CLINICAL LECTURE ON SOME CASES OF ACUTE RHEUMATISM WITH HYPERPYREXIA.

Delivered at the Liverpool Royal Infirmary.

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GENTLEMEN,—I propose to call your attention to-day to some cases of acute rheumatism with high temperature which have occurred in my practice, in one of which the cold, or rather, the tepid bath was successfully used. The following are the notes of the case.

CASE I.—Mary R., a domestic servant, 17 years of age, was admitted into the Infirmary, under my care, on September 4th last. A week previously to admission, she had been working in a cellar, standing without her boots on the damp floor. On September 2nd (two days before admission), she felt pain in her feet and ankles, and on the following day the pain extended to the knees. There was no previous history of rheumatism. The patient was a strong, well developed, and healthy-looking young woman, with a ruddy complexion; and she presented on admission all the characteristics of a mild attack of acute rheumatism, the affection being confined to the joints. She was ordered bicarbonate of potash in fifteen-grain doses every four hours, and a grain of opium at night, with beef-tea and milk for diet. On September 5th, the pulse was 120, the respirations were 36, and the temperature was 102 deg. On the 6th, they were respectively 120, 40, and 103.5: this was at 11.15 A.M. There was profuse perspiration, with a copious military eruption, and pain in most of the joints. The dose of potash was increased to half a drachm, and a grain of opium was ordered twice a day.

On the 7th, at 11 A.M., the pulse was 120, the respirations were 40, and the temperature was 103.5 deg. The patient complained of pain in the chest, and a faint systolic murmur was audible at the base of the heart; but there was no friction-sound, and no increased dulness. The urine was neutral, of specific gravity 1.027, and free from albumen. On September 8th, she was very restless, and complained of pain in the left side. On examination, the cardiac murmur was still audible; but there was no other abnormal condition of heart or lungs found. At 11.20 A.M., the pulse was 110, the respirations were 40, the temperature was 104.3 deg. I saw the patient at midday. She was very restless; the skin was dry and pungently hot. Having had experience of the cases to which I shall refer, which terminated fatally, and as the symptoms presented by this girl were similar to those which preceded the fatal issue in those cases, I resolved to try the effects of the cold bath if the temperature continued to rise. I saw the girl again at 5 P.M. The temperature had risen to 104.7° in the axilla. This probably represented a temperature of 105 deg. in the rectum. Now, a temperature of this kind will not necessarily kill, but it becomes alarming in a case of acute rheumatism when it appears to be steadily rising, and especially if, as was the case with this patient, certain nervous symptoms are present. It was the presence of these symptoms—a peculiar restlessness and an appearance of threatening delirium—such as I had noticed in the fatal cases to which I shall refer in connection with rise of temperature—which induced me to use the bath at this period rather than wait till the patient should reach a more alarming condition. The girl was put into a bath at 5.20 P.M. (September 8th). Her temperature was 104.7 deg. in the axilla, and the pulse 104, the room having a temperature of 70 deg. The temperature of the bath was 95 deg., and it was gradually reduced to 75 deg. The reduction of the temperature from 95 deg. to 76 deg. occupied twenty-five minutes, and during the following thirteen minutes, at the end of which time the patient was removed, the temperature ranged between 76 deg. and 75 deg. The patient was in the bath forty-three minutes. On her removal, her temperature was 99 deg., the pulse 96 shortly before removal. There was thus a fall of nearly six degrees of temperature as the result of the bath, and a slight fall of the pulse. The patient was very comfortable whilst in the bath; towards the end, she complained slightly of the cold, but there was no chattering of the teeth, nor any shivering. She slept after being placed back in bed. At 7.45, she was quite comfortable; pulse, 94; temperature, 101.4 deg. The potash treatment was continued, but the opium was omitted. I left directions that, if the temperature rose above 103 deg., the bath should be used again. At 11.50, the temperature was 103.3 deg., the

pulse was 106. The bath was used for the second time at 12.30 (night), eight hours after the first bath. The patient's temperature on entrance was 103.3 deg.; on removal 101.3 deg.; the pulse 106 and 93. The temperature of the bath was gradually reduced as before from 95 deg. to 75 deg. The patient remained in the bath thirty minutes. The second bath, therefore, reduced the temperature two degrees, and lowered the pulse thirteen beats a minute. The patient experienced the same comfort from the bath as before, and slept after removal from it. The temperature, however, gradually rose again, and at 2.25 P.M. on the 9th (fourteen hours after the second bath), it had reached 103.3 deg., and the bath was again used in the same way as before.

On this day (September 9th), five minims of tincture of aconite were added to each dose of the potash mixture, and given every three hours; and a grain of opium was ordered, as a good deal of pain was complained of in the chest. On examination, no systolic murmur could be heard, nor any other abnormal sound. The temperature again rose after the third bath, and at 10.45 P.M. it was 104 deg., and at 11.50 104.5 deg. It was evidently rising rapidly, and the bath was used for the fourth and last time at 12.5 (midnight), ten hours and a half after the third bath. The patient was again kept in thirty minutes, and the temperature of the water was reduced from 95 deg. to 73 deg. Ten minutes after removal from the bath, her temperature was 99 deg. After this, her temperature never became very high. At 9 P.M. on the 10th, it was 103.4 deg.; but it fell soon, and the patient progressed favourably towards recovery; and, although on the 13th the temperature marked 103.5 deg., yet, as the general symptoms were mild, and the temperature was not sustained, the bath was not used again. Quinine (two grains every four hours) was given on the 14th, and continued for some days. On the 20th, the pulse was 80; temperature, 101.3 deg.; and on the 27th 56, and normal, respectively. The patient was sent to the convalescent hospital on October 7th. At that time, the heart-sounds were free from murmur.

Although it may be said that this case was one which did not thoroughly test the efficacy of the bath, as the temperature did not rise to a very alarming height, still my own impression is, that the bath was instrumental in preventing this dangerous rise, and thus in saving the patient's life.

And now let me call your attention to some cases which have terminated fatally. During the past few years, there have been recorded in the medical journals many cases of acute rheumatism with high temperature which have ended fatally, and, doubtless, in previous years such cases occurred; but, as the temperature was not taken, the nature of the cases was not clearly understood; they were put down as instances of cerebral rheumatism, and death was considered due to a metastasis to the brain, although no definite lesions recognizable by the naked eye were found after death in that organ. It is only since the thermometer has been in constant clinical use that we have heard of deaths from acute rheumatism without any serious complication except hyperpyrexia.

CASE II.—Geo. B., a cotton-porter, 38 years of age, was admitted into the Infirmary under my care on October 31st, 1874, suffering from acute articular rheumatism of the knees and feet. The man had had an attack of rheumatism twenty years previously; but, on examination, no affection of the heart was found. The pulse on admission was 108 and feeble; the temperature was 101 degs. He was ordered fifteen grains of bicarbonate of potash every four hours, and a grain of opium at bedtime. On the 22nd, the temperature was 100.4 degs. On the 23rd, symptoms of bronchitis set in; there was profuse sweating, the pulse was 96, and the evening temperature 102 degs. On the following day, the bronchitic symptoms were more severe. The rheumatic pain and swelling had left the knees and feet, and appeared in the wrists and hands. The pulse was 104, the evening temperature 103 degs. Four ounces of brandy were ordered. On the 25th, he was much worse, and had passed a very restless night; there was great thirst with lividity of countenance; the pulse in the morning (10 A.M.) had risen to 120, and the temperature to 106 degs. I saw the man in the afternoon about 3 o'clock, the temperature was 107.4°. He was becoming unconscious, and appeared to be rapidly sinking. An examination revealed no evidence of pneumonia or pericarditis. At 4.45 P.M., the temperature was 109.7 degs., and at 5 P.M. the patient died. The *post mortem* appearances were as follows: heart congested on surface, tissue flabby; liver enlarged, very friable, pale, slightly greasy-looking; kidneys a little pale, and rather soft; blood fluid.

This was the first case of the kind that I had lost, and after the patient's death I regretted very much that I did not try the effect of the cold bath to reduce the temperature. I was deterred from using it by the presence of bronchitis, but, with my present experience, such a complication would not prevent me from trying it.

CASE III.—Geo. P., 35 years of age, a barman, was admitted into the Infirmary under my care on November 14th, 1874, suffering from acute articular rheumatism. He had been drinking a good deal for some days, and was in a condition verging on delirium tremens when admitted. There was no previous history of rheumatism. There was no complication either of heart or lungs. On the day of his admission, the temperature was 102 degs. He was ordered bicarbonate of potash, with small doses of colchicum. On the following morning, the temperature was still 102 degs., but the man had passed a bad night, and been delirious. No change took place until the afternoon. At 2 P.M. the temperature was 102 degs., at 6 P.M. 106 degs., at 7 P.M. 107 degs., and before 8 o'clock the man was dead; the temperature after death being 109 degs. The *post mortem* appearances were as follows: heart, pale and soft; liver, partial fatty degeneration in lobules; spleen, large, puffy; kidneys, both large, left very large, but apparently healthy; pus was found in the sheaths of the flexor tendons of one of the arms; the blood was fluid.

CASE IV.—Mary B., 19 years of age, was admitted into the Infirmary under my care on November 14th, 1874. It is curious that this case and the preceding one were admitted on the same day. The patient was a well-developed healthy-looking young woman; her rheumatism was simply articular, and she had a very moderate temperature up to the evening of November 17th, four days after admission. At 9 P.M. on that day, her temperature was found to be 102 degs. She was left for the night in the charge of the night nurse. At 7 o'clock the following morning (November 18th), on the day nurse going on duty, the report she received was that the girl had been very restless and excited during the night, and, on taking her temperature, it was found to be 107 degs. The nurse at once summoned the house-physician, who, having had directions to send for me in case of any serious rise of temperature, at once despatched a messenger to my house. I started for the Infirmary with the intention of placing the patient in a bath, but, before my arrival, she was dead. She died at 8.30. The temperature rose to 110.6 degs. shortly before death. It rose between 7 A.M. and 8.30 A.M. at the rate of 0.6 deg. every quarter of an hour. At the *post mortem* examination we found the heart healthy, but slightly soft; the liver was slightly softened; the kidneys were large and white; the spleen small; the blood fluid.

The *post mortem* appearances found in these cases are similar to those met with in others where death has resulted under like conditions. No recognisable alteration of the nervous centres has been found—no inflammation of the brain nor of its membranes. The special morbid condition which may be said to characterise these cases is the peculiar state of the liver, now known as "parenchymatous degeneration". This is met with in many febrile and blood-diseases when a high temperature has prevailed. In addition to this change, the substance of the heart, kidneys, and spleen has generally been found soft and flabby, and the blood fluid. These morbid changes resemble very closely those met with in death from sunstroke, or heat apoplexy, in which there is great elevation of temperature, not, however, of prolonged duration. They form also a marked feature in cases of typhoid fever when the temperature has been high and more prolonged. Whatever be the exact nature of these changes, there can, I think, be no doubt that they are the result of the hyperpyrexia. I shall not stop now to speculate on their causation; that these conditions may be perfectly recovered from—unless, indeed, they proceed to a high degree—we cannot but admit, for patients have got well in whom the temperature was so high that we may fairly assume that "parenchymatous degeneration" existed to no slight extent.

The general symptoms which have been observed in these cases of high temperature in acute rheumatism are as follows. There is a peculiar restlessness and great thirst; the respiration is hurried, and the countenance has an anxious expression. The pulse is usually, but not always—except when the temperature gets very high—quick. The restlessness is followed by slight, and then well-marked delirium, and this by coma, which, if not relieved, soon terminates in death. There is generally a copious miliarial eruption on the body, and profuse perspiration. As the temperature, however, rises to an alarming height, this latter ceases, and the skin becomes dry and harsh. Coincident with this occurrence, the nervous symptoms become more marked.

To what are all these phenomena due? Some of the cases—all that I have recorded, with one exception, that of the man who had bronchitis—have been cases of simple uncomplicated articular rheumatism. There was no inflammatory condition of any organ to account for the symptoms. It can scarcely be said that they were due to the poisoned condition of the blood, and we must therefore conclude that they were the result of the profound impression produced on the nervous system by the high temperature.

A very interesting circumstance in connection with these cases of

acute rheumatism with hyperpyrexia is that a very large proportion of the patients have been young, and the attack has been a first attack.

In all my fatal cases—and the remark will apply to others—there was a rapid rise of temperature, and the patients passed from a condition of apparent safety to one of extreme peril in the course of a few hours. In the case of G. B., the temperature at 9 o'clock on the evening preceding death was 103 deg. The next morning, about 10 o'clock, it was 106 deg.; at 4.45 P.M., 109.7 deg.; and, at 5 o'clock, the man died. At all events, therefore, the rise was not more than twenty hours occurring. In the second case, the temperature rose from 102 to 107 deg. in four hours, and the patient died shortly after; whilst, in the third, the rise of temperature occurred during the night: from 9 P.M. to 8.15 A.M., it rose from 102 to 110.6 deg.

In some of these cases, there has been profuse sweating, even when the temperature has marked a high degree; but generally, I believe, when the pyrexia has become extreme, the sweating has ceased, and the skin has become dry and harsh. How far this arrest of perspiration may be concerned in the production of the abnormal heat of the blood, and how far the bath may be instrumental in lowering it by simply restoring the action of the skin, are interesting points for inquiry.

I believe that there has been no case of recovery from acute rheumatism recorded when the temperature has risen to 107 deg., except when the bath has been used; and the recoveries, when a temperature of 106 deg. has been reached, are very few indeed. On the other hand, cases where a temperature of 107 deg., and even 110 deg., has been reached, have recovered when the bath and the external application of cold have been employed.

A very important question arises as to what temperature you should wait for before you use the bath. I think the question must be decided by a consideration of the general features of each case. It may be safe to wait for a temperature of 107 deg.; but if, in any case of simple uncomplicated acute rheumatism, the temperature began to rise rapidly, and marked indications of disturbance of the nervous centres were present, I should use the bath when the temperature in the rectum was 105 deg.

It is not desirable, in my opinion, to use the bath at a low temperature to begin with. I should recommend you to commence with a temperature of 98 or 95 deg., and gradually to reduce it to 75 or 70 deg., according to the effects it produces. You must bear in mind that there is usually a fall of temperature after removal from the bath; so that it is probably best to remove the patient when the temperature has fallen to 101 or 100 deg. Should the temperature rise after the bath, you must again and again have recourse to it.

I cannot conclude without referring to a very interesting case of high temperature which has recently occurred in the surgical wards. A man, under the care of Mr. Harrison, suffering from disease of one of the great toes, after being some months in the hospital, had, on October 19th, some dead bone removed. On the 22nd October, in the morning, he had a chill, and at noon he was found unconscious, with a temperature of 109 deg. in the rectum, and a pulse of 156, the respirations being 80. He was put into a bath for fifty minutes. The temperature of the bath was 95 deg., and it was reduced to 74 deg. In the bath, the temperature fell to 103.9 deg., and the pulse to 134. Twenty minutes after removal, the temperature was 102.2 deg.; two hours afterwards, a profuse perspiration broke out, and at midnight the temperature was 99 deg.; respiration, 28; pulse 112. For some days, the temperature kept down; but, on October 27th, it rose to 106.8 deg., and the bath was again used, with the most satisfactory results. The man perfectly recovered. As the case will be published with all its details, I merely allude to it here as an instance of the effects which may be produced by the bath in lowering high temperature, and relieving the symptoms resulting from it. It cannot be doubted that the bath was the means of saving this man's life. The symptoms from which he suffered are just those which are met with in hyperpyrexia from acute rheumatism and other febrile diseases.

PHARMACEUTICAL SOCIETY OF IRELAND.—The first examination in connection with this newly instituted Society took place on the 1st instant, when ten candidates presented themselves for examination, nine of whom were successful. At a meeting of the Council recently held, the following resolutions were passed:—"That the fee for a licentiate of the Apothecaries' Hall to be registered as a pharmaceutical chemist shall be three guineas; that the annual subscription for membership of the Society be fixed at one guinea; for life membership, ten guineas; and that candidates who may be rejected prior to October next shall be entitled to present themselves for re-examination on the same conditions in twelve months after that date."