Potassium replacement therapy

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SYNOPSIS Potassium replacement is often an important therapeutic measure, and the advantages of effervescing potassium-containing granules are put forward in this article.

Potassium depletion is a very real additional danger to patients already ill from other causes. Potassium ion may be rapidly lost from the alimentary tract, as in vomiting and diarrhea, or from the kidney when diuretics are used in diseases associated with hyperaldosteronism such as chronic liver disease or congestive cardiac failure.

The treatment of potassium depletion holds particular difficulties. When given in tablet form absorption is capricious because of the varied times taken for the tablets to disintegrate, and when intestinal transit is rapid the tablets not infrequently appear unaltered in the faeces or ileostomy bag. The bitter taste of potassium-containing mixtures makes them unpalatable to many patients and may lead to anorexia, nausea, and vomiting. These side-effects are particularly incomming in conditions where the clinician aims to stimulate or at least maintain the appetite to combat malnutrition. The following prescription taken in an equal quantity of Ribena syrup is more palatable than most:

Pot. chloride..............1 g.
Syrup of raspberry..........2 ml.
Chloroform water............to 15 ml.

Nevertheless its use is not without the risk of gastrointestinal disturbance.

At the Royal Free Hospital an effervescing potassium tablet has been developed (Hadgraft, 1960) which is both palatable and effective. This is composed of potassium bicarbonate, potassium acid tartrate, and anhydrous citric acid. It contains 6.5 mEq. of potassium per tablet. One practical drawback has been the slowness of these tablets to go into solution and their liability to leave behind undissolved residues in the glass. Examination of the glass revealed up to 0.3 mEq. K remaining after tablets had been given to patients routinely by the nursing staff.

We prefer to use effervescing potassium-containing granules for this reason and also because their superior effervescence makes the granules rather more palatable. The formula used is:

- Potassium bicarbonate........50 g.
- Potassium acid tartrate........30 g.
- Citric acid....................10 g.
- Sodium saccharin...............0.5 g.
- Sucrose powder.................20 g.

The granules, made by the method described in the British Pharmaceutical Codex, 1934, are dispensed either
A method of measuring gastric pressure during vagotomy

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During the use of the test for completeness of gastric vagotomy described by Burge and Vane (1958) some difficulty has been found with the change in gastric pressure caused by respiration.

The test consists of stimulating the vagus nerves with an electrode placed around the oesophagus. This stimulation produces a rise in gastric pressure which varies with the size of the nerves present. Using an ordinary water manometer and the stomach being distended with air to a pressure of 20 cmH₂O, respirations cause a rise in gastric pressure of between 1 and 3 cm. The heart beat may also cause a slight rise in pressure. On stimulation, the average vagal nerve trunk produces a rise of between 4 and 10 cm. A small nerve, however, may produce an increase of only 1 cm. and is not easy to observe if respiration is present.

It was decided to attempt to make use of the fact that the respiratory rise only lasts a few seconds whereas that due to the presence of an intact nerve lasts some 20 seconds. An apparatus has been devised in which the quick rise and fall in gastric pressure caused by respiration is not recorded and yet remains sensitive to the slightest change in gastric tone caused by vagal stimulation.

THE APPARATUS

In its simplest form the apparatus consists of two reservoirs of water, (A) and (B), connected together with a plastic tube. The side tubes over which the plastic tube fits have very narrow bores to produce a high fluid resistance. A glass tube (C), of about 5 mm. bore, dips into reservoir (A). A glass capillary tube (D) dips into reservoir (B). This tube is drawn out to a fine bore at its lower end. Both tubes are fitted with scales, that on tube (C) being marked to indicate a pressure of 20 cmH₂O. The scale on tube (D) is graduated in centimetres and may be slid up and down the tube.

In use the stomach is distended with air to a pressure of 20 cm. of water as shown on tube (C). The scale on tube (D) is then adjusted until the zero corresponds with the level of fluid in the tube. The vagi are then stimulated. Tube (C) will show at once all pressure changes due to respiration, heart beat, and gastric tone. Only the sustained

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REFERENCE