

[A diagram is here inserted showing the effect of ergot and adrenalin on the blood-pressure, and comparing the result with that of giving strychnine and brandy in case of shock. There is a steady increase in the blood-pressure after the administration of ergot and adrenalin.]

When much blood has been lost, the most important step in the treatment of shock is to replace the lost fluid as quickly as possible. This is most quickly carried out by intravenous infusion. Three pints of saline, at a temperature of 110 degrees F. in the jug, are run into a vein. A drachm of 1 in 1,000 solution of adrenalin and gr. $\frac{1}{80}$ of ergotine citrate may be added. Sterilised water should be used. In an emergency, however, tap water raised to the correct temperature, with one teaspoonful of common salt to the pint of water, makes a perfectly safe and an approximately normal salt solution.

Rigors not infrequently follow an intravenous infusion, especially after adding adrenalin. They are of no serious import. Should they occur during the administration of the infusion, it is safer to stop the infusion for the time. The canula need not be removed from the vein, and the infusion may be continued in from half to one hour later.

A rectal infusion of saline should be given by a nurse whilst the preparations and necessary manipulations for the intravenous infusion are being made.

When the apparatus for intravenous infusion is not at hand, the saline must be entirely given by the rectum or subcutaneously. A patient who has lost much blood will easily retain three pints of saline *per rectum* if about half an hour is taken to run the fluid in.

When the toxic type of shock predominates, continuous subcutaneous and continuous rectal infusions of normal saline must be given. In either case not more than five pints should be run in at one sitting, and about five hours should be employed in doing this. If the patient has sugar in the urine, never employ continuous subcutaneous infusions. I have seen the breasts of a woman, who had diabetes, slough after a subcutaneous infusion.

In all cases of shock the foot of the bed must be raised, and the patient kept warm with hot bottles. Take care not to burn an unconscious patient.

Details of the methods of performing intravenous, subcutaneous, and rectal infusions can be read in any book on surgery. I wish here only to mention two practical points.

One often hears of some difficulty being experienced in dissecting out a vein for the pur-

pose of intravenous infusion. The following preliminary incision will entirely obviate this difficulty. A suitable vein, either one of those at the bend of the elbow, or the internal saphenous vein just above the ankle, is chosen. The patient's skin in the chosen area is surgically cleaned. A fold of skin, at right angles to the direction of the vein, is now raised with the thumb and index finger of the operator's left hand. The base of this fold is transfixed, parallel to the direction of the vein, with a sharp-pointed knife, its sharp edge being directed away from the vein. The knife is now made to cut its way out through the fold of skin. With a little practice the transfexion and outward cut can be performed with one stroke of the knife. The fold is now released and an oval gap is left in the skin. On the floor of the wound the most prominent object is the vein which bisects the small oval space. A little cleaning of the vein with an aneurysm needle is now the only further dissection required. By the method of cutting down on a vein the vein may be nicked and the field obscured with blood, or the incision may go too deep or too superficial and the vein be missed, or even some important structure wounded, and much time lost. By the method described above, with a single stroke of the knife, the vein will be at once exposed in every case, and by observing the precaution to raise the skin fold at right angles to the direction of the vein, all danger of wounding the vein is overcome.

For continuous subcutaneous and rectal infusions I cannot too strongly recommend Mr. Lang's ingenious and simple apparatus. It saves time and anxiety for Sisters and nurses, does not require constant attention, and is as easily worked in a private house as in a hospital.

Summarising the treatment of shock the following are the important points:—

1. Give drugs which act directly on the peripheral vessels and maintain their tone till the centres recover.

2. In hæorrhage shock give intravenous and rectal infusions of normal saline.

3. In toxic shock give continuous rectal and continuous subcutaneous infusions of normal saline.

4. Keep the patient warm with his head lowered.

5. Above all things do not give strychnine, brandy, ether, or coffee.

Mr. Joyce emphasises the necessity of turning to one side the head of a patient, still unconscious after an anæsthetic, to avoid the obstruction of the air passages with vomited matter.

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