the recompression chamber, the death-rate among the workmen fell from 25 to $1\frac{1}{2}$ per cent. per annum. To get the best results the men should be placed in the immersion chamber as early as possible after the development of symptoms. In many instances symptoms do not recur after recompression; in other instances relief may or may not be obtained. The following is an interesting experience of recompression given to me by a patient under my care in the Royal Victoria Infirmary:

On August 6th, 1908, a sinker, aged 25, went to work at 6 a.m., and remained under 30 lb. pressure until 9 a.m. After coming out of the air lock he felt pains in his back and fainted; he was carried into the medical lock and recompressed in a pressure of 20 lb. At 10 a.m. he had recovered, and preferred to go back to work in the caisson, where he remained until 1 p.m., feeling quite well and doing his work as well as the other men. He had hardly left the air lock a second time when he was seized with pains in his arms and elbows, and was placed in the recompression chamber. After being there for half an hour and feeling relieved, the pressure was lowered to 24 lb., but as the pains returned the pressure was again raised, and he remained in the chamber until 6.15 p.m., when he came out free from pain. He left the works and was proceeding homewards, when he was seized with pains in the right arm; but he went home, had tea, went out for a short walk, and afterwards went to bed. The pains by this time had become so severe that he could not sleep. He got up, and going back to the works he re-entered the medical lock at 10 p.m., where he stayed until 5 a.m. on August 7th. He slept for four hours in the medical lock, and on coming out was all right, but severe pains developing in his knees he again entered the medical lock at 5.45 a.m. and stayed there until 8.45 a.m. in a pressure of 26 lb. Shortly after leaving the recompression chamber the pains returned, and as these were severe Dr. Maclay gave him a hypodermic injection of morphine and sent him into the Newcastle Infirmary. The patient, who was a well-developed man, had previously worked under 25 lb. pressures in Dublin for six months, and in Glasgow for four months under lower pressures, without suffering. When admitted into the infirmary he was still in such pain in the knees and elbows that he had to have another injection of morphine. There could be felt distinct creaking in the skin over the left knee as in emphysema. By degrees the pains lessened and ultimately disappeared. The temperatures for the three evenings after his admission were 100° , 100.4° , and 99.80° F. The sounds of the heart, which were normal, were distant and not at all easily heard.

When recompression cannot be carried out, as, for example, when the symptoms come on long after a man has left the works, he should be put to bed, kept warm, and if in great pain a hypodermic injection of morphine may be administered. In many of these cases, even although there is no paralysis of the limbs, there is frequently a paralytic condition of the bladder attended by retention of urine, and calling for the use of the catheter. Muscular paralysis, loss of sensation, bedsores, and complications must be treated on ordinary lines.

Since the risks to life from rupture of a caisson are enormous, the greatest care should be taken to prevent such an accident. Whether the shifting of the surface of the river's bank towards the Tyne at Hebburn on account of the excessive dredging of the river so pressed upon the caisson and cracked it, or whether there had occurred a sudden lowering of pressure followed by a jerk of the caisson which broke its attachments, it is difficult to say, but engineers are agreed that caissons should be made of strong steel or of wrought-iron plates, and not of cast iron, and that these chambers should be made of such strength as to bear two or three times greater pressure than is ever likely to be required of them.

THE Belgian Minister for the Colonies has ordered the establishment in the Congo territory of six new lazarettos for patients suffering from sleeping sickness. The lazarettos will be under the charge of Belgian doctors.

THE Local Government Board in England has issued to port sanitary authorities, and certain other sanitary authorities, a circular (Foreign Meat, No. 3), stating that there has been published in the *London Gazette* of January 22nd a notice containing a schedule of labels and marks declared to be admissible as official certificates in respect of foreign meat which consists of pork, or other edible parts of the pig, which has been subjected to inspection in Denmark, the Netherlands, the Dominion of Canada, and the Dominion of New Zealand. Attached to the circular are facsimiles of the marks. The fact that such a label is attached to the carcasses of pigs or any other kind of imported pork does not exempt the meat from liability to examination.

A Lecture

ON THE

USES OF THE CALCIUM SALTS IN VARIOUS MORBID CONDITIONS.

DELIVERED AT THE MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, NOVEMBER, 1908,

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IN 1898 Sir Almroth Wright pointed out that conditions of deficient blood coagulability do not always manifest themselves in a tendency to actual haemorrhages, but also manifest themselves in a tendency to increased transudation of plasma through the capillary wall—that is, in a tendency to “serous haemorrhages.” He pointed out that this condition of serous haemorrhage can to a large extent be controlled by increasing the coagulability of the blood by the administration of a calcium salt. Examples of such serous haemorrhages are urticaria, chilblains, oedema of the feet and hands not due to heart disease, kidney disease, or venous obstruction, and a certain form of headache known as the “lymphatic type of headache.” Chilblains are always associated with a condition of defective blood coagulability, and the condition is also fairly frequently associated with the liability to attacks of urticaria and epistaxis.

LYMPHATIC TYPE OF HEADACHE.

This type occurs more frequently in women than in men, and generally manifests itself as a dull heavy ache in the frontal region, or occasionally as a throbbing pain in the frontal and temporal regions. In a few cases it may occur in any part of the head. It is generally experienced on waking in the morning, and usually diminishes in intensity or disappears after a few hours. It is most intractable to the ordinary methods of treatment for headache, and may persist for years unless the association of it with a lowered coagulability of the blood is recognized and suitable treatment for that condition employed. The subjects of this form of headache are usually of the lymphatic type, with a tendency to slight oedema of the face, eyelids, hands, and feet. There is generally some anaemia and a varying amount of lassitude, both physical and mental.

G. W. Ross was, I believe, the first to suggest that serous haemorrhage might be the basis of these headaches, and he demonstrated that in 10 cases of lymphatic headache which were definitely shown to have a lowered coagulability of the blood, the administration of a calcium salt was in every case followed by the exaltation of the coagulability of the blood, and concomitantly with or closely following upon this alteration in the blood the headaches were relieved. He also showed that decalcification of the blood by the administration of potassium citrate, with the consequent diminution of the coagulability of the blood, caused a reappearance of the headaches.

During the past nine years I have treated a large number of cases of deficient blood coagulability in both private and hospital practice, with remarkably successful results in the majority of cases. I propose in this communication only to deal with those cases (121 in all) in which I am able to record the results of the treatment after the lapse of prolonged periods from the initial course of treatment. In no single case amongst those recorded in this paper has this period of observation been less than one year, and in several of them it has extended over from one to eight years. The results, therefore, show whether the improvement is a lasting one or not.

With the exception of the 5 cases of aneurysm, which were treated in hospital practice, all the cases were treated in private practice, as I found that in such cases I was better able to follow up the results of the treatment, either from the patients themselves or from their medical attendants, than in the cases of hospital patients. In several of the cases the diminished coagulability of the

blood was experimentally determined before the commencement of treatment; in others it was inferred from the symptoms and history.

METHOD OF TREATMENT.

The calcium salt that I have used in all the cases was calcium lactate, as that salt possesses many advantages over calcium chloride. Calcium lactate has scarcely any taste, and is practically devoid of irritant properties, whereas calcium chloride is an irritant to the stomach, and possesses a most unpleasant taste. The lactate is sufficiently soluble in water (1 in 15), and the organic lactic acid moiety of the salt is readily oxidized in the system, with the result that the base is placed more fully at the disposal of the organism than in the case of the mineral acid salt. In other words, calcium lactate is more readily absorbed into the blood than is calcium chloride. It is important that the lactate should be fresh as it decomposes after long keeping. The indication of its freshness is that it should form a clear solution in water, or at least that the solution should only be faintly turbid. Any definite white precipitate in its solution is an indication that the salt has undergone some change, and that therefore in that state it should not be employed.

For adults the dose given in all the cases was 15 grains of the calcium lactate dissolved in a fluid ounce of chloroform water, with the addition of a half to one minim of tincture of capsicum. This dose was always ordered to be taken three times a day, and one hour before meals. I consider that the administration of the medicine about one hour before meals is an important point, as it allows absorption of the salt to take place prior to the introduction of food into the stomach, and so the precipitation of the calcium by the phosphates and possibly other constituents of the food is prevented. The calcium lactate was in all the cases given over a period of six weeks. Constipation is a common accompaniment of the administration of the calcium salt, and must be controlled. For this purpose it is not desirable to give saline purgatives, owing to their precipitant action on calcium salts. The laxative that I have found most useful in such cases is an infusion of senna pods, which should be taken at bedtime.

In a small proportion of the cases described as cured a few slight relapses occurred, generally some months after the course of treatment, but these were in all cases speedily relieved by the readministration of the calcium lactate for a short period (generally from one to two weeks).

THE VARIOUS CONDITIONS TREATED AND THE RESULTS OF THE TREATMENT.

Headache.—These cases were all of the lymphatic type, and were associated with slight oedema of the feet and hands, and generally of the face and eyelids. The records of 45 cases are known. Of these, 37 (82 per cent.) were cured, 2 were considerably benefited, 2 were slightly benefited, and in 4 cases (9 per cent.) no good resulted. The headache was generally relieved in from one to three days. These headaches were always associated with lassitude, and in all the cases successfully treated there was a remarkable improvement in physical and mental tone. In cases of headaches not of the lymphatic type the treatment with calcium lactate is not of the slightest use.

Chilblains.—All the cases were associated with cold hands and feet, and with some oedema of the hands and feet, which was generally slight in amount. The records of 37 cases are known. Of these, 29 (78 per cent.) were cured, 1 was considerably benefited, 3 were slightly benefited, and in 4 cases (11 per cent.) no good resulted. In several of the cases recorded as cured slight relapses occurred, generally in the following winter, but they all rapidly responded to another course of treatment with calcium lactate of usually two to four weeks' duration.

Boils.—All the cases were associated with cold hands and feet, and with slight oedema of the hands and feet. The records of 8 cases are known. All were cured, and up to the present time no relapses have occurred.

Urticaria.—Seven cases of severe urticaria associated with coldness of the extremities and oedema of the hands and feet were treated. None of them were cases of urticaria due to food. Six were cured, and in one case no good resulted.

Flushing of the Face.—These cases were associated with coldness of the extremities, and generally with cardiac palpitation. The records of 6 cases are known. Four were cured, and in 2 cases no good resulted.

Aneurysm.—Five cases of aneurysm of the arch of the aorta occurring in hospital patients were treated with calcium lactate. Considerable benefit resulted in every case. The drug appeared to encourage the deposition of fibrin within the aneurysmal sac, with recession of the swelling, more rapidly than any other drug I have tried. Two of the patients had previously been in hospital under me for the treatment of their aneurysms, and had then been treated with large doses of iodide of potassium, so that I had the opportunity in these two cases of comparing the effects of the two drugs. Beyond all doubt the calcium lactate acted more rapidly and more efficiently than did the potassium iodide, and without the unpleasant effects produced by the large doses of the iodide.

Haemoglobinuria.—The calcium lactate treatment was employed in three cases, with very marked benefit in controlling the condition in all three cases. A brief description of one of the cases will serve as an example: The patient, a male, aged 57, was first seen two years ago with a history of haemoglobinuria extending over the preceding six months. The attacks recurred during that period every one to three days, and the urine during the attacks resembled burgundy or porter in colour. The attacks were associated with flushing of the face, and coldness and slight oedema of the hands and feet. The haemoglobinuria was quickly and completely checked by the administration of calcium lactate. During the two years there have been a few slight returns of the haemoglobinuria, which can be readily controlled by the administration of a few doses of the calcium lactate, without the patient having to give up his work, which he was formerly compelled to do during the attacks.

Oedema of the Feet on Exertion.—Two cases of troublesome oedema of the feet were treated with calcium lactate. The oedema was neither cardiac nor renal in its origin, and was not due to venous obstruction or any ascertainable organic disease. Both patients had been treated for some time without avail with various drugs, massage, baths, electricity, etc. In both cases there was a marked deficiency in the coagulability of the blood, and both were rapidly cured by the administration of calcium lactate.

Vesicular or Bullous Eruptions.—Three cases associated with deficiency in the coagulability of the blood were treated. In two cases the feet were affected, and in the other case the hands. Other remedies had been tried without avail. All three were rapidly cured by the administration of calcium lactate.

Other Conditions.—Of the following affections, erythema, lichen planus, gouty pruritus, pruritus ani, and perspiring hands and feet with offensive perspiration, one case of each was treated, with success in every case. In all five cases other remedies had been tried without avail. Each of the cases was found to be associated with a marked deficiency in the coagulability of the blood, and fairly rapid cures were effected by the administration of calcium lactate.

SUMMARY OF RESULTS.

Of the cases detailed in this paper it will be seen that 78 per cent. were cured, 9 per cent. were considerably benefited, and in 13 per cent. of the cases no good resulted from the treatment. In none of the 121 cases referred to were any bad symptoms produced by the administration of the calcium lactate, and amongst a large number of other cases treated with that salt, but not referred to in this paper on account of the inability to follow up the ultimate results of the treatment, in only three cases have any unpleasant symptoms been produced which necessitated the withdrawal of the calcium lactate. In those three cases the symptoms that supervened during the course of treatment certainly pointed to some commencing thrombosis, probably caused by the calcium salt. In one case there was a definite slight attack of venous thrombosis in the right calf; in the second case slight numbness of the arms and legs associated with tingling occurred, and in the third case noises in the ear and deafness were produced. In the three cases the unpleasant symptoms rapidly subsided after ceasing the administration of the calcium salt.