Discussion

This test is quick, cheap, simple, and painless. It is adequate in most cases for the diagnosis of achlorhydria. The usefulness of test meals for diagnosing any other gastric abnormality is questionable.

The term "achlorhydria" is usually taken to mean that the gastric juice has a pH of more than 3, as shown by Topfer's reagent or thymol blue. It denotes a relative "an"-acidity rather than a complete absence of hydrochloric acid.

The results of the dye-resin test can be varied by altering the quantity of dye and resin and the time of urine collection. A standardized procedure, therefore, is necessary.

The conditions which may give misleading results in resin tests have been described by Harkness and Durant (1953). They include the administration in the two days before the test of such ions as aluminium, magnesium, calcium, barium, iron, and kaolin that may release dye from the resin. Pathological states which may interfere with excretion of the dye include pyloric stenosis, intestinal malabsorption, and diseases of the urinary tract.

The commercial preparation of the dye resin ("diagnex," Squibb) substitutes 500 mg. of caffeine sodium benzoate for histamine. Although caffeine is a powerful gastric stimulant, the meaning of achlorhydria is generally taken to be the absence of free acid after histamine stimulation. It is therefore preferable to use histamine instead of caffeine.

Summary

A simple and cheap method of preparing and using a dye-resin compound as a test of achlorhydria is described.

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Beginning with the issue of the *Journal of Clinical Pathology* of January, 1960, summaries of papers will be replaced by abstracts written by the author. These abstracts will precede the paper, and will be fuller than most summaries. For the guidance of contributors the following suggestions may be useful:

The abstract should always include (1) a statement of the purpose for which the investigation or review was undertaken; (2) the selection of material used; (3) the methods, procedures, or treatment employed; (4) the results; (5) discussion.—EDITOR.

A Jig for the Agla Micrometer Syringe for Automatic Quantitative Applications in Paper Electrophoresis

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The device described here is designed to achieve quantitative applications combined with an even distribution of material by means of continuous automatic expulsion from the micrometer syringe as the needle moves across the strip. The method is suitable for use with electrophoresis tanks of the horizontal type with the strips already in position. The inexpensive jig can be made quite easily from "perspex."

An "agla" syringe with a micrometer attachment is mounted by means of Terry clips (A in Fig. 1) on a laterally moving platform (B). When in position, the machined handgrip of the micrometer rests firmly against a rubber strip (C) supported on a fixed upright. When the locking screw (D) is released, movement of the platform causes the micrometer screw to turn. The platform is moved by hand and is limited by a removable check pin (E) capable of insertion at intervals corresponding to the width of the strip. The base is in two parts (F and G) sliding on each other when the locking lever (H) is released to allow lining up of the needle point with the application line on the strip. A long needle ("record" No. 20), filed level at the end, is attached to the syringe and bent at right angles to reach the strip through a narrow opening in the tank. The height of the needle is finally adjusted by means of the screw (I) operating against the flap (J). The front end of the base-plate (G) rests against a bevelled "perspex" bar on the lid of the tank fixed in such a position as to allow the needle to pass through the opening and at the same time permit both tilting and lateral movement of the jig on the lid. On the under surface of (G) is a strip of rubber (K) so that pressure of the hand causes the base-plate to grip the lid during movements of the platform (B).

The handgrip of the micrometer has a circumference of exactly 2 in., so that lateral movement of 1 in. results in the expulsion of 0.005 ml. of fluid. Obviously, the maximum number of consecutive applications depends on the width of the strip and the jig respectively. The apparatus is reset for further applications by locking the micrometer and pulling the platform across with slight upward pressure to clear the rubber strip (C).

Fig. 2 shows the complete apparatus with the platform (B) in mid position.

FIG. 1.—Mid-line section of jig.

FIG. 2.—The complete apparatus.

Operating Procedure

(1) The syringe is charged, clamped in the micrometer attachment, and fitted into the jig.

(2) The platform (B) is now moved to check delivery from the needle tip, each drop being gently touched off with the finger.

(3) The jig is now placed in position on the lid so that the needle lies beside the strip. The tip of the needle is lined up with the application line and its height set just below the surface of the strip.

(4) A folded piece of filter paper is held for a few seconds on the application line to soak up excess buffer.

(5) With the micrometer released and the check pin one position ahead, the whole jig is lifted slightly to elevate the needle tip and to place it on the application line at the extreme edge of the strip.

(6) With firm pressure on the base-plate, the platform (B) is now moved *slowly* across until it reaches the check pin.

(7) By releasing the pressure on the base-plate the jig can be moved sideways to carry the needle clear of the strip and the application is completed.

To obtain satisfactory results the following points must be borne in mind: (a) Elimination of air bubbles from the syringe; (b) a flat, rigid tank lid on which to rest the jig; (c) removal of excess buffer from the application line; (d) careful adjustment of needle height; (e) slow movement of the needle across the strip. With Whatman 3 mm. paper this should take about 20 seconds per inch. Faster movement leads to pooling. When using cellulose acetate membrane better results are obtained if, at the end of the application, the needle is moved backwards and forwards across the strip several times. (f) The use of a "polythene" tip on the needle may be of value when using cellulose acetate membrane but was not found to be in any way advantageous for applications to filter paper.