LUMLEIAN LECTURES
ON
THE CONVULSIVE DISEASES OF WOMEN.

Delivered at the Royal College of Physicians.

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LECTURE III.—PART I.

Convulsive Diseases in the Non-pregnant State.—The Ovaries are in the Ascendant.—Menstruation compared with Pregnancy.—Increased Nervous Tension.—Ovarian Epilepsy.—Influence of Dysmenorrhœa, of Pain, of Blood-degradation, of Inherited Diathesis.—Neuralgia.—Hysteria Presupposes an Antecedent Diathesis.—Influence of the Mind, of Habit, and of Emotion.—Climacteric Convulsive Diseases.—Epilepsy.—Influence of Phosphatic and Uric Acid Accumulation, of Alcoholism.—The Psychical Phenomena.—The Treatment of Convulsive Diseases: Four Cardinal Principles.—The Induction of Labour Discussed.—Induction of Anæsthesia.—Bleeding.—Transfusion.

MR. PRESIDENT AND GENTLEMEN,—We have dwelt in some detail upon the convulsive diseases induced by pregnancy, labour, and the puerperal state, because these supply the most striking types, and illustrate the most forcibly the subject-matter of our theme. The types being determined, we shall be able to deal more rapidly with the convulsive diseases as they occur apart from the conditions of pregnancy.

The nervous system is still dominated by the sexual system. During pregnancy, the seat of the highest vascular activity is the uterus; the ovaries and breasts are greatly, though not absolutely, in abeyance. During lactation, the breasts exert, or should exert, the supremacy; but, as we have seen, the ovaries are constantly striving to regain the predominance of which they have been temporarily deprived.

When lactation is over, the reign of the ovaries is undisputed. And this is especially true in women who have never been pregnant. The uterus, indeed, responds to the periodical work of ovulation, undergoing certain remarkable changes; and the breasts feel the influence of the stimulus; but the manner in which they are affected is entirely sympathetic, or secondary upon the lead of the ovaries. Still, we may trace, very plainly, in the changes undergone during menstruation, a cyclical succession of action analogous to what is observed in the history of pregnancy. Ovulation, or ootocia, the work of the ovaries, is the first in order; menstruation, or the discharge of blood from the uterus, is the second phenomenon; turgescence of the breasts is the third. Everything is prepared. Should the male element arrive, there is a mature ovum ready for impregnation; there is an uterus gorged with blood, with a mucous membrane developed into a decidua, to furnish a nidus for the ovum; there are the breasts turgid, and ready to secrete milk, should the occasion arise. But for want of the necessary, or "fortuitous concourse of atoms," the ovum decays, and all the organs subside into quiescence. This cyclical process, then, bears a close resemblance to pregnancy. Menstruation may be likened, by a not very violent figure of speech, to an abortion. It is a missed, or disappointed pregnancy. Such as it is, it involves the same changes in the vascular and nervous systems, up to a certain point, as does pregnancy itself. The rapid afflux or diversion of blood to the uterus, and the structural change set up in it, determined by ovulation, imply a correlative activity of the spinal cord. There is the increased nervous tension, provided for a specific purpose; and, in most cases, probably, this tension is even greater than the mere transitory work a missed pregnancy requires. There is an excess, often a great excess, of nervous tension, provided in anticipation of the possible consummation. Hence, the intense excitement of the whole organism, the turbulence of the nervous phenomena, often witnessed at the menstrual epochs.

Such phenomena, then, as we have seen to take place during pregnancy, we may expect to find reproduced during menstruation. And this deduction is amply justified by clinical experience. The chief point of difference lies in the fact that menstruation does not occasion those marked changes in the constitution of the blood which play so important a part in the history of pregnancy. We may, then, expect to find, in connexion with pregnancy, the more purely reflex nervous phenomena, *minus* especially the eclampsia, which is so intimately dependent upon uræmia.

Of these, epilepsy is the first I will recall to our attention. It is not necessary to dwell long upon this form of convulsion. Its frequent evocation by menstruation is familiarly known. Its first appearance has been too often associated with the first menstruation, or with the early struggles of the ovary to carry out its function, to permit of any doubt as to the influence at work. In sound health, the generative organs being well formed, the function of menstruation is performed without difficulty; there is a well-balanced relation between nervous energy and the work to be done. There is no commotion. But introduce any one of several conditions, and the nice balance is destroyed; some morbid phenomena will almost certainly appear. It may with truth be asserted that, even in the healthiest women, there is evidence of exalted nervous action under the influence of menstruation. In most instances, the struggling nervous power is confined within physiological limits, or is controlled by the will. But suppose—and the case is a frequent one—the importation of a disturbing element in the form of struma, or of some subtle modification of structure derived from ancestral peculiarity, and the nervous system will react in abnormal degree and manner under the physiological stimulus.

Or take the case of obstructed, or morbid menstruation. Here there will be excess of irritation, importation of the element of pain, both together tending to exhaust the nervous energy, or to scatter it in abnormal directions.

Under either of these conditions, a fit of epilepsy, or of hysteria, according to the constitution of the patient, may explode. If the organic predisposition be strong, such a fit may break out under the simple irritation proceeding from the ovaries, and their appendage, the uterus. That is, it does not appear to be necessary to postulate an attendant unhealthy condition of the blood, although such condition is so frequently present at the onset of menstruation.

But there are many cases in which the due manifestation or action of nerve-force is not conspicuously disturbed under the first trial. There is more or less resisting power, which we may suppose to depend upon a less decided organic defect or taint of the nervous centres. Hence, the latent proclivity to nervous aberration will only be brought out under repeated irritation. And the repeated irritation, arising from periodical pain and obstructed function, hardly ever fails to induce appreciable depravation of the blood. There can be no doubt that this new factor operates most powerfully in provoking the outburst of nervous disorder. Probably the depraved blood, partly by its negative qualities, partly by its positive qualities, so modifies the nutrition of the nerve-substance that a morbid diathesis may be created, as in the case of syphilis; or developed, as in the case of latent hereditary taint. Certain it is, that in many cases blood-disorder comes in to play an important part in the production of epilepsy and hysteria. Where the original proclivity to nervous disorder is not so great that the nervous centres yield at once, the assailing power, the ovario-uterine irritation, takes the citadel by slower approaches, gradually starving, exhausting, and degrading the nervous centres. It carries on the assault by the twofold operation of sapping the resisting power and of continually renewing the attack. Under these combined influences, nervous structure, originally but slightly affected, will in the end break down. Of this the examples supplied by the history of dysmenorrhœa are plentiful. Dysmenorrhœa commonly includes two factors. There is first, in many instances, difficulty in the performance of the proper ovarian function, mal-ovulation, or, to coin a more expressive term, *dysootocia*. This is a prime cause of pain. The other factor is the disturbance in the secretion and excretion of the menstrual blood, the proper function of the uterus. Impeded secretion and excretion almost infallibly entail disorder in the quantity of the discharge. Menorrhagia is a frequent attendant upon dysmenorrhœa; and in many other cases the flow is deficient. But there is another condition which has attracted less attention, but which is not less real. Dysmenorrhœa, in a large proportion of cases, implies retention of some portion of the secreted blood in the cavity of the uterus. This adds uterine pain to ovarian pain, doubling the force of the irritation, and introducing a new element of blood-impairment. Retained blood is liable to undergo a degree of decomposition, and hence to be a source of toxæmia. Thus we may have, and very frequently do have, as the consequence of dysmenorrhœa, a double degradation of blood going on, through hæmorrhage or loss, on the one hand, and through empoisonment by absorption of foul matter, on the other.

Todd said no nervous disorder is more certainly due to blood-disorder than hysteria; and Briquet says the influence of defective hæmatosis over the nervous susceptibility is nowhere more evident than in the action which chlorosis exerts over the economy, and in the predisposition to hysteria which results from this action. Out of 430 hysterical patients, he found 152 in whom chlorosis existed in a marked manner before the appearance of hysteria. This is quite true, so long as we regard the blood-disorder as simply a provoking cause.

The like explanation or statement will apply with equal point to neuralgia, which, in the large majority of cases in women, is produced

by dysmenorrhœa and other ovario-uterine disorders attended by pain and exhausting discharges, which induce degradation of the blood, and therefore morbid nutrition of the nervous centres, and increased susceptibility to external impressions.

I do not profess in this place to discuss the various theories that have been advanced as to the nature or causes of hysteria. I shall content myself with expressing the opinion that the underlying essential cause is an inherent organic condition, constituting what may be called the hysterical constitution, just as we have an epileptic constitution. It may be, as some have conjectured, that there is a peculiar nervous temperament out of which may be developed epilepsy, hysteria, chorea, or insanity; the particular form which the nervous disorder may assume being determined by accidental circumstances. Of this I am not convinced. I see epileptics who are quite free from hysteria, and *vice versâ*. What we are most concerned with is, to know that, howsoever obscure the intimate physical condition upon which these nervous disorders depend, these disorders may never become manifest; in short, they may have no other than a potential existence, unless certain new conditions be introduced. These new or adventitious conditions are not necessarily inherent in the system. If they be warded off, or removed when they have effected a footing, the nervous disorders are averted, or may be cured. This means that we must direct at least a large part of our remedial forces, not against the nervous disorder, the hysteria, or the neuralgia, for example, as if it were a self-supporting morbid entity, but against the accidental and removable, exciting or maintaining, causes. Where we cannot discover such causes, or where we fail to dislodge them, we may be reduced to treat the epilepsy, hysteria, or neuralgia as a disease; treating it, in fact, as we do syphilis, by means of so-called specifics.

It is not much to the purpose to tell us, as some physicians who neglect the study of the diseases of the female generative organs do, that hysteria, for example, is a disease of the brain, and is not dependent upon disease of the ovaries or uterus. So long as they refuse to apply to these organs similar methods of precise observation to those which modern science applies to the study of the other organs, they cannot be credited with the knowledge necessary to give authority to their assertion. They may treat the brain; they may strive to restore the blood to soundness, to bring the digestive organs into order: all this they may do, with about as much success as is achieved in keeping a leaky boat afloat by baling out the water, taking no heed of the leak. It is like the labour of the Danaids.

If it be true that dysmenorrhœa, menorrhagia, leucorrhœa, and other ovario-uterine disorders, lead to blood-disorder, which often precedes the outbreak of convulsive and other nervous diseases, it follows logically that we ought to begin by removing, if we can, these debilitating and irritating causes. By doing this, we may often succeed in restoring the nervous system to the *status quo ante morbum*; thus proving the correctness of the observation that the utero-ovarian diseases produced the nervous disorders.

But, whilst I dispute the doctrine that hysteria is an affection of the brain or of the mind, it is impossible to deny that the mind has a great influence, if not in the initiation of the disease, at any rate in provoking attacks and in aggravating them. It is, however, a grievous error to regard this influence as more than subordinate and secondary. It is rarely until the nervous system has been broken down by illness of some duration, that we see those apparently perverse and perplexing mental aberrations which often make hysteria the puzzle and opprobrium of medicine.

In the great majority of instances, at the beginning, the subject struggles resolutely against the hysteric explosion. But by and by, when, through continued assaults, the resisting power has become impaired, the mind is also weakened, and then it may be said to go over to the enemy, and to help in the outbreak of hysteric attacks. This reciprocal influence—this action in a vicious circle, or alternation of the brain and spinal cord—is just what we have seen to hold good in chorea, in epilepsy, in vomiting, and, in fact, in all convulsive diseases. Those most distressing cases where the erotic element becomes a part of the hysterical fit, are no real exceptions. The chief difference between these cases and those of ordinary hysteria lies in the greater gravity of the original nervous diathesis. Their close connexion with insanity has often been noticed. Not a few of these cases culminate in mania; and in all of them there is a substratum of mental disease which, howsoever anxiously we may try to ignore it, will probably declare itself sooner or later.

In hysteria, the influence of habit and of emotion is pretty sure to make itself felt after a certain time. This influence it is which generally accounts for the departure from periodicity which is often observed when hysteria, epilepsy, and neuralgia have become chronic. When the blood has become degraded and the nervous centres weakened, under the protracted operation of the morbid factors, the attack is brought on by very much slighter causes than were necessary at the beginning. Hence it is that, after a while, a slight emotion, even moderate fatigue, gastric disorder, may excite an attack at almost any moment. But still the menstrual epoch is the period of greatest susceptibility. And I must here observe that in some cases, where periodicity appears to be the most utterly lost, the influence of ovulation is still the immediate exciting cause. It must be remembered that ovulation is a distinct function from that of menstruation. Menstruation is the outward indication of the ovarian process; but it is not a necessary consequence. It is not always coincident in time. It may not take place at all. The ovarian nisus may begin a week or more before the menstrual flow; and it is the ovarian nisus which is the chief cause of the central nervous erethism, and which at the same time supplies the centripetal irritation. This is no *petitio principii* invoked to bring apparent exceptions within a general law. There are abundant facts to prove this proposition, familiar enough to those who observe closely the phenomena of the ovario-uterine functions.

The periodical action of the ovarian nisus is frequently observed in the arousing or exacerbation of mania, delusions, and other insane phenomena, in the inmates of lunatic asylums.

Climacteric Convulsive Diseases.—At the "turn of life", when the ovario-uterine functions are ceasing, the nervous system, it is well known, exhibits frequent and various perturbations. Thus we find giddiness, vertigo, actual syncope, a pseudo-paralysis marked by numbness and comparative loss of power of one side, impairment of memory, mental irritability, restlessness, culminating in some cases, especially where the nervous diathesis exists, in epilepsy, and even in insanity. Probably few women pass through this epoch without some nervous perturbation. It is a stage of transition and of trial for all. Vertigo, some degree of loss of memory, some disposition to utter *mal-à-propos*, to use the wrong syllable or word, some sense of distrust in the power of self-control, are extremely common. These perturbations may persist for months, even for years, before the balance is restored. During a great part at least of this transition period, the ovarian influence may be traced. There is more or less periodicity in the nervous disorder; and when the uterus and ovaries have undergone complete senile involution or atrophy, when all menstrual discharges have ceased, these disorders commonly subside or change their character.

The climacteric perturbation is often even more severe and more marked than what is observed at any previous period of life. Thus many women may have passed through the trials of puberty and of child-bearing without serious nervous disorder, and will break down at the menopause. Often, no doubt, this is the climax, the last ounce of a long-troubled sexual life. Exhausting labours, consequent uterine disease, the cares incident to the rearing of a family, tell at last, so that when the irregular and futile efforts which mark the close of sexual life are made, the nerve-force, missing its proper destination, breaks out in various aberrations. These nervous aberrations commonly entail irregular deviations from the proper order of the blood-distribution, as well as alterations in the quality of the blood. That menstruation exerts a depurating action on the blood, is an old idea. I believe it is a correct one. At any rate, when there is no longer a normal attraction or afflux of blood to the pelvic organs, the subject becomes liable to irregular determinations of blood to the head.

I have already said that I cannot here undertake to enter upon a critical discussion of the theories of the pathogeny of convulsion. But I may venture to repeat that clinical observation of the phases and conditions of climacteric epilepsy, or those of puerperal eclampsia, lends little support to the doctrine that it is the result of anæmia. On the contrary, in many cases epileptic fits occur in florid, robust women, who make blood fast, and that just at the times when the circulation may be said to be in the state of highest tension—that is, under the excitement of a menstrual nisus. In a certain proportion of these cases actual extravasation of blood from the cerebral vessels—apoplexy—takes place. In another group of cases, it is true, the evidence of plethora is wanting. The vessels may be over-full, but the blood is watery, deficient in red corpuscles. In these cases it may, with more semblance of exactness, be said that the condition of epilepsy is anæmia. In a third group, the blood may or may not be deficient in red globules, but is obviously charged with noxious matter. About the climacteric the aberrant nervous distribution is attended by disorder of digestion, by disordered or obstructed secretion and excretion. The unsteady brain favours the general disposition to physical inertia; want of exercise increases the sluggishness of the great depurating organs. The liver, the kidneys, the intestinal canal, the lungs, the skin acting imperfectly, allow the products of tissue-waste and of the mal-assimilated excess of food to accumulate in the circulation. This is marked by the urine becoming loaded with phosphates, and sometimes with

uric acid. In some cases, which I have had special opportunities of watching closely, the outbreak of a fit of convulsion had been preceded by more than usual accumulation of phosphatic matter and of uric acid. It is interesting to remember that uric acid crystals are not seldom found in the urine and in the blood in the albuminuria of pregnancy. I am not aware of any distinct evidence in support of the conjecture that uric acid, as such, is the exciting cause of convulsion; and I am not prepared to accept the doctrine of Frerichs, that the cause is ammonia resulting from the decomposition of urea. I venture to submit—pretending to no recondite skill in humoral chemistry—that, until more precise correlative chemical and clinical investigations have been made, it is wiser to be content with the general conclusion that the poisonous convulsion-provoking element cannot be specified; but that it is to be found amongst the products that ought to be excreted through the agency of the lungs and glandular system.

In rather a large proportion of cases, including not a few in which the climacteric has not been reached, this loading of the urine with phosphates and uric acid is greatly occasioned, or increased, by the habit of resorting to stimulants. In these cases, vomiting is a frequent complication; and, in subjects not specially prone to epilepsy, constitutes the chief nervous disorder. Occasionally, albuminuria even is caused by the combination of alcoholism and phosphatic accumulation, and it may persist so long as to give ground for concluding that it depends upon permanent Bright's disease; but I have seen it vanish rapidly when alcohol was cut off, and when the glandular system was set to work, the nervous symptoms subsiding simultaneously.

In this class of cases may be easily traced the influence of the mind, of the emotions, in the evolution of convulsion; or perhaps it might be more correct in some cases to say that the poisoned blood takes effect first upon the brain, inducing disorder of the intellect, and that thus it becomes a more ready irritant of the spinal cord. In many cases of hysteria and of epilepsy the fit is preceded for several hours, for a day or more, by a strange alteration in the mind. The patient exhibits unwonted excitement, passion, suspicion; is irrepressibly loquacious, perhaps violent in action; complains of intense headache; she is, in fact, for the time beside herself. It is quite certain that perception is disordered, and the faculty of comparison suspended. The apparent untruthfulness of patients of this class is often a source of pain to those about them. In some cases, this untruthfulness is real. There is no saying more questionable than the toper's maxim, "In vino veritas". Alcohol is too often the enemy of truth; and this is never more clearly seen than in the conduct of those who have become the slaves of drink. But I refer to this subject for the purpose of offering a different explanation, which I am sure applies to many cases: the untruthfulness is apparent. There is untruth in reference to facts; but there may be no untruth if reference be made to the patient's own impressions. Under the mental perturbation of an impending fit—a state compounded of vertigo and delirium—the senses are subject to illusions, perception is distorted, and the false impressions are often crystallised as delusions, and so indelibly engraven on the memory. Something similar, I am certain, often occurs in persons whose faculties are impaired under the combined influence of nervous disease and the abuse of stimulants. I have seen persons who, on recovering from the disease and the associated alcoholism, have no longer shown any tendency to falsehood.

HYDRATE OF CHLORAL IN TETANUS.—Dr. Coryllos of Patras relates, in the *Allgemeine Wiener Med. Zeitung* for January 14th, the case of a lady aged 70, who, on August 27th, 1872, wounded the sole of her right foot with an iron nail. The injury caused her little inconvenience until September 12th, when spasms of the limb set in, accompanied with trismus. The next day, Dr. Coryllos found the patient complaining of painful tetanic spasms of the right leg, affecting chiefly the gastrocnemius, and of severe pain along the course of the crural nerve. The puncture made by the nail was visible; but there was no swelling, and scarcely any discharge from the wound. She could not open her mouth easily, and had frequent difficulty in swallowing. The cervical muscles were contracted; but those of the remainder of the body were not affected. She was ordered to take every two hours a tablespoonful of a mixture containing a drachm of chloral in two ounces of a mixture of equal parts of distilled water and orange syrup. The affected limb was rubbed three times a day with mercurial ointment and extract of belladonna. Two days later, as she remained in the same state, the dose of chloral was doubled; and the next day an eighth of a grain of acetate of morphia was given every two hours, alternately with the chloral. From this time she improved, and was well a month after being first seen. The morphia was given for four days only, four grains in all being used. The chloral was continued for fourteen days, in which time she took eighteen drachms.

CLINICAL LECTURES
ON
MENTAL AND CEREBRAL DISEASES.

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IV.—CANCER OF THE BRAIN.—(*Concluded.*)

ARE there any symptoms, from the presence or combination of which, cancer of the brain may be inferred to exist? If you dip into the literature of the subject, you will find contradictory answers to that question. Andral, who analysed forty-three cases, observed by himself or others, says, that there are no characteristic symptoms at all, whereas Guislain, who made a careful study of organic lesions of the encephalon, maintains, that special pathognomonic signs may be detected in every case. MM. Sauze and Aubanel suggest that cerebral cancer is often confounded with general paralysis, while Dr. P. Berthier writes an able monograph, *De la Folie Cancéreuse*. Without acknowledging any such absurdity as cancerous insanity—we might as well speak of tubercular jaundice, or fibroid leucorrhœa—I am inclined to believe that, with every heterologous growth in the brain, we have certain definite symptoms, in a certain definite succession. I admit that, in a certain number of cases, these symptoms are not sufficiently pronounced and isolated from other symptoms to justify a differential diagnosis during life; but I feel satisfied that, in a considerable proportion of instances, they are adequate to conduct us to a trustworthy conclusion, without any aid from the confessions of the *post mortem* room. When a patient, of cancerous dyscrasia, and with an open sore, say on the breast, becomes depressed and demented, slowly loses power on one side, complains of acute intracranial pain, and suffers from convulsive attacks, we have no hesitation in asserting, that a cancerous deposit has taken place in the brain. Cancer of the brain can, therefore, be diagnosed during life. The question is, can its existence be ascertained without the clue afforded by the open sore? Is there anything in the symptoms which points to cancer more directly than to other coarse lesions of the supreme nerve centre? In considering that question, it is, I think, necessary to divide all the symptoms which have been observed and described in cases of cerebral cancer into two great groups: the necessary and the contingent; the universal and the particular. The position of the tumour in the brain-mass, its rate of increase, the degree of irritation which it excites, or of softening which it induces, imply, of course, an infinite variety of what may be termed secondary or accidental symptoms, which will vary in every individual case. But the nature of the tumour, the cachexia in which it originates, the intercranial pressure caused by its growth, will be expressed in primary and essential symptoms, which will be identical in all cases. Putting aside the contingent, let us apply ourselves, for a few minutes, to the necessary symptoms. And first, as to the mental symptoms. You know that the cancerous cachexia has a peculiar mental, as well as bodily complexion associated with it: the emotions are dark and sallow, as well as the skin; a captious temper and a despondent tone of feeling are indeed as indicative of that change in the blood, or in nutrition, in which the cachexia consists, as any of the other somewhat vague signs by which it is supposed to manifest itself. When insanity occurs in persons of strongly cancerous cachexia, it is almost invariably of the melancholic type; and when the cancerous cachexia is strongly developed in an already insane person, melancholia is most frequently superinduced. Some of you will be able to recall to mind, as examples of these statements, Selina H., lately in Ward 25, who, in the course of a mammary cancer, gradually passed from a native sombreness of disposition to abject misery, leading to repeated suicidal attempts, and shaping itself into delusions, such as that her tongue was removed, so that she could never speak again; and Ralph W., who died in 18 Ward, and who, from being a cheerful, excitable old man, became wretched, and querulous and forlorn, when attacked by malignant disease of the pancreas. In cancerous marasmus, when anæmia and emaciation, and exhaustion, add their evil influence to that of the cachexia, the despondency proper to the cachexia is intensified, and is accompanied by a sense of mental debility that ultimately converts it into a settled despair. Few scenes more harrowing can, I think, be witnessed, than the death-bed of a patient who is consciously sinking under malignant disease, and who is writhing under physical and mental anguish.