LUMLEIAN LECTURES

ON

THE CONVULSIVE DISEASES OF WOMEN.

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LECTURE III.—PART II.

The Treatment of Convulsive Diseases: Four Cardinal Principles.—The Induction of Labour Discussed.—Induction of Anæsthesia.—Bleeding.—Transfusion.

Treatment.—Upon the treatment of convulsive diseases I have nothing new to offer in the way of remedies, or even of methods of applying them. The utmost I pretend to do is, to strengthen the rational basis, the principles, upon which the treatment should be conducted; and to show why certain agents, still of conventional reputation, should be rejected. The treatment of all convulsive diseases rests upon the same physiological and pathological foundation; and it is therefore most convenient not to pursue the details of treatment as applicable to each disease, but to sketch broadly the principles that apply to all, stopping, as we proceed, to point out such modifications as particular diseases require.

The principles of treatment flow logically from the view we have taken of the etiology and nature of the diseases we have to deal with. Four cardinal principles may be laid down for our guidance:

1. To moderate central nervous irritability.
2. To cut off emotional irritants or excitants.
3. To cut off peripheral irritants or excitants.
4. To eliminate all complicating morbid conditions.

To carry out all, or as many of these indications as we can, should be our aim in the management of all convulsive diseases. But the varying circumstances of different diseases and of different cases will prompt us to vary the order in which these indications shall be taken. For example, in all the convulsions of pregnancy the question surges up—Shall we try to subdue the central nervous irritability by putting an end to the pregnancy which produced it? The affirmative presents itself with cogent force. Yet it is not always possible or wise to resort to this measure, at least in the first instance. The indication is most clear when eclampsia breaks out after the sixth month of gestation. Here we have not only intense exaltation of nervous irritability, but an active blood-poison constantly keeping up this irritability, and which, we know from experience, will rarely disappear until the pregnancy which produced it is brought to an end. Often, indeed, the disease itself will determine the labour. In this case we have to follow the lead, and accelerate it judiciously. The urgency is pressing; every fit is a source of fresh danger to the brain. Prompt action, by averting one fit, may save life. Still we may err by precipitation. If we hurry on the labour too quickly—if, in short—we carry out what the French call the *accouchement forcé*, we may do irreparable mischief. The violence of the necessary manoeuvres will be a source of so much irritation as to add to the severity of the fits, and to add the depressing influence of shock. There cannot, I am convinced by observation even more than by theory, be a more fatal error than to follow the precept still inculcated and practised by many, to deliver as quickly as possible. The simplest measure which involves the least possible irritation is the best. That is, to puncture the membranes and leave the rest to Nature, at least until we see she fails to carry on the process. And since even the gentlest examination is often enough to provoke a fit, I would advise the previous induction of anæsthesia by chloroform. Under the cover of this state, the catheter should first be passed to secure an empty bladder, and to procure a good specimen of urine for testing. Then, at the same sitting, the membranes should be punctured by a quill, stilet, or other suitable instrument. The diminution of the volume of the uterus by the draining off of the liquor amnii, lessening the pressure upon the vessels and the vascular tension, gives sensible relief. But another good effect generally follows; one, it is true, not without occasional drawbacks, but still a risk that must be encountered. The good effect is this: the moment labour is started, a call is made upon the nervous centres for nerve-force to be expended upon the uterus. This is its physiological destination; and if it can be kept steadily directed to this, its proper work, we may hope to obviate its diversion

to convulsion or other morbid action. It is, indeed, a matter of observation that uterine action will often excite a convulsion. But, upon the whole, I am disposed to think that it acts beneficially; and we shall be the less afraid of calling it into operation if we reflect—first, that labour must take place, and that it cannot be effected without this uterine action; and, secondly, that we can greatly diminish the excess of irritability by the use of chloroform.

The expediency of inducing labour when there is albuminuria without convulsion is more doubtful. As we have seen, it is not certain that convulsions will break out. I have at this moment under my care at St. Thomas's a woman pregnant for the first time, six months gone, who is known to have had albuminuria for at least three months. She is under close observation; but I have not thought it desirable to act without more decided indications. If headache, vertigo, dimness of sight or amaurosis, singing in the ears, oblivion, delirium, or any sudden anasarca in the shape of swelling in the fingers or face supervene, labour will be immediately induced. Undoubtedly some risk is being run. Convulsions might set in without warning, and then aid might come too late. But the risk I have observed is certainly less when the albuminuria and attendant blood-poisoning assume the chronic character; so that when we know that this is the case there is justification for delay.

The induction of labour is the means of carrying off, or of discharging, the excess of nervous tension. But something more is commonly required. We cannot complete labour all at once. Sometimes we must wait, and, not seldom, when the nerve-force has once got into a wrong channel we shall fail to turn it all to the proper direction. Measures for moderating the excess of central irritability are almost always useful. The most available of these is the induction of anæsthesia by chloroform. It should be carried to the surgical degree—that is, to the extent of rendering the spinal cord irresponsive to irritation of the sphincters. The beneficial effect of this is sometimes very striking. The convulsive fit is rendered less violent; it is shortened. When anæsthesia is induced in anticipation of a fit, this may be almost entirely averted, and is sure to be moderated. The evidence in favour of chloroform has been greatly accumulating since Simpson's time. Chloroform blots out memory, one source of emotion; it cuts off perception, another source of emotion; it lessens reflex irritability. When chloroform or equivalent anæsthetics cannot be given, we must act on the same indications. We must procure absolute rest; exclude noise, light; avoid all suggestion of disagreeable ideas; avoid all irritation of the skin. All this is especially necessary at the acme of spinal and cerebral irritability when a fit is on or impending. But an essential condition for obtaining from chloroform the full benefit it is capable of giving, is to keep close watch over the patient, so as to be ready to administer it on the slightest warning of a fit.

How it is that chloroform acts in averting or shortening a fit may, perhaps, be explained by the following observation of Achille Foville. The cessation of an attack is the consequence of the asphyxia which itself produced. The quicker the asphyxia, the more quickly is its action felt upon the cord, rendering it incapable of reacting. Thus the danger is averted by its very excess. Chloroform, by inducing asphyxia, acts in a similar way.

But, whatever the explanation, the use of chloroform now rests upon a solid foundation of clinical facts. We should, however, be glad to have at our command some anæsthetic that would act with even greater rapidity. When a fit overtakes a patient, the action of chloroform is too slow; the respiration being to some extent suspended, we cannot get the vapour inhaled quickly enough. It is, therefore, my intention on the next occasion to administer the nitrite of amyl.

In fulfilment of the same indication we may derive great assistance from opium, belladonna, and bromide of potassium. A doubt has been entertained whether opium does not act injuriously by increasing brain-congestion. But I have seen excellent effect in allaying nervous irritability follow the subcutaneous injection of morphia; and the advantage of a remedy which can be so used in cases where deglutition cannot be turned to account is manifest. The value of belladonna in allaying spasmodic or convulsive action is often striking. I have seen nothing so effective in the whooping-cough of children. Its power over other forms of convulsion is incontestable. It may be given in quarter-grain or half-grain doses in the form of very minute pills every two hours until its toxic action is declared. It may be injected subcutaneously in the form of atropine, alone or in combination with morphia. One-thirtieth of a grain is enough for one injection.

When the patient can swallow, in the intervals of the fits, the bromide of potassium or of ammonium may be given in scruple or half-drachm doses every three or four hours. But in the first instance it is more useful to give a scruple or half-drachm dose of chloral. This, like chloroform, removes all emotional sources of irritation, and lessens the

sensitiveness of the nervous centres to peripheral irritation. The sleep it procures is eminently beneficial. I entirely concur in the praises which many practitioners have bestowed upon this most precious remedy in eclampsia.

We cannot yet discuss the treatment of eclampsia without referring to the practice of bleeding. To advocate anaesthesia is practically to condemn venesection. Not that there is any necessary antagonism, but that, as a matter of fact or of fashion, chloroform is superseding venesection. The modern contention has been between these two remedies. Statistics have been marshalled on each side, and, as usual, great has been the waste of words and of figures in the conflict. The laws of numbers are infallible, but not so the perceptions and the reports of observers; nor are individual cases of disease constant uniform quantities like abstract figures. I think the true clinical physician will prefer to base his judgment as to the value of different methods of treatment upon careful observation of the action of remedies and close critical comparison of cases. I am one of those who think there is more of fashion than of wisdom in the almost absolute oblivion of the lancet. But in this particular case I do not regret the disuse into which it is falling. It is very easy to tell of cases in which bleeding has been followed by recovery, and of other cases in which other treatment has been followed by death. I believe I have seen distinct relief ensue upon moderate abstraction of blood from the arm, or by the application of leeches to the temples. And where there is distinct evidence of plethora with marked engorgement of the vessels of the face it is judicious, I think, to apply eight or twelve leeches to the temples, but not to the exclusion of anaesthesia. In delicate women with a feeble circulation, bleeding in any form should be rigorously condemned. And we must not forget that the process of labour is usually attended by a loss of blood quite as great as is good for the patient.

In climacteric epilepsy, the abstraction of a moderate quantity of blood by leeches to the temples, or by cupping at the back of the neck, just before the expected return of the attack, is often eminently useful.

The second indication, to cut off emotional excitants, is one that is generally studied. It need not detain us: it is so obviously important, and the means of accomplishing it are so entirely dictated by the surroundings of the patient.

The third indication, that to cut off physical peripheral excitants, demands more attention. It is less understood in some of its details, and is too often practically contravened. It is desirable, then, to clear the ground of some of the relics of an irrational empiricism. The first impulse of many, when they see a person in a fit, no matter of what kind, is to dash cold water in the face. There may be no great objection to this in hysteria; in syncope it is undoubtedly beneficial; but in eclampsia it is decidedly injurious. I have seen it provoke a fit. Another not uncommon error in eclampsia is to apply blisters to the nucha, or mustard poultices to the calves. These applications do exactly what ought not to be done. The irritation they produce when the whole surface is in a state of hyperaesthesia, is doubly prejudicial. The immediate effect is often to excite a fit; and the continuous irritation set up in the skin can only keep up irritation of the nervous centres. There is no fact in medicine of which a stronger conviction has been forced upon me by observation than this, that all peripheral irritation is injurious in eclampsia. It is a sin against physiology. Hence the rule, when the situation dictates manipulation of any kind, to lull the system in the artificial sleep of anaesthesia before passing the catheter, before making a uterine examination, or proceeding to induce labour.

These principles of action apply with almost equal cogency to the treatment of epilepsy in the pregnant state; they apply with quite equal cogency to the treatment of obstinate vomiting in pregnancy. With regard to this latter affection, one or two special remarks may be permitted. When vomiting, in severe and uncontrollable degree, sets in about the third month, the question as to inducing labour presents itself with peculiar anxiety. On the one hand, if it be resorted to at once, there may be room for the misgiving that a grave step has been taken unnecessarily. On the other hand, the fatal progress is apt to steal on insidiously but rapidly, so that the time for hopeful action may quickly pass away. If the pulse have risen to 120 or 130, if it be small, indicating prostration; if there be marked Hippocratic countenance, considerable emaciation, continuous difficulty in keeping down food, sleeplessness, and especially any degree of delirium, it is highly probable that the induction of abortion will be too late. It may even provoke distress, which will accelerate the fatal issue. The same observations apply to obstinate vomiting in the latter months. The indication to interpose early is all the stronger if there be albuminuria, for the concomitant blood-disease will almost infallibly keep up the irritability of the nervous centres and the vomiting. But in several fatal cases which I have seen there was no albumen in the urine, so that, whatever poison there was in the blood, the condition was probably different

from that which we call uraemia. Comparing these cases with the phenomena of acute atrophy of the liver, and with other cases of rapid sinking in pregnancy, I cannot help suspecting that there is developed some graver systemic or organic disorder, than has yet been recognised. Death does not appear to me to be accounted for by the exhaustion from shock, for in some cases the fits were not very frequent or protracted. In some cases, I have no doubt, the delirium witnessed towards the close, the irritative fever, are the result mainly of starvation. The evil consequences of starvation are negative and positive. There is first, of course, defect of nutrition, so that the sufferer sinks from inanition; but there is also a peculiar empoisonment of the blood, resulting from the absorption into the circulation of waste material, and probably of some peculiar poison developed during the process of starvation. Blood so poor in every virtue that is wanted, so charged with noxious elements, may, it can well be imagined, not only fail to nourish the system, but may depress the whole organism, and set up diseased action incompatible with life.

It is wiser then to err on the side of safety to the mother, and rather to induce labour too soon than to temporise until it is too late. Unless we can, within a short time, get wholesome nutriment into the system, the system will feed upon itself, and the nervous centres, partaking of the general exhaustion, may soon be paralysed.

To counteract this progressive starvation is one of the greatest practical difficulties. Enemata of beef-tea, containing brandy or port wine, and sometimes half a drachm of chloral, are often of the greatest benefit. I am sure I have seen life saved by them, the patients being, by their aid, tided over a critical stage of exhaustion. But, in cases of extreme anxiety, there is another remedy which has not yet been sufficiently, if at all, tried, and which is full of promise. I mean the transfusion of blood. One successful case of transfusion in exhaustion from puerperal convulsions has been recorded.

In the case of exhaustion from obstinate vomiting, if used betimes, the prospect is better still; unless, indeed, the patient be struck with that deadly disease at the probable existence of which I have hinted.

In the chronic state of the menstrual or climacteric epilepsy—that is, when the fit has passed away, and when the indication is to break the morbid chain by preventing future fits, bromide of potassium, belladonna, and various metallic preparations, and a carefully ordered hygiene, are our chief allies.

I have not yet fairly tried Voisin's plan of giving the bromide, but it appears to me eminently deserving of being rigorously tested. It consists, as described in his admirable article on Epilepsy, in the *Nouveau Dictionnaire de Médecine*, in giving from two to twelve grammes daily, a few minutes before meals, and in persisting uninterruptedly for a year or more, testing the action of the bromide by applying a spoon to the epiglottis. When reflex nausea is no longer excited by this test, we know that the drug is acting on the rachidian bulb, diminishing its excito-motor force. As Voisin truly says, in a chronic disease we must have a chronic medication. Bromide of potassium must be an aliment. Diuretics must be given with it, and occasionally iron, to obviate anaemia.

About two years ago I saw, with Brown-Séquard, a young American lady, decidedly epileptic, the exciting cause being probably ovarian trouble. She had been taking for a year or more two-drachm doses of bromide; and there seemed no doubt that it acted efficaciously in averting the fits.

Trousseau's plan of giving belladonna continuously for one, two, or more years, is another way of carrying out the same indication. This, he says, is more especially useful in the epileptic vertigo. I am inclined to suspect that the disappointment at times experienced with these remedies is in some measure due to the want of perseverance in keeping up the full doses over a long space of time, and in many cases—my remark applies especially to women—to the neglect to treat the frequently attending ovario-uterine complications.

The value of the metals in the treatment of convulsive diseases has always been recognised. It would be impertinent on my part to dwell upon the subject. I would simply ask leave to mention that many years ago I proposed and extensively tried the combination of zinc with phosphoric acid. The diphosphate is soluble, and may be given as a syrup. It is somewhat apt to nauseate, and it might be preferable to give the insoluble phosphate in powder. I am not, perhaps, justified in saying that this combination is better than other metallic preparations; but I have certainly derived excellent effects from its use.

In cases where periodicity is marked, the indication is obvious to be on the watch, and so to prepare the system as to avert or to lessen the severity of the attack. In many cases there is no warning symptom to attract attention. It is, therefore, the more important to observe closely the conduct of the patient when the calculated time for an attack is coming round. There is often observed some increase of mental irritability,

headache, languor, a sense of uneasiness, perhaps a sense of dread of something impending. Sometimes, as I mentioned in the preceding lecture, there is marked increase of phosphates and uric acid in the urine; and on several occasions I have noticed nearly total suppression of urine for the day or two preceding an attack. The state of the urine should be observed; and, in any case, the secretions should be carefully regulated by alkaline salines, aloetic and mercurial pills, or Püllna or Friedrichshall waters. To meet the fit itself, chloroform should be kept at hand, and a bit of India-rubber to slip between the teeth. The attack, it is well known, frequently comes on in the night. This seems to be the time when the excito-motory system is most active. Evidence of this may be seen in the common occurrence of erection in children connected with the loading of the bowels and bladder. It is probable that a similar loading of the pelvic viscera may sometimes be the immediate exciting cause of a fit in women, especially when such an accidental condition coincides with the periodical nervous erethism. Since the attack is so likely to occur in the night, it follows that the patient should never sleep alone, and that the person sleeping with her should be instructed and prepared to administer the treatment necessary for the emergency. It would also be wise to increase the doses of belladonna or bromide of potassium about this time; and, if there be any threatening symptom, at once to give a scruple or half a drachm of chloral. By acting in this way, I have every reason to believe that fits have been warded off.

The indication to cut off all complicating morbid conditions is one that rarely admits of being fulfilled in the urgent cases of eclampsia and of the vomiting of pregnancy. Purgatives, and those not the gentlest, are commonly given in eclampsia, the motive being to remove any possible irritating matters from the intestinal canal. It is a routine practice, which is occasionally useful, as in those cases where a fit has come on soon after a heavy meal. An emetic would act better still; but in the majority of cases I do not think I have seen any good from the practice. Some violence is often done in forcing open the jaws to place calomel or croton oil on the tongue, and this is bad. It is very easy to do too much. The terrible anxiety of the friends around urges the physician to "do something". If he be not self-collected and wary, he falls into that worst fault in medicine, as it is in diplomacy, of exhibiting too much zeal; but anxious friends, the unskilled bystanders, can rarely appreciate "masterly inaction". Let the physician, then, show activity in removing all useless persons, who are likely to be the most mischievous critics, from the room; in removing all other sources of irritation; and in the administration of chloroform or other sedatives.

The elimination of all complicating morbid conditions is especially necessary in the prevention and treatment of the convulsive and other nervous diseases of non-pregnant women. In a large proportion of cases, indeed, this constitutes the greater part of the treatment. This applies particularly to neuralgia, to hysteria, and, in a lesser degree, to the epilepsy of the climacteric period.

I suppose the old doctrine of antagonism between certain morbid conditions is now exploded. Whatever ground there may be for the belief that certain poisons are mutually antidotal or neutralising, few will now maintain that the poison of variola is incompatible with that of scarlatina, that ague excludes phthisis, or that phthisis is favourably modified by pregnancy. It may be accepted as a general law, that any two diseases existing at the same time in the body aggravate each other, and increase the danger of the patient; and also that imperfect structure, or other abnormal condition, and disordered function of one organ, is the source of disturbance in the functions of other organs—hence the great rule in therapeutics, to give what relief we can by eliminating, as far as possible, morbid complications. Every such complication removed is a gain not only *pro tanto*, but also by the consequent alleviation of those remaining morbid conditions which we cannot at once cure.

The evidence in support of this precept rises to demonstration in many cases of hysteria and epilepsy associated with dysmenorrhœa; and the particular form of dysmenorrhœa which is most commonly the attendant and forerunner of nervous disorder is that which depends upon obstruction or partial retention of the menstrual fluid. It would be too wide a digression from our theme to enter with any detail upon the pathology and treatment of dysmenorrhœa; but I may state that the following sequence of facts is established by an overwhelming mass of clinical observations.

1. Beginning with the menstrual function, there is the pain which is one of the features of dysmenorrhœa.
2. There is gradual wear and tear of the nervous system, attended by degradation of the blood.
3. There is increased susceptibility to physical and mental impressions, marked in many cases by the outbreak of hysteria or of neuralgia, and in a more limited proportion of cases by epilepsy.
4. Where marriage ensues, it is generally unfruitful; proving again,

by another test, that there exists an impediment to the due performance of the ovario-uterine functions.

5. Where the obstruction is removed, as in most cases it can be, we find the preceding conditions gradually disappear. When menstruation is performed easily, the nervous complications, which are really epiphenomena, subside.

If, on the other hand, the dysmenorrhœa be cured early—that is, before hysteria, neuralgia, or epilepsy have shown themselves—these disorders will, in high probability, not appear at all. The presumption is great that they will be prevented, and that any *inherited* predisposition to them will remain dormant. The treatment, then, both prophylactic and curative, must be directed against the dysmenorrhœa.

In single women, dysmenorrhœa is the most frequent attendant or exciting cause of hysteria or epilepsy. In a certain proportion of cases, however, no abnormality of structure or function of the ovaries or uterus is apparent. The exciting cause may spring up elsewhere; but in all there is a special proclivity developed by the normal ovario-uterine stimulus.

In married women, and in those who have borne children, not only may dysmenorrhœa arise, but metritis, congestion, displacement, and other affections, are more frequent. They hardly ever fail to induce that general debility and nervous prostration which predispose to nervous disorders. It is generally a hopeless task to cure these nervous disorders, unless we begin by relieving the local disorders upon which they so greatly depend.

Before closing, I must beg leave to retrace my steps rapidly, and to sum up in a few propositions the principal points of my theme.

1. Pregnancy and labour require for their due fulfilment an extraordinary supply of nerve-force.
2. This extraordinary supply of nerve-force implies a corresponding organic development of the spinal cord.
3. The provision of an extraordinary supply of nerve-force implies a greatly augmented irritability of the nervous centres, rendering them more susceptible to emotional and peripheral impressions.
4. The disturbances in nutrition occasioned by pregnancy almost always entail some alteration of the blood, which increases the irritability of the nervous centres, and favours the evocation of any latent convulsive or other nervous diathesis, as chorea, epilepsy, or vomiting.
5. When the blood-change wrought by pregnancy is marked by albuminuria, a poisonous action of peculiar intensity is exerted upon the nervous centres tending to produce eclampsia.
6. Obstinate vomiting in pregnancy probably sometimes proves fatal by the development of an unknown organic or systemic morbid process.
7. Menstruation resembles pregnancy in giving rise to an exalted central nervous erethism; and ovulation is a primary exciting cause of epileptic, vomitive, and hysterical convulsion.
8. At the climacteric age, again, there is renewed susceptibility to convulsive disease.
9. Pregnancy, by evoking or producing convulsive diseases, under certain known and passing conditions, puts to the test the various theories of the pathogeny of these diseases.
10. The rational treatment of convulsive diseases in women must take into account the two great factors in the production of these diseases—namely, exalted nervous irritability under the stimulus of the reproductive function, and lowered or empoisoned conditions of the blood.

If it be objected that the views I have ventured to lay before you seem to be false in colour and form, wanting in breadth and perspective, I might reply, that to deny this absolutely would be to arrogate to oneself freedom from human infirmity. The mind, like a mirror, can only reflect the impressions which it receives. Our care must be to keep the mirror bright and even, so that it may reflect truly. This I have endeavoured to do; with what success, must be determined by comparing my reflections with those coming from mirrors that are brighter. One thing only do I ask. It is, that these mirrors may be so set as to take in the objects which have been reflected from mine.

YELLOW FEVER IN BAHIA. The *Gazeta Medica da Bahia* of February 15 and March 15 contains two parts of an interesting report, drawn up by a special committee, on the epidemic of yellow fever, and on the sanitary measures to be taken in consequence. The article contains a series of recommendations on the course to be adopted with regard both to the ships in harbour, and to the hygiene of the city itself. Among other things, the committee recommend the local government to take effectual and energetic measures for correcting the irregular manner in which sanitary proceedings are carried out, for destroying sources of infection, for enforcing the regulations relative to articles of food, and for providing a suitable system of drainage.