNICATIONS.

ON THE PHYSICAL EXAMINATION OF THE ABDOMEN, IN HEALTH AND DISEASE.

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ALTHOUGH practitioners have long (even before the examination of the chest became a study) been in the habit of proving the condition of the state of the abdominal viscera by means of inspection and palpation, yet it does not appear that any systematic attempt has been made to reduce this mode of investigation to *fixed principles*, which, by rendering it more rational and intelligible, would facilitate and extend its application in practice. The signal aid which the diagnosis of thoracic diseases has derived from the light of physical science, is a sufficient encouragement to attempt the elucidation of abdominal diseases in the same rational point of view. If it be objected, that the signs of the state of the abdomen, being derived chiefly from the touch, are rather to be learnt by experience than taught by precept, it may be answered, that although experience is absolutely necessary for proficiency in all matters in which the senses are concerned, yet a proper analysis of the objects of examination will render this experience much more intelligible and instructive. And this applies as much to the sense of touch as to those of vision and hearing. The *tactus expertus*, a fine delicacy of touch, capable of very nicely feeling and discriminating between impressions, may be more or less acquired by mere experience: but the *tactus eruditus*, the faculty of properly interpreting these impressions, and their differences, includes an exercise of the understanding, and requires a due consideration of the subject in its relations of cause and effect.

In the following papers, I propose to give an outline of the principles of the Physical Examination of the Abdomen, illustrated by facts, which have been supplied by clinical observation. The subject might be extended almost indefinitely in the way of example and further application of the principle; but such prolonged details would be neither con-

sistent with the form and plan of this essay, nor, according to my experience in teaching, calculated to facilitate the task of the learner.

EXAMINATION OF THE ABDOMEN BY INSPECTION.

The shape of the abdomen is determined by the conjoint influence of the walls and of the viscera contained within them. When these are in a healthy state and normal proportions, the shape of the abdomen in front is flat-convex, with slight rounded projections, which give a general rotundity to that region. With slight exceptions, presently to be noticed, the two sides of the abdomen are symmetrical; for, although the contents may differ, the walls, in health, have sufficient weight and tonicity to smooth down the inequalities of the contents. But where wasting or relaxation has rendered the walls very thin or flaccid, as in the aged and emaciated, the contour of the viscera may often be seen through the walls, and the want of symmetry becomes obvious. We may then sometimes trace the position of the viscera with great precision; and in such cases I have repeatedly seen not only the form of the superficial intestines, but their peristaltic motions also, and the changing prominences and depressions which these motions produce.¹ Such cases are instructive, in showing the varied position of the intestines during life, more accurately than the inspection of bodies after death can do.

Such inequalities and motions, however, are rounded off and intercepted by the abdominal walls in their ordinary state of thickness and tension; and the exterior of the abdomen generally indicates the symmetry of *animal life*. Yet, even through this equalizing surface, a correct eye can generally discern certain projections, constituting the exceptions before alluded to, representing the irregularity of parts, which are the seat of the *organic life* of Bichat. The first of these is at the lower four or five ribs on the right side, which bulge outwards a little more than those on the left, and give a rounder shape to the abdominal portion of this side of the chest. It need scarcely be mentioned, that this is due to the liver; whose weight and bulk infringe visibly on the statuary outline of the exterior. Another intruder on the outward symmetry of the abdomen is the stomach; which very commonly makes known its presence and swelling importance, by a prominence to the left of the epigastrium, including the cartilages of the lower left ribs. In persons who have suffered much from dyspepsia, these cartilages are often so prominent as to attract the notice of the patient; being permanently protruded by the habitual distension of the stomach with air; and this deviation from symmetry remains, although the cause may no longer exist. A slight prominence is frequently perceptible in the right iliac region, and at or below the umbilicus, from an accumulation of air in the cœcum and small intestines respectively.

As these inequalities are most conspicuous when the abdominal walls are thinnest and most flaccid, so they are least perceptible, and may disappear altogether, where the walls are thick or tense. The shape of the abdomen is then more perfectly uniform; but it will yet vary,

¹ On several occasions, I have pointed out this phenomenon to the students; and have further shown them, that this contraction of the intestines could be induced at any given spot by smart immediate percussion.

according to whether muscle or fat predominates in the walls; the former making it more flat, with the symmetrical prominences of the muscles and their divisions; the former giving it a smooth rotundity, with a greater convexity around the umbilical depression, where the layer of fat attains its greatest thickness.

After this brief sketch of the normal shape of the abdomen, and its varieties, we may proceed to notice such alterations, caused by disease, as may be available as signs. In order to inspect the abdomen well with this object, the patient should lie flat on the back, with the arms and legs straight, but relaxed, and resting on the bed. For some purposes, a sitting or standing posture may be preferred. In all cases, the observer should place himself so as to survey both halves of the abdomen at a glance; and for this purpose, standing at the foot or head of the bed, or at a sufficient height on either side, is better than a too close inspection. Of course, all covering should be removed from the abdomen, and a good light fall upon it.

VISIBLE SIGNS OF DISEASE IN THE ABDOMEN. Fæulent accumulation in the intestines usually causes a distension of the colon, which is manifest by more or less irregular prominence in the right iliac, and both hypochondriac, and left iliac regions; and if the small intestines are not also much inflated, the abdomen, although enlarged, has a flattened and irregular surface. Even when the small intestines are distended, there is rarely uniformity in the distension; and if the walls of the abdomen are thin or flaccid, the varying shapes of the most inflated bowels may often be distinctly discerned. The same remark applies to colic; in which, although the inflation may be excessive, and the tension of the abdominal muscles more or less constant on account of the pain, yet the spasmodic contraction of portions of the bowel causes inequalities and hollows in parts, visible to the eye, as they are also palpable to the touch, during the knotty twistings of the colicky spasm. In the meteorismus, or tympanitic enlargement of the abdomen in low fever, and in fatal prostration, the case is different. The distension of the intestines is uniform, wholly unresisted by peristaltic contraction, which is suspended, and the tonic or elasticity of the abdominal walls is sufficient to give an evenness to the flatulent tumour, which is not observed where the intestines partially retain their tone. But even this uniform tympanitic distension (besides the differences to the touch, and to the ear) has a visible distinction in its more globular, or convex projection anteriorly, without the gravitating projections at the flanks or groins, which distinguish a similar degree of distension in ascites.

The chief visible characteristic of ascites, or liquid in the peritoneum, is the smooth roundness of the swelling which it occasions. When the quantity of effusion is small, this may be perceptible only in the most dependent parts; as in the flanks in the supine, and in the hypogastric and inguinal regions in the erect or sitting posture; and the contrast which the smooth fulness of these regions presents to those above, where intestinal and visceral inequalities are more than usually conspicuous, has often attracted my attention in incipient effusion, and led to the conclusive tests of palpation and percussion. When the fluid increases, so as to occupy the whole front of the abdomen, the smooth

rotundity of the enlargement becomes a further evidence of the uniformity of fluid pressure, which, obliterating the umbilicus, gradually expands the abdominal cavity into a large, smooth, and almost polished globe. But the weight of the liquid is also evident, and reveals its nature in the predominant fulness of the lowest parts; and, where the walls of the abdomen are not tense, in the comparative flatness, or less prominent convexity, of the part which lies uppermost. If, however, the walls be put much on the stretch, or there be much gas in the intestines, these are floated upwards, and give more or less prominence, which may remove the flattening proper to the liquid.

In the rare case of effusion of air into the sac of the peritoneum, the surface of the abdomen would be smooth and rounded as in ascites, but more convex anteriorly, and without the ponderating bulge at the lowest parts.

Enlargement of the solid viscera of the abdomen, if considerable, rarely fails to cause some change in the shape of the abdomen, both by their own protrusion, and by their causing an unsymmetrical displacement of the other viscera. A much enlarged liver makes the lower right ribs to bulge outwards, both at the side, in front, and sometimes behind. When the mass extends much below the ribs, it often gives an unusual breadth and prominence to the upper part of the abdomen; and yet this prominence is flatter and smoother than that arising from intestinal distension, which may often be seen below the site of the enlarged liver: change of posture does not materially alter the appearance. Enlargement of the spleen may cause a projection of the lower left ribs at the side in the left hypochondriac region. When extensive, it occupies the whole iliac region, and may reach to the umbilicus and pubis. When the left half of the abdomen is thus filled with the tumour, its smoothness and immobility form a visible contrast with the right side of the abdomen, which is distended by the rounded inequalities of the intestines, and is more affected by the respiratory movements. Change of posture may visibly affect the position of a much enlarged spleen: I have known it to form a visible projection when the patient lay on his face or leaned much forwards. It is very rarely that the kidneys become sufficiently enlarged to affect the shape of the abdomen in front; but I have more than once found a kidney dilated by pyelitis (commonly called abscess) to produce a visible fulness in the lumbar region of that side.

The peculiarities of the enlargement of the abdomen by the gravid uterus have occupied much attention, and form a subject too extensive to be introduced here. Suffice it to say, that although there are considerable varieties in different women, and in the same women in different pregnancies, owing to the condition of the abdominal walls, the quantity of liquor amnii, the mode in which the intestines are displaced, and other circumstances, yet pregnancy beyond the half term pretty constantly forms a visible tumour *above the pubis*, rising more or less high in the abdomen: but whatever the posture and whatever the stage, and whether the distension in the upper part of the abdomen be more or less, there is always a peculiar fulness in the hypogastric region which serves to trace the tumour to the pelvis. In this respect, pregnancy resembles ovarian tumours; and these frequently cannot by their visible

signs be distinguished from it. For although an enlarged ovarium generally occupies the side where it has originated, more prominently than the other, yet when it has attained a large size, it extends over the whole front of the inferior abdomen, and may not project more on one side than the gravid uterus often does. The diagnosis is rather to be sought in palpation, auscultation, and other symptoms. But all these tumours connected with the pelvis are generally visibly discernible from other causes of abdominal enlargement, by their more circumscribed shape, often presenting a terminal projection or outline upwards or at the sides, where the inequalities of the displaced intestines come into view, and vary at different times and in different postures; whilst the mass of the tumour remains little altered, and extends its unbroken continuity to the pubis, with which it is always in close apposition. The distended urinary bladder may form a tumour above the pubis, reaching to the umbilicus, or even higher: it is also to be distinguished by its well-defined upward limit; and its globular or pyriform shape rising from the middle of the pubis, often visibly characterizes it; but conclusive signs are to be found in palpation and percussion.

Tuberculous disease of the mesenteric glands is accompanied by enlargement of the whole abdomen, but the surface is formed by the intestines more than usually distended with air, and pushed by the nodulated masses underneath, forwards in contact with the walls of the abdomen, on which they impress the outlines of their convolutions: the abdominal walls, although tense, are generally so thin as to render their form visible. In my experience, it is very rare for the tuberculous glands to project so far as to reach the surface. On the contrary, in tuberculous deposits on the peritoneum, the result of chronic peritonitis, the solid masses are on the surface, and often form projections or inequalities, visible either at rest, or when the respiratory movements extend to the abdomen.

Malignant disease, when deep-seated, and to a limited extent, only affects the shape of the abdomen in the case of stricture of the alimentary canal; and then, by preventing or increasing its distension with gaseous and other matter. With malignant disease of the œsophagus precluding the deglutition of food, I have known the abdomen so collapsed as to appear absolutely empty, and the aorta could be seen pulsating on the projecting spine. With scirrhus pylorus, I have noticed in some instances a collapse of the lower half of the abdomen, whilst the epigastrium and left hypochondrium have been prominent from the enlarged stomach. In other instances, no such appearance has existed. In stricture of the rectum, colon, or ilio-cæcal aperture, it often happens that the portion of intestine above the obstruction becomes enormously distended, causing a visible prominence in the abdomen: and this may extend so far as to totally derange the ordinary position of the viscera. Malignant tumours connected with the liver, stomach, pancreas, colon, and bladder, may reach so near the surface as to form a visible projection of the walls of the abdomen, and by its shape and position it may give some intimation of its nature.

To conclude, it may be inferred from the preceding illustrations, that the visible signs of disease of the abdomen are constituted by such deviations from its outward form, size, and symmetry, as are obvious to

the eyes; and these become instructive in proportion as they may be referred to known morbid conditions, of the internal organs. In most instances they are not in themselves conclusive, but they are especially valuable in arresting attention at first sight, and in guiding the practitioner to the employment of the senses of touch and hearing, which may give him a more intimate acquaintance with the condition of the internal parts.

(*To be continued.*)

[This paper will be continued in the succeeding numbers. We take this opportunity to contradict a report which has been current, that Dr. Williams is connected with this Journal. Except as a contributor of the articles to which his name is attached, Dr. Williams neither has nor ever had any share or cognizance in its composition. EDITORS.]

ON THE SUBCUTANEOUS BURSÆ: THEIR ANATOMY, PATHOLOGY, AND TREATMENT.

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[*Read before the Medical Society of London, November 23, 1850.*]

It has been remarked, that the anatomy of the lymphatic system was discovered by fragments, the thoracic duct by one observer, the lacteals by another, and the common absorbents by a third; nor was it till after the lapse of ages from the discovery of the first fragment, that a Mascagni appeared, who gave to the disjointed parts the character of unity and of system. The same remark applies to the organs of which I propose to speak.

To Winslow and Albinus may be traced the first notice of certain shut sacs, to which the name of Bursæ Mucosæ has been given, situated beneath certain muscles, or between the tendons and the bones, or between tendons; communicating occasionally with important joints, and formed of a membrane analogous to, if not identical with, the synovial sacs or membranes of the joints. After a time, these Bursæ attracted more notice, and began to be viewed as a distinct system. The second Monro described many not previously observed, and Sömmering followed, who discovered and described many more. The inaugural dissertation of Kosch appeared in 1782; in which he clearly points out the deep Bursæ, shewing that they are sometimes absent, sometimes small, and sometimes double, with bilocular cavities, which might or might not communicate; but, from confounding the deep and superficial systems, his observations are deficient in that order which alone can form the basis of future correct and profitable research. He was also aware of the existence of many of the Subcutaneous Bursæ; but he knew them not as a system, which they really are; he considered them as composed of cellular tissue, and essentially of the same structure as the vaginal Bursæ, and those of tendons and muscles; and he happily remarks, that these superficial Bursæ are not wholly foreign to the subject which he discussed; thus intimating a suspicion of a difference existing, which he did not then clearly comprehend. He knew the patellar and anconal Bursæ, and those