A LECTURE

ON A

CASE OF PUERPERAL SEPTICÆMIA, WITH HYPER-PYREXIA, TREATED BY THE CONTINUOUS APPLICATION OF COLD.

By W. S. PLAYFAIR, M.D., F.R.C.P.,

Professor of Obstetric Medicine in King's College, and Examiner in Midwifery to the University of London.

GENTLEMEN,—Strictly speaking, a case occurring in private practice scarcely forms a fit text for a clinical lecture; but that on which I am tempted to make some observations to you to-day is one of a class which students have no opportunity of studying in the wards of a hospital, and yet of a kind which, unless they are exceptionally fortunate, they cannot fail to meet with now and again in the course of their private practice. Moreover, I am sure I am fully justified in saying that these cases of puerperal fever, or rather of puerperal septicæmia, or pyæmia, as modern obstetricians are more inclined to call them, will cause you more intense anxiety and more severely tax the resources of your art, than any others that are likely to come under your observation. Under these circumstances, the breach of the rule which limits clinical lectures to hospital cases is, no doubt, justifiable, the more so as it will enable me to direct your attention to the treatment of such cases by the continuous application of cold, a therapeutic resource regarding which we have, so far as I know, no published details as applied to puerperal cases, and which, in this case at least, rendered most valuable assistance, and, I cannot but think, saved the patient's life under conditions which almost precluded any hope. As time elapses, our knowledge of the effects of cold in the management of hyperpyrexia will, no doubt, be greatly extended, its limits defined, and the readiest way of applying it decided. In the meantime, I trust that this history may at least afford you some useful hints in the event of your being so unfortunate as to meet with such a case in your own practice.

On the 5th of August, at 5 P.M., I was summoned to attend Mrs. —, a young and healthy primipara. I found the head presenting, the pains frequent but slight, and the os undilated. The labour progressed perfectly naturally, the first stage being somewhat tedious and painful. At 7 A.M. on the morning of August 6th, the os had remained without further dilatation since 1 A.M., although the pains were frequent and of good character. The os was at this time of the size of a florin, the membranes not bulging at all through it. I suspected that the labour might be protracted by an excess of liquor amnii, and, therefore, ruptured the membranes with the best effect. The os now rapidly dilated, the head descended into the pelvis, and the child was born at 10 A.M.

I may observe, in passing, that the axiom of our text-books as to the paramount importance of keeping the membranes unruptured until the os is fully dilated, often leads to unnecessary delay. No doubt, some practical experience is necessary to decide upon the propriety of evacuating the liquor amnii; but, when the pains do not steadily increase, when the membranes do not bulge through the os with each pain, and when the os is soft and apparently readily dilatable, the puncture of the membranes often saves your patient many weary hours of suffering.

The uterus now contracted strongly, but one drachm of the fluid extract of ergot was administered after the placenta had been expressed, as has been my custom for several years, with the view of keeping up continuous contraction.

At 6 P.M. the same day, when I again visited the patient, I found that there had been a distinct rigor, her pulse being 120, and the temperature 102 deg. Nothing was done that evening, as, this having occurred so soon after labour, I was in hopes it might have been due to some transient cause. Next morning, I found that the patient had had another rigor, the pulse being 130, and the temperature 103 deg. There was no tenderness over the abdomen, and the lochia were natural. I now washed out the uterine cavity freely with Condé's fluid and water, with the view of disinfecting any decomposing coagulum that might be lying within it and setting up septic mischief, and prescribed twenty grains of quinine to be taken immediately, and to be repeated at 8 P.M.; and a minim of tincture of aconite was given every half hour, under careful

supervision, with the view of lessening the rapidity of the heart's action. Next morning, the pulse was 120, and the temperature 101.2 deg.; but the quinine had produced so much discomfort and throbbing in the head that I was obliged to discontinue its use.

The case now rapidly grew worse. Next morning, the fourth after her confinement, the temperature was 104 deg.; and in the evening 105.4 deg., the pulse 130, small, thready, and feeble. There was no tenderness over the abdomen, but flatulent distension was commencing. There were occasional well marked rigors; the complexion was of a dusky yellow tinge, with distinct patches of a livid purple eruption coming out over the forehead and cheeks, disappearing, and coming out again (a phenomenon that continued, more or less, during the whole illness); the tongue was coated, but moist; in fact, the case had now assumed a most formidable character, and was a well marked example of what I believe to be one of the worst types of puerperal fever, that in which there are no distinct local phenomena.

The treatment now adopted was the administration of abundant fluid nourishment in the form of milk and beef-tea; fifteen grains of salicylic acid every third hour, in the hope of lowering the temperature; six ounces of brandy in the twenty-four hours; and the washing out of the uterine cavity twice daily with antiseptic lotions. In the hope of lessening the persistent high temperature, Dr. Knowsley Thornton's ice-cap, which has been found so useful for this purpose after ovariotomy, was now applied. This gave great relief to the throbbing headache, which caused much suffering; but it produced no further diminution of the temperature than from 105.4 deg. to 104 deg. Next morning, August 10th, things were in no way improved. The temperature was 105 deg.; pulse 140; and the abdomen tympanitic. As the salicylic acid had not lessened the temperature, and as the pulse was very thready and feeble, it was discontinued.

Next day, August 11th, the patient was still worse. The temperature was 105.2 deg.; pulse 140. The intelligence was good, and she was able to take nourishment well; but, with the temperature at so high a mark, it was obvious that the chances of recovery were small indeed; and I now determined to try the effect of cold applied externally, with the view of lessening the excessive fever, on which the antipyretic remedies already tried had had no appreciable effect. Accordingly, at 4 P.M., the patient was enveloped from head to foot in a large sheet wrung out of iced water; this being rapidly changed every minute or so for another. The pack was applied for half-an-hour. The patient expressed herself as feeling no discomfort from it, but rather the reverse. The effect on the temperature, however, was slight, as it only fell from 105.2 deg. to 104 deg. At 11 P.M., the pack was again applied for half-an-hour; and, at the end of that time, the temperature had fallen to 103.2 deg. Next morning, August 12th, the temperature was 104 deg.; pulse 130. Her general condition was as before. At this time, I had the advantage of meeting my friend Dr. Wilson Fox in consultation. It is well known that that gentleman is one of the first who, in this country, drew the attention of the profession to the systematic use of cold applications in the treatment of hyperpyrexia, and I thankfully acknowledge the great assistance I derived from his experience in the management of this anxious case. With his concurrence, it was determined to use the cold applications continuously, but in a modified form, since the complete envelopment of the body in iced sheets was very difficult to manage, and had not the marked effect of reducing the temperature which was expected. Accordingly, the patient lying on her back, three towels soaked in iced water were placed on the front of the body, one over the shoulders and chest, one over the abdomen, and one over the thighs. These could be frequently changed, and were managed by one nurse, while it had taken three people to apply the sheets that had been formerly used.

It is not easy by description to convey to you any accurate idea of the effects on the temperature which, from this time and through the remainder of the illness was taken in the mouth every quarter of an hour, except when the patient was asleep, as you will see by the chart. During the whole of the day, the modified pack was kept constantly applied, with manifest comfort to the patient; the temperature varying from 103 deg. to 104 deg. At 5 P.M., it registered 103 deg., after which it gradually fell, until at midnight it was 101.4 deg., when the pack was removed. The patient now had a little sleep, but the temperature rapidly rose, until at 3 A.M. it was again at 103 deg., when the pack was reapplied. Next day, August 13th, the patient was much the same. The temperature ranged from 102 deg. to 103 deg. The pulse was 130; the general condition unaltered. The ice-cloths were kept on nearly continuously night and day, the patient being obviously more comfortable when they were applied; and, when they were removed, the temperature at once showed a decided tendency to rise. The patient now and again slept for half-an-hour or so, took her food well, and had no diarrhoea; the abdomen was still tympanitic.

The brandy was increased to ten ounces *per diem*; twenty minims of the tincture of perchloride of iron were given every four hours; and nourishment of some sort, milk, beef-tea, or yolk of egg every hour.

I cannot give you a detailed account of the progress of the case from this time; but it will suffice to say that it was obvious that there was a very marked tendency to hyperpyrexia, which was only kept within moderate bounds by a constant attention to the iced applications. If for half-an-hour or more, as occasionally happened when the patient was asleep, their use were intermitted, or when an endeavour was made to do without them, the temperature very shortly ran up to 104 deg., or even, on one or two occasions, to 105 deg.; but, by the assiduous use of the cold towels, it was again speedily reduced to 102 deg., or even less, having occasionally fallen as low as 101.4 deg., but for a short time only. By the means we had hitherto used, the cold was applied to the front of the body only. We now adopted a method of applying it to the back, with no moving of the patient, and with little fatigue to the nurses. I had two India-rubber tubes fixed to the opposite corners of a water-bed, on which the patient was laid without any clothing, and covered with the iced towels. From the lower of these tubes every hour or so several gallons of water were allowed to flow out, while an equivalent quantity of iced water was pumped in at the opposite end by a large garden-pump. This answered admirably, and gave little trouble. The cold applications were begun, as I have told you, on the 9th of August, and they were continued night and day, without any intermission, except for a short time now and again, when a rapid increase of temperature immediately necessitated their reapplication, until August 18th, that is eleven days. During the whole of this time, the patient's condition was critical in the extreme. The temperature was taken in the mouth every quarter of an hour, except during the intervals of sleep; and even under the constant refrigeration, it never fell below 101 deg., except for three hours on the morning of the 16th, when it was 99.5 deg., whilst at times it was 105 deg. The pulse all this time was excessively small and feeble, ranging from 130 to 150 per minute. The other symptoms were, on the whole, good. The tongue was moist; the abdomen only moderately tympanitic; there was slight diarrhoea for three or four days, but never in excess; the intellect was clear; the urine possessed a slight cloud of albumen; there was no local complication. Until August 15th, the tenth day of the illness, the temperature-chart showed a nearly uniform line with occasional short rises. On that day, however, and on each subsequent day, there was a distinct remission in the morning, when the temperature reached its lowest point, and the pulse improved; the temperature beginning to rise again at 1 P.M., reaching 104 deg. or 105 deg. by 3 P.M., and the pulse becoming extremely rapid and feeble. On the afternoon of August 16th, 17th, and 18th, the patient was almost moribund; and I left her on each successive visit with little hope of finding her alive on my return. Indeed, on the 18th, I thought she could not possibly have lived many minutes. The pulse at the wrist could not be made out at all; and, on auscultation, only a feeble flutter, quite impossible to count, could be heard over the heart. At those times, the amount of stimulant was largely increased; as much as twenty-eight ounces of brandy having been given during the twenty-four hours on those three days. All this time, the cold applications were continued; and, although I am quite convinced that they kept the temperature within limits which were compatible with existence, and so gave the disease a chance of wearing itself out, they did not seem, either to Dr. Fox or myself, to do more than this, and had in no sense a curative effect.

You will remember that large doses of quinine and also of salicylic acid had been given, with no distinct antipyretic effect, and had been discontinued. Being struck with the marked remittent type the fever had now assumed, I determined to try the effect of a remedy of high repute in India in the worst class of malarious remittent fevers, and the almost marvellous effects of which in such cases I had myself witnessed many years ago when in India. This is the so-called Warburg's tincture, a drug which, as being a patent medicine, was for long in disfavour, but the remarkable properties of which had been testified to by many high authorities, among whom I may mention Dr. Maclean of Netley and Dr. Broadbent, and which Sir Alexander Armstrong, the Director-General of the Medical Department of the Navy, informs me is now supplied to all Her Majesty's ships in the tropics, because it is found to be of the utmost value in cases in which quinine has little or no effect. Recently the composition of the tincture has been made public by Dr. Maclean. Its basis is quinine, in combination with a large number of vegetable aromatics and bitters, and the recipe reads like a farrago of nonsense. Probably there is some ingredient in it which intensifies the action of the quinine. Be this as it may, the testimony in favour of the efficacy of the drug as an antipyretic is very strong, and I determined to try its influence on my patient, since her condition was so bad that nothing could make it worse, and all other remedies had

proved useless. The effect was very much more marked than I had ventured to hope. A full dose of the tincture was given at 3.30 P.M. on August 19th, the pulse being then 140; temperature 104 deg.; and was repeated at 6 P.M. A very profuse perspiration shortly broke out, until the patient was literally bathed in sweat (this being the almost invariable effect of the remedy), and she described herself as feeling immensely relieved. The cold applications were now removed; and the patient fell into a quiet sleep. At 9.30 P.M., the pulse was 110, but much fuller and stronger than it had been for many days. Temperature 102 deg. A single drachm of the tincture was given at 3 A.M., and ordered to be repeated every six hours. Next morning, at 8.30 A.M., I found her condition totally altered. The temperature was 99 deg.; pulse 96, full and strong; and from this moment the patient may be said to have been convalescent. The temperature never rose again, except between 3 and 7 P.M. on the afternoon of the 20th, when it suddenly ran up to 102 deg. A dose of the tincture, which had been discontinued, was now given, and repeated at 2 A.M.; and next morning the temperature was normal, and remained so.

The history of this terrible illness is now practically over. For many weeks the patient remained very weak and feeble, and there came on some indefinite swelling and pain about the joints; the skin of her hands, and here and there in other parts of the body, peeled, a fact on the significance of which I shall presently comment; but eventually she completely regained her usual health.

Let me now, as briefly as possible, point out to you some of the lessons we may gather from this history, already, I fear, too tedious and long, of the most remarkable recovery it has ever been my fortune to witness.

I. Can we say anything as to the *cause* of the illness? The first question the medical man is bound to ask himself, in the face of such a case, is: whether it is possible that the septic matter can have been conveyed to the patient? Unhappily, the evidence of the possibility of this is too strong to render it a matter of doubt that this may happen; and all who see much midwifery practice could, were they honestly to review their experience, record such cases. Fortunately, in this instance, nothing of the kind was in the least likely; since no one in contact with the patient had, so far as could be ascertained, recently been near a case from which the contagium could have been derived. There is, of course, the possibility that it might have been autogenetic; but I do not think it probable, since the symptoms began too soon after delivery to admit of the supposition that it arose from decomposing matter in the genital tract. There remains the possibility of the patient having herself been exposed to the contagium of some zymotic disease, such as scarlet fever, before labour. Now, I cannot enter here, as I have done elsewhere, into a discussion of the *questio vexata* as to whether a disease, indistinguishable from puerperal fever, may be derived from the poison of zymotic disease, which shows none of the characteristic phenomena of the disease which originated it. I am aware that many high authorities totally disbelieve that this can be the case, and contend that zymotic diseases in the puerperal woman always run their usual course, and show their characteristic phenomena. That they often do so is quite beyond doubt. I have repeatedly seen lying-in women, who have been attacked with distinct and well-marked scarlet fever or measles, within a few days after labour, in whom the disease has run its usual course, and has not apparently been in any way intensified by the puerperal state. On the other hand, I am equally certain that I have seen many cases of puerperal fever showing no traces whatever of the ordinary symptoms of zymotic diseases, the origin of which was undoubtedly traceable to the poison of scarlet fever, erysipelas, or diphtheria. I am quite unable to suggest to you any satisfactory explanation of this curious fact; but I believe it to be proved to demonstration, and no one can, I think, impartially study the literature of the subject—as, for example, the interesting paper of Dr. Braxton Hicks, in the twelfth volume of the *Obstetrical Transactions*—without being compelled to admit it. It is to be hoped, as our knowledge increases, that some light may be thrown on the subject. In the meantime, I firmly believe that the denial of the facts, because we cannot explain them, can have no other effect than that of rendering the practitioner careless in his dealings with zymotic disease in relation to puerperal patients, and thus leading to the most disastrous results. Now, the channels through which such a poison as that of scarlet fever may come into contact with a patient are numberless, especially in large towns, where the first cab the patient may enter, or some casual contact in the streets, may convey the contagium. There was in this case a well-marked eruption, very analogous to that of scarlet fever; but such rashes are common in septicæmia, quite independently of the origin of the disease. The fact, however, that, subsequently to recovery, there was distinct desquamation about the fingers, and, to a less extent,

in other parts of the body, make me think it likely that the scarlatinal poison was the origin of the illness.

2. As to the *treatment*. I believe that this may be summed up in the aphorism, that we have to use our utmost endeavours to keep the patient alive until the intensity of the disease has worn itself out; but, I fear, we must admit that we know of no reliable means of cutting short, or materially influencing, the progress of the septic disturbance, when once it has been fairly set in progress. Beyond any doubt, continuous elevation of temperature, such as existed in this case to so marked a degree, is one of the chief sources of danger, and much of our management of the case must lie in the direction of lessening pyrexia. In cases of moderate intensity, antipyretics—such as quinine in sufficiently large doses, of not less than twenty grains, salicylic acid, or the ice-cap—will probably be quite sufficient; and I certainly should not be disposed to recommend so troublesome and irksome a treatment as the external application of cold, unless there were marked hyperpyrexia. I cannot, however, doubt that in this case refrigeration saved the patient's life; for, without it, she certainly could not have tided over eleven days of fever with the temperature at 104 deg. and 105 deg., and tending to increase. My experience of this treatment is limited to two other cases. One was the wife of a medical man, whom I saw in consultation with Dr. Cleveland of St. John's Wood. In this we did not think of using the cold until the temperature was 107 deg., and the case was almost hopeless, and then only in the modified form of the ice-cap, and unhappily without any good results. In the other, which I saw in consultation with Dr. Protheroe Smith and Dr. Simpson of Highgate, we used the ice-pack night and morning for several days. Unfortunately, this patient was the subject of chronic albuminuria; and the case, which ended fatally, could hardly be considered a fair test of the remedy. My belief is, however, that where there are no well-marked local complications, and where the temperature is above 104 deg. or 105 deg., and tending to rise to a still higher level, the pack should certainly be tried; and in the modified form in which it was used here, it may be applied readily enough, while the lifting of a puerperal patient into a bath would be almost impossible.

You will have observed the marked beneficial results which followed the administration of Warburg's tincture. It would, of course, be absurd to draw too strong an inference from one case; but, at least, my experience of it would strongly incline me to try it again as an antipyretic of promising character.

By the careful feeding of your patient with milk, beef-tea, and eggs, administered at frequent intervals, you will materially husband her strength for the storm she has to pass through, and you cannot pay too much attention to this part of the management of this disease. With regard to stimulants, I am inclined to think that they are often given in such cases to an injudicious and needless extent. As long as the pulse is fairly strong, and no indication of excessive prostration exists, I believe it is better to administer them in strict moderation. But the time may come, as it did in this instance, when the prostration is so great, that the only chance of keeping the patient alive is in profuse stimulation. My advice with regard to stimulants would be not to order them indiscriminately, or in fixed quantities, but in strict accordance with the exigencies of the case, varying the amount from hour to hour, as the state of the patient may require.

One point of local treatment should never be omitted, especially in the early days of the illness, that is, the thorough washing out of the uterine cavity, night and morning, with antiseptic lotions, such as Condy's fluid and water, tincture of iodine and water, or a weak solution of carbolic acid. In many cases of autogenetic origin, in which decomposing matters exist *in utero*, this alone will suffice to remove the source of mischief, and cut short the progress of the disease. I must warn you, however, that such injections to be of value must be applied thoroughly, and into the uterine cavity itself; and it is quite useless to entrust them, as I have often seen done, to the nurse.

3. I can only briefly refer, in conclusion, to a subject which every conscientious practitioner must very anxiously consider, when he is so unfortunate as to have under his charge such a case, and that is: What are his duties to his other patients? The practical difficulty of giving up attendance on other midwifery cases is so great, that one cannot be astonished at practitioners inclining to underestimate the weight of the evidence which shows the possibility of the contagion being conveyed from patient to patient. Indeed, I believe that, in these days of antiseptics, the thorough disinfection of the hands can be so efficiently carried out, that danger from this source can be reduced to a minimum. The principal risk is in refusing to admit the danger, and neglecting the necessary precautions; and it is the man who wilfully shuts his eyes to the facts, and does not employ the means of disinfection at our disposal, who is most likely to be the unhappy medium of carrying infection. If, then, we see such a patient once in a way, carefully wash our

hands in some antiseptic lotion, and avoid touching her with the right hand or keep on a glove while in her room, there is no reason why we should not continue our obstetric practice, and to insist upon more would be practically to debar us from following our profession at all. But, if we are in constant and frequent attendance on such a case as that we have been considering, visiting our patient four or five times every day, and, above all, if we are compelled to use intra-uterine injections, I believe it to be quite impossible to attend other cases without such a degree of risk that no conscientious man can venture to subject his patients to it; and, be the sacrifice what it may, it will be our bounden duty to avoid, for the time, the actual attendance on lying-in women.

A CASE OF PECULIAR CROWING INSPIRATION IN A NEW-BORN CHILD.*

By HUGH MILLER, M.D.,

Physician-Accoucheur to the Glasgow Maternity Hospital.

BEFORE I relate the case which forms the more immediate object of this paper, allow me to give you a few particulars bearing upon it, which the family history reveals. The lady—the mother of the child—had not been in good health for years. While a young lady, her family physician ordered her to the Mediterranean, and during her stay there she married, and afterwards gave birth to the two eldest of her children. The firstborn was a female, who lived two years and died of dysentery. The second child, born soon after this first one's death, was a son, and he died in his third year from scarlet fever. After an interval of three years, she gave birth to her third child, a female. She was the first of her family born in this country, and she exhibited from birth a peculiar crowing while breathing. The mother describes it as a catching of the breath, and she believes it originated in consequence of the exhaustion she suffered from through nursing the second child during his last illness. This third child lived only a few hours. Again, after an interval of about three years, another female child was born. This one had the peculiar crowing during each inspiratory effort; she lived twenty-four hours, and during that time every attempt was made to establish an easier state of breathing, but without success. About ten months after the event, my patient had a miscarriage.

Towards the end of 1876, the lady herself, for the first time, came under my care. Her statement to me was that she had suffered from rheumatism, with occasional neuralgic attacks, and that she had habitual indigestion. I found her suffering from the gastric sympathetic irritation of pregnancy, and from abdominal pains over the region of the womb and bladder, which were due either to her rheumatic condition or to previous inflammatory adhesions existing around the uterus. It was rare for her to take any food without feeling acidity in her stomach. The urine was normal, but the bladder was irritable; and this condition became so aggravated while in the erect position, that she was obliged to remain in bed during the last five months of her gestation. Altogether, she felt and looked in very poor health. Various remedies were employed to meet the disordered conditions just described, with only partial benefit. When her pregnancy had advanced seven months, she suffered from the symptoms of a miscarriage, without any known exciting cause for inducing it. The spasmodic pains were arrested by morphia suppositories, and after two days they ceased to trouble her. Henceforth, the gastric disorder was kept in check by pepsin and bismuth, while the irritation of the bladder was somewhat relieved by her taking tartarated iron. At full term, her labour began; its onset was marked by the usual irregular and fitful pains, which in about two hours were succeeded by the regular bearing down ones, and the labour, which was natural, was completed within the usual period of a healthy multipara, and with no effort beyond that usually employed.

The child, a male, was fully matured; it appeared to be well nourished, and was of the average size. From the first, its respiration was defective. It did not cry, and the attempts at inspiration were irregular, short, and very feeble; they might be described rather as a gasp than as an inspiratory effort. Slapping the nates, and the alternate application of hot and cold water to the skin, increased the frequency of the child's efforts to breathe. A little blood was allowed to escape from the navel, with no beneficial result; then the use of hot and cold baths was resorted to. The child was plunged in one of them to the neck, kept for a few minutes in it, and then quickly transferred to the other. This treatment was found of most advantage; the skin began to show patches of a natural colour; after a time, the breathing was

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