

yielding a positive result would be still further increased if the patient's serum were tested against a still greater number of locally isolated strains.

In conclusion we express our indebtedness to Captain B. G. Klein, R.A.M.C., medical officer in charge of the dysentery wards, for his kind co-operation.

REFERENCES.

- ¹ Major G. Dreyer and Captain A. C. Inman: The agglutination curve and its importance in the diagnosis of typhoid and paratyphoid infections, *Lancet*, 1917, i, p. 367. ² See Lentz, *Handbuch der pathogenen Micro-organismen*. Kolle and Wassermann, 1913, p. 947. ³ Ledingham and Penfold, *BRITISH MEDICAL JOURNAL*, 1915, ii, p. 704. ⁴ J. R. Ritchie, On the agglutination reaction of the typhoid-dysentery group with normal sera, *Lancet*, June 24th, 1916. ⁵ C. J. Martin and F. E. Williams, *BRITISH MEDICAL JOURNAL*, April 14th, 1917.

POST-OPERATIVE PULMONARY EMBOLISM DUE TO THE CONDITION OF THE BLOOD.

BY

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OPERATING surgeons all over the world are greatly indebted to the writers of the two very interesting articles on post-operative thrombosis and embolism which appeared in the *BRITISH MEDICAL JOURNAL* on March 9th and 23rd. With every word in these two articles I most heartily agree—with one exception, and that is, instead of putting the quality of the blood last on the list I would put it first.

Early in my professional career I came under the influence of Sir William Hingston, who pointed out to me the great demands of the human system for water. The kidneys, the skin, the bowels, and the lungs are all calling for it to enable them to carry on their functions. These apply equally to men and women, but in the case of nursing women lactation makes a large additional demand. Some years later I listened for an hour to the scholarly presidential address of Dr. Mathew D. Mann of Buffalo before the American Gynecological Society, in which he pointed out that many of the aches and pains from which women suffered would not have afflicted them if they had been water drinkers. Since then I have seen many women operated on at the Mayo Clinic for gall stones who would never have had them if their bile had not been a supersaturated solution of biliary salts, ready to throw down crystals on the slightest pretext; and I have removed in women many stones from the kidneys and ureters which were due to supersaturation of the urine with solid matter that would never have been formed if the specific gravity of the urine had been kept down. Early in my career as an abdominal surgeon, as well as in consulting obstetrics, I came to the conclusion that the tragic deaths from pulmonary embolism, which at that time were much more frequent than they are now, both after operations and confinements, were due principally to a hyperfibrinous condition of the blood, and all these years I have taken great and laborious pains to see that all these patients were allowed to drink freely.

To this fact more than to anything else do I believe that it is due that I have not yet seen a death from pulmonary embolism following any of my own operations, nor after any of the confinements that I have attended.

The other factor is one to which Colonel Symonds has done a service by calling attention. He says: "Is it necessary to keep the parturient woman on her back for days together?" From his experience after abdominal operations he is inclined to think that early movements of the limbs and frequent changes of position would diminish the number of cases of embolism. My answer is that not only is it not necessary, but positively harmful. The heavy uterus falls backwards and ceases to drain; adhesions form between the ends of the tubes and the peritoneum, and the woman is sometimes never quite well again. We should not only permit, but even urge, the patients to have their position changed frequently during the first few days and to move their limbs freely as soon as they are able to do it themselves. I have always told women after confinement to lie any way they like—right side or left side, or even on the face—rather than on the back. Most important of all is it to sit up on a chamber in bed three or four times a day to pass water and move the bowels.

Sir William Hingston, who knew the habits of the Iroquois Indians thoroughly, told me that they were almost absolutely free from the accidents of childbirth common to their white sisters, which he attributed to their not going to bed at all, but continuing the march with the papoose on their back after a few hours' rest.

The only cases of pulmonary embolism in which I have been even remotely interested occurred in the wives of two medical friends in other cities who had had ideal confinements and afebrile recoveries, and yet who died without any warning on the twelfth and fourteenth days at the moment when life seemed at its happiest; another in the wife of a lay friend, who made a perfect recovery, and died suddenly on the fourteenth day. As Colonel Symonds points out, the nurses trained twenty years ago are in favour of the dorsal position for ten days and very little movement; and I may add they were bitterly opposed to the patient being allowed cold water or fresh air for fear of a chill, and sunlight for fear of ophthalmia neonatorum. Our nurses trained to-day are taught that air, water, and sunlight are the great enemies of microbes, and that chills mean fever due to microbic infection. A closed and darkened room generally means a hot room, causing profuse perspiration, which, with lactation, would make the blood less liquid and more liable to clot in the veins. Lying on the back for ten days, with the blood getting daily more clottable, is a very good way to bring about thrombosis and death by embolism when the patient begins to move about.

While it is important to carry out all the suggestions of Dr. McCann and Colonel Symonds, I feel sure that some other factor has been operating silently in their favour, and that is that doctors are urging women to drink water, and nurses are more and more getting in the way of allowing them to do it. It must be in the experience of every accoucheur that what every woman craves for most is a drink, cold preferred. Elderly women who have had large families have assured me that the most unpleasant part of their confinement was the awful ten days of immobility on the back, and, next to that, the thirst. Medical friends who have been operated on have assured me that their greatest desire was a drink of hot tea, and acting on their suggestion I always prescribe it as soon as the patient comes out of the anaesthetic, whether they are vomiting or not. If the first cupful comes up it at least washes out the stomach.

Getting up several times a day to answer the calls of nature will not only ensure drainage of the uterus and vagina, but that and sitting up in bed for meals will prevent the stagnation of the blood, which Colonel Symonds points out is one of the factors in thrombosis. Many practitioners fear to allow the patient to sit up on a chamber for fear of all kinds of things happening—that the uterus may drop out of the body, that it may drop inside out, becoming inverted, or that there will be tremendous hæmorrhage; but these are all bogies.

Another friend, Joseph Price, who was assistant to Lawson Tait, told me that he always placed his patients on their right side with their knees drawn up after abdominal sections, and as soon as they were able he allowed them to move about freely in bed, and to stretch and bend their legs frequently. Lawson Tait's idea was to relax the tension on the abdominal stitches, which were silkworm gut and through-and-through.

Pulmonary embolism is fortunately very rare, only 47 deaths having occurred from it at the Mayos Clinic in 63,000 operations. In former days, when the accident was more frequent, it was the custom to prepare the patient by drastic hydragogue catharsis for a day or two before. Then, again, hæmorrhage was more frequent and more abundant; also the operating rooms were kept at 80°, so that the patient lost a large amount of water by the skin, while vomiting from the anaesthetic prevented replacement of the lost water. For this last reason I believe that the chances of embolism would be greatly lessened if a rectal enema were given by the slow method at the rate of 20 oz. of beef-tea or salt solution for every half-hour the operation lasts. If given at a temperature of 105° F. it would practically do away with shock and sub-normal temperature. I constantly resorted to it while in charge of Lady Wemyss's Hospital in France, with great benefit, as I reported in this *JOURNAL* two years ago, and I am glad to see by recent reports that it is being more

generally used in the hospitals over there. The reservoir should lie on the foot of the bed or operating table with the patient in the inverted position, so that the water has a fall of only a few inches from the reservoir to the rectum.

Conclusions.

1. Have the full normal proportion of water in the blood before operating.
2. Replace by the rectum the amount of liquid lost by vomiting, catharsis, sweating, haemorrhage, and urine, either during the operation or immediately after it.
3. Encourage the patient to move the lower limbs freely, if not during the first two days at least during the next ten.
4. Give the patient abundance of water between meals and during the night; it may be hot or cold, sweet, sour, or salty, in the form of lemonade, barley water, weak tea without milk, or beef-tea; a jug and drinking cup with spout should be left within reach so that it may be taken when wanted without waiting for the nurse to come.
5. Speedy operating lessens embolism because it means less haemorrhage, and less sweating and less loss of water from the system.
6. Round-pointed needles with flat eyes are much less likely to cause haemorrhage than ones with cutting edges, and should alone be used in the abdomen.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TREATMENT OF ORIENTAL SORE.

AMONGST Indian troops in Mesopotamia, between the months of November and March, it is common to find sores which are chiefly distributed on the extensor aspect of the limbs and face. These sores are characterized by an irregular spreading raised edge, which is often undermined, vascular, and anaesthetic; by a base formed of pale oedematous granulations, slimy in appearance and slightly purulent; and by the chronic condition of the lesions, which may take months to heal. A crust often covers the sore, and at a hasty glance may be mistaken for a dry scab. On pressing the scab beads of pus appear at its edges. The sores are found to contain *Leishmania tropica*, chiefly situated in the undermined edge. They have been treated with hot fomentations, dilute carbolic and mercurial lotions, pure carbolic acid, powdered potassium permanganate, eusol, eupad, and injection with kerosene oil, with merely palliative effect.

The following method of treatment, employed in the ulcerating stage, was originated by Major W. R. J. Scroggie, I.M.S., who has kindly given me permission to publish the results. It has been in use during two winter seasons in a considerable number of cases.

Any undermined edge is cut away, and the surface of the ulcer is cleaned with carbolic lotion, and, if necessary, fomented to remove crusts and discharge. It is then covered with powdered corrosive sublimate obtained from the blue 8½-grain tablet. It is necessary to powder especially at or under the edge, where the chief infection lies. Care must be taken that the surrounding sound skin is free of powder. A dressing of dry gauze is then applied. Two hours later a hot fomentation is applied, and another at the end of two more hours. For the next two days hot fomentations twice a day are used until the sore presents a clean, bright red, vascular base, with a level or slightly sloping edge. The effect of the perchloride is to permeate every interstice of the wound, and in particular to destroy the infected margin. A short time after its application considerable pain ensues, which may last for twelve hours, but is not sufficient to require morphine. It is necessary to watch the temperature, as occasionally a dry blue scab is formed with pus pent up beneath. This must at once be raised to give exit to discharge. As a rule, fomenting keeps the surface sufficiently moist to allow of drainage of pus. When the surface of the wound is clean, new skin extends from the edges, and gradually covers the wound surface. With a daily dressing of 1 in 2,000 perchloride solution or eusol uninterrupted healing occurs, the time taken depending upon the size of the ulcer and varying from twelve days to six weeks. The scar is smooth and level with the surrounding skin, unlike the raised and

thickened scar produced by the use of antimony tartrate ointment.

If the above treatment were systematically carried out from the time of diagnosis, it is possible the length of absence of patients from their units would be materially shortened. In civil life these sores may be borne with little discomfort and interference with daily work, but in the exigencies of military service they form a real cause of ineffectives and their prolonged stay in hospital.

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PERSISTENT VITELLINE DUCT IN TWINS.

Mrs. C. was delivered of female twins on April 5th, 1918. The first was a footling, the second a vertex, presentation. There was one sac of membranes. A troublesome prolapse of the cord in the first case may possibly account for the difference in degree of the two cases.

In appearance there was nothing unusual about the cords, which were dry and off on the ninth day. On the tenth day a few drops of bile were observed on the pad of the first born, continuing daily at that amount morning and evening. No faecal matter appeared. The stump of the cord, which was dry and firmly healed, presented in the mesial line, subcentrally, a well marked triangular orifice, which would take a No. 3 catheter. The intestinal orifice must either be very small or protected by a valvular position.

Three days afterwards there was a minute trace of bile on the pad of the later twin, and the umbilicus showed an even more manifest orifice situated similarly.

There has been no constitutional disturbance, but a slight degree of icterus has been present all through in both cases.

In Norris and Dickinson's *Textbook of Obstetrics*, vol. i, p. 118, it is stated that:

The connexion of the yolk-stalk or vitelline duct with the intestinal canal rapidly becomes less conspicuous, and by the end of the fifth week the yolk-stalk has but slight connexion with the gut. The position of the juncture of the vitelline duct with the intestinal tract varies greatly, but usually corresponds with a point within the small intestine from 40 to 60 centimetres (16 to 24 inches) from the ileo-caecal valve. When the usually atrophic cord is replaced by a tubular recess, the persistent portion of the duct constitutes Meckel's diverticulum, a structure of interest. The vitelline duct may remain pervious throughout its intra-embryonal extent, resulting sometimes in congenital umbilical fistula.

That the condition should occur in twins must be uncommon, but not to be marvelled at when one calls to mind that these are likely to be homologous twins, so that the vitelline ducts of each developed from common parent blastodermic cells, and inherited in equal degree the tendency to persist.

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THE TREATMENT OF PERNICIOUS ANAEMIA.

I THINK it may be of interest to record a case of pernicious anaemia treated by intramuscular injections of salvarsan cream. My patient, a woman aged 39, had suffered from pernicious anaemia, showing all the usual blood changes and general signs and symptoms, for over two years. In spite of several temporary remissions the disease steadily progressed, and in November last she appeared to be dying. The liver reached to the umbilicus, and there was a loud haemic murmur over the heart. The usual blood changes were present and the haemoglobin content 15 per cent. I gave her an injection of 0.2 gram salvarsan cream (prepared from "Kharsivan" brand salvarsan by Messrs. Allen and Hanbury) into the muscle of the buttock (as suggested in the *BRITISH MEDICAL JOURNAL* in 1912 and 1913), repeating the same dose in a fortnight, and another of 0.3 gram a fortnight later. The result was really extraordinary. Within a few weeks she regained her usual healthy colour, the liver returned to its normal size, the haemic murmur disappeared, and the haemoglobin content rose to 85 per cent. She is now, six months after commencing the injections, apparently in normal health. Whether the recovery is permanent I cannot say, but a line of treatment followed by such remarkable results in such a hopeless disease is worth recording, and I hope that this brief note will lead to its further trial.

London, W.

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