A SIMPLE PAEDIATRIC TRANSFUSION APPARATUS

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During operations on infants and children, timely and adequate replacement of lost fluid is essential. Moreover, the fluid and electrolyte balance is so easily disturbed that it is important to measure the replacement fluid accurately (LeQueux, 1954). Gross (1953) used a burette type of transfusion set. This would appear to be unnecessarily complicated, requiring the use of a special syringe. There is, also, no protection of the transfused fluid from airborne infection. To overcome these defects the following apparatus has been assembled from standard materials.

Description of Apparatus and Method of Use.

The diagram shows the general plan of the transfusion apparatus. Blood or other fluid, from the reservoir bottle (A), can be run in, as required, into a 50 ml chamber (B), with 5-ml divisions. The measuring jar illustrated here is commonly used for gastric milk feeding, but this was graduated and adapted for use in this connection by fusing the lower end to a Murphy drip (D). The rate of flow is adjusted by clip (E). To prevent contamination from the outside atmosphere glass wool was inserted into the air inlet tubes (C). P.V.C. (polyvinyl chloride) tubing has been used instead of rubber because it withstands autoclaving and storage without cracking or becoming tacky. This transparent material shows up air emboli or any foreign particles, due to faulty cleaning. Moreover, thrombophlebitis is less common with plastic than rubber connecting tubing (Jones, 1954; Medical Research Council, 1957).

Gravity alone cannot maintain a rapid rate of transfusion through the narrow channels available. A three-way tap (F) not only provides an efficient means of rapidly increasing the flow, but also enables the easy administration of drugs for anaesthesia or resuscitation. When there is an urgent demand for transfusion, a 10 or 20 ml syringe is attached to the tap and blood aspirated from the chamber (B). By suitably adjusting the tap and...
exerting some force on the plunger of the syringe, the fluid can be rapidly introduced into the blood stream. There is no leakage at the unions or filling up of the Murphy drip chamber, as may occur with a transfusion pump or Higginson syringe.

"Portex" nylon tubing of adequate diameter allows a free flow of blood and is used for connecting the three-way tap to the vein. This material can be sterilized by boiling or steam heat up to 160°C, but not by dry heat, which makes it too brittle.

This tubing is put into the saphenous vein, at the ankle or in the groin, before operation. It is then gently pushed along the vein until it is judged to be within one of the larger channels. By this means the anaesthetic agent or transfusing fluid is introduced directly into the central venous stream, where relatively larger volumes can be accommodated. Any irritant, so introduced, is consequently more rapidly diluted and irritation of the vein wall and thrombosis less likely to occur (Le Quesne, 1954).

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REFERENCES


BOOK REVIEW

*The First Hundred Years.* Published by Pfizer Ltd. Pp. 92.

The title of this little book, by an anonymous author, gives little idea of its contents. This is clarified in the opening sentence which reminds readers that it is just over one hundred years since Thomas Addison focused attention on the clinical significance of the adrenal gland by publication of his monograph on "The Constitutional and Local Effects of Diseases of the Suprarenal Capsules." It is, in fact, devoted entirely to corticosteroid therapy and aims to present a clinical evaluation of these compounds in those conditions for which they are specifically indicated.

The opening chapter deals with the history, chemistry and physiology of the glucocorticoids, although the latter aspect is not discussed in great detail. The formidable list of clinical indications for systemic hydrocortisone in chapter 2 makes one realize that "we are now in the corticosteroid age." These opening chapters will be of greater interest to the anaesthetists than the subsequent ones dealing with dermatology and ophthalmology. Those who are, from time to time, requested to inject local anaesthetics into fibrotic nodules should benefit from reading the section on the use of hydrocortisone for this purpose.

Mention is made of the newly introduced preparations, prednisone and prednisolone, but it is rather surprising to find the latter (which is not available in an injectable preparation) recommended for pre- and postoperative substitution therapy after adrenalectomy. One notable omission is a discussion of the hazards of anaesthesia in patients undergoing glucocorticoid therapy, although the use of the latter drug in circulatory failure is mentioned.

The book concludes with a brief review of the literature on Viadril, which is the steroid of most interest to the anaesthetist.

The large type makes very easy reading and the book is well produced and for the average medical practitioner presents an easily readable review of this difficult and specialized subject.

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