Original Communications.

ON THE INFLUENCE OF VITALITY UPON SECRETION.

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ON previous occasions, I have ventured to call the attention of the profession to what seemed to be fallacious principles of diagnosis and treatment in respect to some diseases generally considered to be of nervous origin; I propose, at the present time, to call attention to some points connected with secretion, into which we have not so clear an insight as is desirable.

As far as I can ascertain the general notion about secretion, it is, that it is essentially an active process; and that increased secretion, as a necessary consequence, implies the idea of increased action in the secreting organ. Thus we speak of perspiration as increased action of the skin, diarrhoea as increased action of the bowels, diuresis of the kidney, and the like. Still farther, we consider that various organs can be stimulated or goaded into increased action, and we find such ideas constantly put into formulas in the following manner: diaphoretics, diuretics, aperients, etc., are given to increase the action of the skin, the kidneys, the bowels, and the like.

Under other circumstances, we have the idea of increased action put in another form; thus, in rheumatic fever we are told that perspiration is an "effort of nature" to throw off or eliminate a certain poison; in the diarrhoea accompanying many cases of Bright's disease, we are told that the bowels take on "increased action" to relieve the kidneys; that in scarlatina, the kidneys take on increased action so as to supplement the deficient action of the skin, etc. In all these instances, and many others we might name, there is a steady idea apparent, that increased secretion implies increased action, and that increased action implies increased power. This idea receives corroboration from the constancy with which increased secretion from the nostrils, bronchi, urethra, and vagina, are spoken of as produced by "inflammation" of the Schneiderian membrane, of the mucous membrane of the bronchi, etc.

Now I am not going to make the startling assertion that all our ideas on this point are wrong; but I wish to group a number of well known facts in such a manner that it must be apparent to every one, that another interpretation may be given of the phenomenon of increased secretion, besides that of "increased action;" and I wish to point out some of the very practical conclusions which a reconsideration of the subject involves.

The first fact to which I would call attention is, that during the short period of life which elapses between an apoplectic stroke and its fatal termination, we have, in a vast majority of instances, if not universally, an abundant perspiration upon the skin, and a copious secretion (I use the word for want of a better) of mucus in the trachea and the larger bronchi. Cold clammy perspiration, and the "death rattle" in the throat, have long been recognised in many diseases as immediate harbingers of death. With the dying condition of the patient before our eyes, it is impossible to attribute these phenomena to increased power, or increased action; we must, on the contrary, allow that they are due to a failing condition of the vital powers. Now copious perspiration and abundant bronchial secretion do not always come together, and we may therefore advantageously follow up each symptom separately, and ascertain how far the preceding inference is correct.

We ask, in what classes of persons perspiration is most common, constant, and severe? The answer is, it is an almost habitual attendant on consumption; it is nearly constant in rheumatic fever; it comes on partially in the later stages of typhus fever; it is frequent in cases of psoas abscess and strumous disease of the bones; it attends simple debility, whether arising from accidental or constitutional cause; it is common in delicate children; and it is frequently produced by fright or other depressing mental emotion. It often accompanies bronchitis; and one of the most severe cases of colliquative perspiration I have seen, arose from sexual excesses. In none of these instances can we suppose that there is increased action and augmented power.

With regard to the causes influencing the amount of the bronchial secretion, we may again ask, In what persons is it most abundant? We find it far more copious in old age, when the powers are low, than in youth, when they are vigorous, and it augments in quantity every year as the patient grows older and is more enfeebled; it is increased by all depressing agencies, by the action of cold upon the surface which checks the circulation, by the abstinence of food which poverty too often enjoins, and by the use of such drugs as mercury and antimony. It is increased by even trifling exercise, and I have known in many cases a short walk to prove fatal. The bronchial secretion is unusually abundant in strumous children, in those who have a tendency to decline, or are already in consumption. I have known an inordinate amount of secretion induced by fasting, and almost magically cured by a very generous diet. Nor is it without interest, the fact, that of all the popular remedies for profuse bronchitic secretion, those are the most successful which are practically the most stimulating, *e. g.*, ammonia, polygala, myrrh, ammoniacum, tinctures, balsams, etc.

We now extend our inquiry into other secretions, and what do we find? That struma is very generally attended with increased secretion from the nostrils, the bronchi, the bowels, the skin, and in females from the vagina. That a weak old age is attended with, and often fatally ended by, hydrothorax and hydropericardium, *i. e.*, increased secretion from the pleura and pericardium; that ascites is common under the same circumstances; and that general dropsy frequently occurs, even when there is neither renal or cardiac disease. We know that large losses of blood occasionally eventuate in the same phenomena. We know that the children of consumptive parents are unusually liable to increased secretion from the lining membrane of the cerebral ventricle, *i. e.*, to watery effusion. I have had many patients under my own eye, in which hydropericardium and hydrothorax have been traceable to no other cause than cold, privation, misery, and hard usage at sea. I have had others, in which large effusions into the knee and elbow-joints have been due to a similar cause, and where the products of the increased secretion of the synovial membranes have been taken up again under the influence of strong stimulation, *e. g.*, blisters and iodine paint. Still farther, we know that diarrhoea, *i. e.*, increased secretion from the bowels, is a frequent cause of infantile death in the miserable dwellings of the wretched poor, where starvation is more common than profusion, and a low vitality than a flush of strength. The same complaint is common in struma, phthisis, typhus, and other exhausting diseases; it often attends sea scurvy, and is almost habitually produced by fear.

If we turn to the female sex, we find that the secretion of the catamenia is increased by debility; that in the consumptive or strumous, it is not only excessive in quantity, but that it is brought on at irregular intervals by an amount of exertion and fatigue totally inadequate to produce similar effects on the healthy. We find, too, that the vaginal secretion is wonderfully increased in the delicate female; and that leucorrhoea is at once the evidence of debility and the cause of its continuance or increase. In man, we find that the quantity of semen is augmented by various depressing agencies, such as excessive heat, excessive fatigue, and sexual excess; the quality of the secretion is deteriorated, but the amount formed in any given period, say for a week or a month, is amazingly increased, *i. e.*, in spermatorrhoea the amount of the discharge will reach an ounce in three weeks or thereabouts, whereas in health the same amount would not be discharged spontaneously in as many months.

Nor does our experience of gonorrhoea militate against the preceding facts, as we have had repeated opportunities of noticing that the discharge is always most excessive in those of a strumous habit or debilitated frame; and that it may in them be diminished more surely by the use of steel or other tonic, than by a rigidly meagre diet and total abstinence from stimuli. And I would call attention to the well-known fact, that the most popular medicines in that complaint are such excitants as cubeba and copaiba, which stimulate the parts to decreased action. Nor is such increased secretion confined to cases of venereal origin; for I have the following account from a well-known physiologist. "In my most feeble state," he writes, "I observed the secretion from the glans penis to be unusually abundant, so much so that, having omitted for three days to take my cold bath in a morning, I found stains on my shirt." I have myself repeatedly noticed that the glans is far more moist, and the sebaceous secretion around the corona far more abundant, in delicate or strumous young men, than in

perfectly healthy subjects. A similar remark applies to the vulva of females.

We next turn to the secretion from the kidneys, and find that it is no exception to the rule. The secretion is increased by fear—the most depressing of all our passions; by hysteria—essentially a disease of debility; and in diabetes insipidus, which, there is reason to believe, is the result of extraordinary debility of the constitution, rather than its cause, inasmuch as the amount of solid matter excreted is too small in itself to produce any marked effect on the system. Few are ignorant how much the secretion of the bladder is increased during that low state of vitality which accompanies paraplegia; and how the mucus, till then hardly recognised in the urine, becomes one of its most characteristic ingredients.

Respecting the liver, I have not much definite information to offer: all we can say is, that its sugar-production is increased, as in diabetes, by certain debilitating agencies, and is diminished by such things as increase the patient's strength. Respecting the influence of debility in increasing the secretion of the stomach, we cannot say much beyond the fact that water-brash is common in those whose stomachs are weakened by ulceration, etc.

But our facts do not end even here; for we may now turn to parts in which the amount of secretion is naturally so small as to be imperceptible, viz., the eye and external ear. In the former, we have increased secretion in the poorly fed, the delicate, the strumous, and the aged. Shakespeare, amongst the characters of old age, sets down "a moist eye"; "eyes purging thick amber and plum-tree gum." And we may add as a significant fact, that those who are weakly, not only weep sooner, but cry with far more copious tears than those who are strong; that an hysterical burst of crying may be repeatedly checked by a glass of wine, or other stimulant; and that many a man will, when fasting, weep over griefs, which cannot bring a single tear if presented to him when full. In the ear, we have otorrhœa occurring amongst the scrofulous, the children of consumptive patients, and in those who are or have been reduced by scarlatina or other depressing diseases. I have seen it come on when the patient was at the lowest extremity of weakness, and go off as he returned to his strength.

We speak with some hesitation respecting the influence of deficient vital power on the secretion of the milk in the female. But we think that we have noticed, as a general rule, that very healthy women have not so large a quantity as the weakly; that the quantity in the weakly increases in proportion to the debility lactation produces in them; that large quantity and good quality do not generally go together; and that the influence of tonics and stimulants upon a nurse, is to increase her own health and condition, and to diminish the quantity of the milk produced.

Let us for one moment turn to one of the causes of increased secretion, the presence of so-called chronic inflammation. What are the facts connected therewith? why, that during the acute stage of the disease, when the power or increased action may be considered at its height, all secretion is suspended and the secreting surfaces are dry; that the increased secretion comes on when the inflammation is chronic, and that the parts are restored to health under the influence of stimulants. We know how much debility, locally and generally, increases the secretion of pus from a sore; how it abounds under the use of poultices, and almost disappears when dry lint is used.

Coupling all these facts together, we are forced to the conclusion, *that increase in the amount of any secretion, is not evidence of increased action or augmented power, but that it may, and very frequently does, result from diminished vitality, and even expiring life.* How frequently these last conditions are the cause I would hardly venture to enunciate. My impression is, that they are far more common than any one has hitherto supposed.

The practical application of the view we have been setting forward is readily appreciable. Chronic bronchitis, strumous coryza, and some other profuse discharges, have long been treated by stimulants and the most generous diet; but in some other diseases, which fairly come into a similar category, the same principles are studiously avoided. Thus, in gonorrhœa, while we give with one hand such stimulants as copaiba and cubebs, and even apply such local irritants as cantharides externally, we take away with the other hand the patient's beer and wine. I have long thought that this plan could not be the correct one, and I have sought, first, for some reason why alcoholic stimuli should be prohibited in any case; secondly, when they might be administered with advantage. The reason why they are in general tabooed is, because gonorrhœa is most

common in young men, that it prevents them from having coëction, that this encourages erections, that erections are very painful, and that alcoholic stimuli increase sensual desire, and promote erections—hence they are forbidden. But if erections are not troublesome and rarely, if ever, occur; if the patient is not strong, is of a strumous habit, has much exertion, or suffers from any cause of debility, tonics and alcoholic stimuli may be given with great advantage. Under their use I have seen cases of gonorrhœa yield rapidly, which had previously appeared to be intractable.

But there is another application of the subject to which I must refer in a few words. If the increased secretion into the cells of the areolar tissue in general *dropsy* has its origin in an enfeebled condition of the system (and we will not waste time by demonstrating that it is not produced *simply* by obstruction to the circulation, for that will exist as in phlegmasia dolens, etc., without dropsical effusion, and heart disease without dropsy is common enough), is not any plan of treatment which ignores the use of strengthening remedies manifestly insufficient to complete the cure? Is not the plan of treating it by diuretics and frequent purgation, alone, radically bad? To these observations I will add, that I have had under my care a girl with general dropsy from renal disease, in which an artificial diarrhœa had been kept up for some months, ere she came into hospital, and during that period the anasarca had steadily increased. On her admission, the treatment was entirely changed, the purging checked, and tonics given, and an improvement was immediately apparent. She remained, however, only under notice for a fortnight, and was taken away by her friends, the dropsy remaining uncured.

I doubt not that many practitioners have seen many mild cases of dropsy cured by tonics alone; but I have already taken up so much space, that I must not pursue the subject farther.

THE MEDIAN OPERATION OF LITHOTOMY, FOR THE REMOVAL OF A PORTION OF BOUGIE FROM THE BLADDER.

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On the morning of Sunday, February 20th, I met two surgeons in consultation, in a case of which I received the following history:—

Mr. A. B. C., aged 28, in good health but of spare habit, on the morning of January 31st (*i.e.*, three weeks before I saw him), having been under the impression that he had a stricture, passed with some difficulty a No. 10 bougie or gum elastic catheter along the urethra; and, after allowing it to remain in the canal about twenty minutes, he found he could not withdraw it. After repeated attempts, by pulling and twisting the instrument, he withdrew it, leaving about three inches behind. He was seen by his ordinary medical attendant; and, in the afternoon, by another surgeon; and they made many attempts to lay hold of the foreign substance with the urethra forceps. They could only succeed in bringing away small portions of the bougie, which appeared to be held by the stricture too firmly to allow of its removal in this way; and, consequently, they placed the patient in a position for lithotomy, and under the influence of chloroform, and with a silver catheter in the urethra, held in contact with the portion of bougie, they cut down immediately behind the scrotum, in the middle line. Upon exposing the end of the bougie, and attempting to withdraw it with the aid of the dressing forceps, after repeated trials, it unfortunately eluded the grasp of the forceps, and slipped back into the bladder. A silver catheter was passed and retained, and a bladder of cold water was applied to the perineum, to stop the hemorrhage, which was considerable. From this time, for some days, there was but little inconvenience; the patient passed urine every two or three hours. The wound granulated freely and gradually closed; but afterwards the irritability of the bladder increased, and on February the 18th, the wound being almost healed, extravasation of urine took place; the scrotum and perineum became much inflamed, red, swollen, and painful; the wound became unhealthy, and the general state of the patient was as bad as could be, so much so, notwithstanding the stimulus prescribed in the morning, that in the night of February 19th, he had excessive rigors, and appeared to be dying.

When I saw him, early on the 20th, he had somewhat rallied;