without adrenaline; the baby is bandaged to Denis Browne's cross, and a dummy dipped in glycerin is used to soothe it. There is greater responsibility for the surgeon, since, with straining, sewing may be difficult.

ALKALOSIS IN PYLORIC STENOSIS

The work of Maizels, McArthur, and Payne² is of the greatest importance, and has passed almost unnoticed by many. They point out that, with repeated vomiting and loss of hydrochloric acid over a prolonged period, there is a marked tendency for the chloride content of the plasma to be lowered. The almost universal habit of washing out the stomach with a solution of sodium bicarbonate, usually directly before the operation, tends to induce a state of alkalosis. The very familiar picture after operation of slow, gasping respirations, pallor, and collapse, was the direct result of this procedure. With this knowledge, the avoidance of bicarbonate lavage, and the extensive use of saline solution and glucose subcutaneously, such a clinical picture has disappeared.

POST-OPERATIVE FEEDING

Improvements in post-operative feeding in the past few years have probably assisted to lower the mortality, to prevent diarrhoea, and to hasten convalescence of pyloric cases. Breast milk should be used unquestionably in preference to any other food when it is available, but in other cases some artificial food must be employed. My usual feeding regime is as follows:

Four hours after the operation there is given, at hourly intervals, 1 drachm of one of the following: breast milk; or half-cream Cow and Gate dried milk mixture (or Dryco or Klim skimmed), made up one measure to each ounce of water; or unsweetened condensed evaporated milk mixture; or lactic acid milk-and-water mixture. Twelve hours after the operation there is given, at hourly intervals, 1½ drachms of the food selected. Eighteen hours after operation, at intervals of one and a half hours, 2 drachms of the food chosen are administered, gradually increasing, until twenty-four hours after the operation 1½ ounce of the food is being given at two-hourly intervals. If the infant is breast-fed, it should be suckled at three-hourly intervals from this time onwards. If it is not breast-fed, 2 ounces of the food chosen are given thirty-six hours after the operation, at three-hourly intervals, while at forty-eight hours after the operation almost the full amount for the infant's weight can be administered.

The unsweetened condensed evaporated milk mixture is made by adding one part of this to four parts of water, one heaped teaspoonful of Demerara sugar being introduced into each 4 ounces of the mixture. For the preparation of the lactic acid milk-and-water mixture, thirty-five drops of lactic acid (B.P.) are added, drop by drop, to one pint of skimmed cow's milk, which has been boiled and allowed to cool; during the addition of the lactic acid the milk is well stirred and sugar is added. The mixture should be given diluted at first with an equal quantity of water.

As regards the feeding in medically treated cases, breast milk should be continued if plenty is available; failing this, the milk mixture, thickened with one of the starchy patent foods (for example, Savory and Moore's or Benger's food added to a mixture of cow's milk and water in equal parts, the whole having the consistency of cream), will be found the most successful. Small, concentrated feeds are desirable, since they are of high caloric value; even if only a small quantity is retained the infant tends to thrive. Lactic acid can be added to the cow's milk if thought advisable.

CONCLUSION

The obvious conclusion to be drawn from this very large and unique series of cases is the value of nursing and good environment to the child after operation. What are the advantages to the child who is treated privately?

First, it cannot be too strongly pointed out that the risk an infant runs in an ordinary hospital ward of contracting infections from other children is very great.

Respiratory and gastro-intestinal infections in other inmates of the ward are readily contracted by the debilitated congenital pyloric stenosis case. With private treatment the infant is in a room by itself, and the possibility of such an infection is carefully guarded against.

Secondly, and of even greater importance, is the nursing care which a very ill infant requires. No hospital ward in this country can provide more than one nurse to four or six infants and children during the twenty-four hours. This means that the infant is sharing the attentions of a nurse with several others, which must necessitate the work being done imperfectly. In addition, those nurses are young, and in process of learning their profession. During the night period, in a ward of from 12 to 26 beds, there are, as a rule, two nurses, and for twelve hours the infant can only have a fraction of their attention.

In private practice, for twenty-four or forty-eight hours at least, the infant receives the entire attention of a skilled day nurse, and also a night nurse, such nurses, with a repetition of cases, becoming most experienced, and, in fact, being able to cope almost unaided with any situation which may arise. It would appear to me that the lowering of the mortality must be attained by the separation of pyloric stenosis cases from all others, the nursing of these cases by themselves, and the realization by the public and the profession that the intensive nursing required in such a case for a short period must be provided.

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THE USE OF AN ANTISEPTIC (QUINANIL) WITH PREPARATIONS OF GONADOTROPIC SUBSTANCES

BY

J. M. ROBSON, M.D., B.Sc.

(From the Macaulay Laboratory, Institute of Animal Genetics,
University of Edinburgh)

In the course of work done on the pregnancy changes in the uterus, a number of experiments were performed in which the effects of various pituitary preparations were investigated in rabbits; when bovine pituitaries, in a finely divided form, were used for injection it was found that the site of injection almost invariably became septic, whatever the precautions taken. As it was impossible to sterilize the pituitaries by the ordinary methods available without destroying the activity of the gonadotropic factors, it became necessary to use some type of antiseptic, and an attempt was made to obtain a suitable substance. It was realized that the substance used should have a high antiseptic power, its toxicity should be low, and, most important qualification, it should not destroy or interfere with the action of the gonadotropic factors of the pituitary. Putnam, Teel, and Benedict (1928) have investigated the action of a number of antiseptics on gonadotropic factors obtained from anterior pituitary lobes (alkaline extracts). They found that alcohol, phenol, acriflavine, mercurochrome, and hexyl-resorcinol either destroyed or precipitated the active principles, and had ultimately to resort to filtration through a Sieck filter in order to obtain a sterile preparation.

It was of course impossible to use this method when the actual pituitary was being injected, and it was decided to try other antiseptics. Quinanil appeared to be suitable in view of its properties. This antiseptic is a derivative of a substance [2 (*p*-dimethyl-amino-anil) 6-methyl-quinoline metho-chloride] originally described

by Browning, Cohen, Ellingworth, and Gulbransen (1926). It has been bacteriologically and clinically investigated by Gordon and Armitage (1929); its antiseptic power is two to three times as great as that of acriflavine, and is little affected by the presence of serum; its toxicity is low; the mean dose tolerated by a rabbit ($4\frac{1}{2}$ lb.) is of the order of 9 c.cm. of a 0.5 per cent. solution when the drug is injected intravenously, and comparatively large doses (up to 50 c.cm. of a 0.1 per cent. solution) have been injected in human subjects without any apparent ill effects.

The antiseptic was mixed with the finely divided pituitary tissue (1 to 2 c.cm. of a 0.5 per cent. solution in Ringer-Locke solution to 1 gram anterior pituitary lobe) and injected into rabbits intramuscularly. It has been shown (Robson, 1931) that the injection of anterior pituitary lobe into female rabbits is followed by the formation of corpora lutea in the ovaries and the concomitant changes in the uterus—that is, proliferation of the endometrium and inhibition of the *in vitro* reaction of the muscle to pituitrin. These results were still obtained in all experiments when quinanil was added to the injected material, and there seemed thus to be no interference with the gonadotropic action of the pituitary active factors. The antiseptic was entirely successful in preventing sepsis at the site of injection; in previous experiments (without antiseptic) many animals had died within a few days, and no animal had remained alive for more than fourteen days after the first injection. With quinanil, on the other hand, no abscesses developed; the animals remained alive and in good health (no loss of weight or diarrhoea) as long as the experiments were continued (more than twenty days in several cases).

In view of these results it was decided to investigate more extensively the suitability of the antiseptic for administration with preparations of gonadotropic factors. Quinanil was added to a water-soluble protein-free alkaline extract of the pituitary (for which I am greatly indebted to Dr. B. P. Wiesner), and injected intravenously into rabbits. The usual corpus luteum formation in the ovary and changes in the uterus were obtained, showing that the potency of the preparation had not been materially affected. The effect on active factors obtained from the urine of pregnant women was then investigated; preparations made by alcohol or phosphotungstic acid precipitation (Wiesner and Marshall, 1931) were mixed with quinanil and injected intravenously into rabbits. Follicular maturation, ovulation, corpus luteum formation, and the usual effects on the uterus were obtained, showing that quinanil again did not interfere with the action of the gonadotropic principles.

Lastly, a number of experiments were performed on mice by Mr. P. G. Marshall (to whom I am indebted for permission to quote the results). A preparation made from the urine of pregnant women by the alcohol precipitation method was dissolved in 0.85 per cent. saline and sufficient quinanil added to make a 1 in 1,000 solution. Various quantities of the solution were then injected into mice; the effects obtained (blood spots, corpora lutea, distension of the uterus) were similar to those given by control experiments in which no quinanil had been added to a fraction of the same pregnancy urine preparation. From these experiments it can also be concluded that quinanil does not destroy or materially impair the activity of gonadotropic factors.

The effect of more prolonged action of quinanil on gonadotropic factors has not been investigated. In all experiments, the active material was used within a few days of its preparation (unless it was kept in the form of a dry powder), and the solutions made up with quinanil were also used within a similar period.

In addition to the use in experiments, quinanil has also, in a number of cases, been added to samples of gonado-

tropic factors (prepared from pregnancy urine) which are sent out from this laboratory for clinical use. Sufficient data have not yet been obtained, however, to pass any opinion on this use of the antiseptic.

SUMMARY

Experiments have been made to determine whether the antiseptic quinanil destroys or interferes with the action of gonadotropic substances. Used in conjunction with finely divided anterior pituitary lobe, and with extracts made from anterior pituitary lobe or pregnancy urine, injected subcutaneously and intravenously into rabbits and subcutaneously into mice, no appreciable decrease in the gonadotropic effects on the ovaries (and the resultant changes in the uterus) was detected. It is suggested that the antiseptic may be suitable for use in the clinical administration of these hormones.

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Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

FOREIGN BODY IN A CHILD'S BRONCHUS WITH ATYPICAL SIGNS AND SYMPTOMS

The occurrence of a ball of paper as a foreign body in the air passages of a child is in itself unusual. In the following case the history and physical signs were atypical, and the presence of the foreign body was not suspected until it was expectorated.

A boy aged 6, who had previously been quite well except for an attack of bronchitis in 1925 and measles in 1926, was admitted to Highgate Hospital on May 6th, 1931, with the history that two days earlier he had seemed feverish, and complained of headache and pain in the back, and had developed a spasmodic cough which sometimes induced vomiting.

On admission his temperature was 99° F., pulse rate 86, and respiration 34. His tongue was furred, the tonsils enlarged and injected without exudate, and his breath smelt of acetone. Movement of the chest, percussion note, air entry, and breath sounds were normal, but there were a few crepitations to be heard along the vertebral border of the right scapula. Physical examination revealed no other abnormality.

On May 7th he was lethargic, with flushed face, loss of appetite, and a troublesome cough. The percussion note was now impaired, and the air entry diminished at the right apex over the area of the right upper lobe. There were no adventitious sounds. By the morning of May 9th the percussion note was markedly impaired, and the breath sounds were loudly bronchial over the whole of the right upper lobe. During that night the patient had a paroxysm of coughing and expectorated a flat plaque three-quarters of an inch in diameter and half an inch thick, which weighed 12 grains. It had a hard, brownish-yellow external crust over a spongy interior, and was soaked in offensive sputum. On May 10th the child was delirious, with dry, thickly furred tongue; the physical signs in the chest were unaltered. During the night, however, the temperature fell by crisis.

On May 11th the patient began to take an interest in his surroundings, and his appetite returned; the tongue became moist and was less furred. The consolidation of the right upper lobe was unchanged, but scattered fine rhonchi were heard in all other areas. On May 12th the percussion note was slightly less impaired, and a few redux crepitations were present over the area of the right upper lobe. Fewer rhonchi were heard in the other pulmonary areas. From this time he made rapid progress until May 25th, when physical examination of his chest revealed no abnormality, and on discharge on June 16th he was perfectly well.