THE TREATMENT OF PERNICIOUS VOMITING IN PREGNANCY BY GASTRIC LAVAGE AND CARBOHYDRATE RECTAL FEEDING.

BY

STANLEY E. DENYER, C.M.G., M.A., M.D.CAMB.,
F.R.C.S.ENG., M.R.C.P.LOND.,
PHYSICIAN, HULL ROYAL INFIRMARY; SPECIALIST IN NEUROLOGY,
MINISTRY OF PENSIONS.

VARIOUS views have been put forward as to the cause of the morning vomiting of pregnancy, which occurs from the sixth to the fourteenth week, and is more common in primigravidae than in multiparae. It usually occurs in the early morning, and where the condition becomes aggravated it occurs throughout the day. In the severest cases it may become almost continuous.

The views that have been held include as causes toxæmia, hysteria, and a reflex type. The view that it is due to a deficiency of glycogen in the maternal liver was put forward by Duncan and Harding in 1918, and the case given below was treated in accordance with it.

Mrs. H., aged 27, eight weeks pregnant, was admitted to the Hull Royal Infirmary on November 4th, 1923. Her last period had been on September 7th. She had been vomiting for three weeks, first after breakfast, then after every meal, then all day, and latterly all night, at short intervals. On the date mentioned she had been vomiting every half-hour. The vomit was green, contained mucus, and some specimens digested blood also. The pulse was 88, temperature 99.8°; heart and lungs normal, abdomen rather retracted; nothing abnormal was felt. The tongue was clean. On vaginal examination the os uteri was found soft and enlarged, consistent with two months' pregnancy. Urine: specific gravity 1030, acid, no albumin, no blood, no pus, no bile, no diacetic acid or acetone present. The blood was examined by Dr. Adamson, honorary pathologist, for the blood sugar content, which was found to be normal (0.095). The patient was very exhausted and was suffering from lack of sleep, not having slept for two or three nights owing to the almost continuous vomiting.

Treatment was started at 3 p.m. on November 4th by gastric lavage with sodium bicarbonate solution (1 drachm to the pint), one or two pints being used. Rectal salines, with half an ounce each of sodium bicarbonate and glucose to the pint, were administered, 1 pint every four hours. Solution of adrenaline, 5 minims hypodermically, was ordered every three hours for four doses or until the vomiting ceased. She was not to be awakened for the rectal salines. The end of the bed was raised by putting blocks under the lower end. A hypodermic injection of morphine 1/6 grain was given at 8.15 p.m.

On November 5th she was ordered 5 minims of the adrenaline solution every six hours, and rectal salines with no sodium bicarbonate but with glucose every four hours. Water was given by the mouth in small feeds; at 10 a.m. gastric lavage with saline solution and sodium bicarbonate 1 drachm to the pint, followed by saline solution only. Water was given at first in 1-drachm feeds every half-hour or hour, and slowly increased. The rectal salines were continued every four hours with 1 oz. of glucose and 2 drachms of sodium bicarbonate added to the 4 p.m. rectal saline. To the 6 p.m. and 10 p.m. salines 30 grains and 20 grains respectively of potassium bromide were added.

She vomited three times in the night, but the vomit was no longer bile-stained. Gastric lavage was performed at 10 a.m. on November 6th, and feeds of water increased to 2 oz. every two hours. On November 7th she was kept on water, 5 oz. every two hours, and rectal injections every six hours with sodium bicarbonate. Glucose was then added to the water by mouth in the proportion of half an ounce to half a pint. On November 8th and 9th the same procedure was followed and the vomiting stopped. On November 10th jelly was given, and on the 11th thin Benger's food; on the 12th there was slight vomiting after the Benger's food, but not otherwise. On November 13th beef-tea and bread-crumbs were given as well as weak tea and condensed milk. On the 15th there was a slight quantity of acetone in the urine, but this disappeared on the 16th, and she was put on fish, eggs, etc. On November 20th she was given lactogen as breast milk was deficient, and on the 23rd she was given chicken. The vomiting stopped on November 8th, four days after admission, except on one or two occasions, when she had slight vomiting on increasing the diet.

In any case of severe vomiting in a pregnant woman such conditions as gastric ulcer, or other gastric disease, cirrhosis of the liver, cerebral tumour, pernicious anaemia, phthisis, etc., must be excluded. It is possible that there may be a combination of causes or that the principal cause is aggravated by others. Assuming that the chief cause is lack of glycogen in the liver, due to a short period of starvation which lowers the glycogen content of the liver, vomiting may be accelerated if the patient is of a neurotic type, or if

there is a relative toxæmia of the bowel, due to constipation. The treatment of such condition can be carried out by putting the patient on frequent small meals.

Summary of Treatment.

The essentials of treatment in cases of pernicious vomiting in pregnancy should be:

1. Rest in bed.
2. Gastric lavage, with solution of sodium bicarbonate 1 drachm to the pint, one or two pints being used.
3. Solution of adrenaline, 5 minims hypodermically every three hours for a few doses until the vomiting ceases, or the adrenaline solution may be given by the mouth in doses of 10 to 20 minims in a little water. It will be found that this drug is very efficient in stopping many kinds of vomiting.
4. The omission of all feeding by the mouth, at first, and feeding by rectal salines containing from half an ounce upwards of glucose to the pint, with a small quantity of sodium bicarbonate added if there is any diacetic acid in the urine.
5. The addition to the evening salines of 30 grains of potassium bromide to help sleep and reduce irritability of the nervous system.
6. The gradual increase in feeding by the mouth, beginning with small feeds of water as described above.

In cases of vomiting of pregnancy which are seen by the physician as they are getting more severe it will be found that treatment by administration by the mouth of solution of adrenaline in doses of 10 minims of 1 in 1,000 solution added to 2 drachms of water at three to six hourly intervals, will in many cases be sufficient to stop the vomiting. The diet at the same time should be light and given at short intervals. The above treatment by lavage and rectal salines should be reserved for the more serious cases, or to those which do not respond to treatment by adrenaline.

PNEUMOCOCCAL POLYARTHRITIS.

BY

ALFRED S. GUBB, M.D. PARIS,
PHYSICIAN TO THE BRITISH COTTAGE HOSPITAL, ALGIERS.

IN view of the grave plight on admission, and for some time after, of the patient whose case is here related, and in view also of the fact that treatment was limited to the subcutaneous injection of antipneumococcal serum, the rapid improvement in the general health and the arrest of the tendency to suppuration of the joints must apparently be credited to the curative effects of the serum. The immediate effect of the treatment was evidently to kill off the colonies of pneumococci originally present in the synovial effusion in such wise that on a second examination of the fluid no pneumococci were present.

On March 5th a man, aged 25, a marine engineer, was sent to the hospital with a diagnosis of "rheumatism." He stated that three days after sailing from Kurrachee (India) he had an attack of diarrhoea which lasted about a fortnight. He had as many as twelve motions in the twenty-four hours; they were scanty and sometimes blood-stained. He lost much weight. Three weeks after cessation of the diarrhoea the left knee began to swell and caused sufficient pain to prevent sleep. That was when he was at sea, four days before admission.

On admission his left knee was much enlarged, owing apparently to thickening of the periarticular structures; little or no fluctuation could be made out over the joint. Movement was extremely limited and very painful. The ankle and dorsum of the foot on that side were oedematous. The temperature was 100° F., the pulse 130. The heart and lungs were healthy, the spleen was not enlarged. He was thin, but this, he assured us, was only since he had fallen ill. He said he had had a urethral discharge some weeks previously, but on discussing the matter with him there did not appear to be any valid ground for suspecting gonorrhoea. In any case, the urethral mucosa was normal in appearance, there was no undue moisture, and no trace of the gonococcus could be discovered on bacteriological examination.

Extension applied to the limb by means of weights afforded the patient great relief. As there was a possibility, however remote, of a gonococcal origin he was given three injections of a product known as neo-dmagon (an antigonococcal vaccine), whereupon the temperature, which had fallen to normal since the patient had been resting in bed, again rose to 100°.

During the next few days he lost ground. There was atrophy of the thigh muscles, most marked on the left side. He had no

appetite, he complained of night-sweats and was rapidly losing flesh. On March 17th the right knee was swollen and soon became greatly distended, and there was pronounced fluctuation. The swelling was not accompanied by pain. Salicylates, 4 grams a day, had no effect.

On March 20th I asked our surgeon, Dr. Pelissier, to see the patient with me. On his advice the left knee was punctured and some pale yellow fluid withdrawn by aspiration. It contained numerous flakes, pointing to the imminence of suppuration. Dr. Lemaire reported that it contained 95 per cent. polynuclear leucocytes, staining well (no karyolysis), and very numerous pneumococci, intra- and extra-cellular. No tubercle bacilli were present. The urine, at first faintly acid, later on became neutral; no albumin was present. On March 23rd the patient complained of his right elbow, which was beginning to swell. It was not thought desirable to perform arthrotomy of the knee-joint, Dr. Pelissier being of opinion that in suppuration due to the pneumococcus operative measures should be had recourse to as late as possible.

In view of the bacteriological report we gave him daily injections of Dr. Minet's antipneumococcal vaccine, together with 20 c.cm. of the antipneumococcal vaccine prepared by the Pasteur Institute. No vaccine was given on March 25th and 26th, but the daily dose of serum was raised to 40 c.cm. This was injected under the skin on the outer aspect of the thighs.

On March 30th the right knee was again punctured and some fluid withdrawn. This time it was quite clear and free from flakes. The bacteriological report was to the effect that no pneumococci were present.

Between March 27th and April 2nd the patient was given a daily dose of 20 c.cm. of the serum, but in spite of the administration of calcium chloride and adrenaline he suffered a good deal from serum reaction: urticaria, arthralgia in all the joints, especially in the shoulders, hard oedema where the serum had been injected, and so on.

At this stage it could be seen that the swelling of the knees was diminishing and the patient's general health improving. The appetite was returning, he was in better spirits, and was feeling more comfortable apart from the serum manifestations. The temperature had returned to normal and remained there, he was putting on weight, and by the middle of April he was able to get up and walk a little, though he felt very weak on his legs. He was ordered massage and passive movements, and the stiffness of the joints gradually lessened.

His pulse remained very rapid (130), though the heart sounds and cardiac rhythm were normal. Blood pressure 125 maximum, 90 minimum. The tachycardia was greatly influenced by tobacco, so that though he only smoked in moderation he was advised to drop it for the time being. Thereupon the pulse fell to 90. The feet and legs became very oedematous towards evening. He was discharged for the return journey to England on May 22nd.

I am sorry it did not occur to me to have recourse to haemoculture, which might have afforded interesting information. In another case of the kind I should feel disposed to inject some serum into the inflamed articulations; though in this particular instance no time was lost in consequence of our not having done so, inasmuch as the joint trouble began to improve directly we started injecting the serum. Even so, the case presents considerable interest in view of its differentiation from gonorrhoeal arthritis on the one hand and from tuberculous arthritis on the other. On a correct diagnosis depended the success of the treatment.

Judging from statistics of polyarticular pneumococcal arthritis, the case would in all probability have had a fatal termination but for the bacteriological diagnosis; hence the importance of such examinations in all cases of arthritis not obviously rheumatic in origin—that is to say, cases in which the patient's antecedents are confirmed by the action of the salicylates.

Pneumococcal arthritis, though not very common, has been recognized for many years. In most instances it is secondary to pneumonia, but it also occurs independently of any other pneumococcal lesion, and arthritis in patients suffering from pneumonia is not necessarily due to the pneumococcus. It is met with most frequently in children. Dr. Gasne¹ reports 52 cases of pneumococcal arthritis—33 during the first twelve months of life, 8 between 1 and 2, 8 between 2 and 7, and 3 between 7 and 15. In 35 the affection was monarticular and in 17 polyarticular, the bigger joints being mostly attacked. Death occurred in 16 of the 52 cases.

Bulkley² collected 173 cases, mostly in children. In 70 per cent. it was associated with pneumonia. Three-quarters of the cases were monarticular (83 times the knee, 41 the shoulder, 23 the hip, 22 the wrist, 20 the ankle, 18 the elbow, and 12 the sterno-clavicular articulation). Suppuration took place in 147 of the cases, while in 15 the effusion was serous.

REFERENCES.

¹ *Revue d'Orthopédie*, May, 1908. ² *Annals of Surgery*, January, 1914.

ACUTE POISONING BY FUMES FROM CELLULOSE ACETATE.

BY

GODFREY CARTER, M.B.VICT., M.R.C.P.ED.,
LECTURER IN FORENSIC MEDICINE, UNIVERSITY OF SHEFFIELD.

DURING the late war many chemical substances were prepared, or brought into industrial use, almost for the first time, as belligerent necessities arose. Some were found to possess highly toxic properties which, little suspected at the outset, proved to be the cause of many cases of grave illness, prolonged ill health, and even, in some instances, death. Among them I would name trinitrotoluene and cellulose acetate. The latter is extensively used as a varnish for aeroplane wings. It is a mixture of benzine, acetone, methylated alcohol, and tetrachlorethane, forming a colourless liquid which gives off a heavy pear-like odour.

Sir William Willcox first drew attention to the connexion between many cases of serious icteric illness and the use of cellulose acetate in some of the large aeroplane factories. The results of his investigations, both clinical and chemical, were published in 1915. He found that after the early symptoms of headache, vomiting, and debility had become established, jaundice supervened. *Post-mortem* examination in fatal cases revealed an acute toxic hepatitis closely resembling acute yellow atrophy. With this was associated parenchymatous degeneration of the kidneys. He added that the tetrachlorethane alone, in addition to being a tissue poison, is a narcotic 2.8 times as powerful as chloroform.

Since the danger has been appreciated fewer cases of cellulose poisoning have occurred, owing to the special precautions now exercised in aeroplane factories. But quite recently a communication was published advising the use of this cellulose acetate for making encasing splints for limbs and joints, etc. As a result of this publication a doctor in this neighbourhood put up a child's knee in a splint of this construction. I am indebted to him for the full particulars given below as regards the serious poisoning which followed. I was asked to see the child in consultation about 8 p.m., when, I am glad to state, consciousness was slowly returning. The patient presented the appearance of just coming round from a general anaesthetic.

The patient was a female, aged 3½ years, with disease of the right knee-joint. On July 7th, 1924, at 11 a.m., cellulose acetate (solutions Nos. 25 and 26) was applied to the right leg by the technique advised by Dr. Fernandez. Half an hour later the patient was returned to bed and ate a good dinner. The leg was propped up and exposed to the air, the patient lying on her back; she was placed in the open-air ward. At 3 p.m. she vomited, and she continued to vomit every few minutes until 11.30. Shortly after she began to vomit she became cyanosed (lips and cheeks). Pulse 136, feeble, at times hardly perceptible; respirations shallow, average 36; temperature 96°.

At 4 o'clock she became unconscious. The splint was removed, and the cyanosis was replaced by pallor. At 4.30 1½ pints of saline with sodium bicarbonate were given by the rectum; most of it was retained. At 5 o'clock the temperature was 98°; the pulse had improved—still rapid, but stronger; her colour had improved; lips red. She was still unconscious, with large equal pupils which did not react to light. Her breath smelt strongly of acetone. At 6 o'clock the bowels acted—stool normal; general condition unchanged. At 7.30 consciousness began slowly to return; she complained of headache. Temperature 99°, pulse 136, respirations 36. At 11.30 the patient appeared to be much better; she vomited slightly and then went to sleep, and slept all night.

On July 8th, at 10 a.m., the patient appeared to be almost normal: temperature 98.4°, pulse 120, respirations 30. The pupils were normal and reacted to light. The skin of the leg was red, inflamed, and blistered over the area covered by the cellulose acetate solution; this in spite of the fact that before application the skin was covered with a layer of vaseline an eighth of an inch thick, before being covered with layers of vesting, on top of which the solution was applied to layers of bandage. At 5 p.m. examination of the urine showed: a sediment of urates, specific gravity 1020, acid, colour normal, no albumin, a considerable amount of acetone, no diacetic acid, no sugar, no blood.

Fourteen days after the above narrated incident the patient showed no signs of jaundice or other complication. But I think it is well that these facts should be brought to the notice of the profession as a warning against the use of this preparation. It nearly caused a catastrophe of a particularly distressing nature.