ASCHHEIM-ZONDEK AND HOGBEN PREGNANCY TESTS MODIFIED AND COMPARED

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During 1948 the new laboratory of the Pregnancy Diagnosis Station of the University of Edinburgh was equipped to carry out the Hogben test. Most of the tests now carried out here are Hogben tests, though a large proportion of Aschheim-Zondek tests are still performed, partly because many practitioners do not send us enough urine.

Modifications

During this period modifications to both methods have been introduced which have resulted in a more efficient routine and in greater accuracy. There are now enough data available to show that the Hogben test is suitable for routine diagnosis, and that it is more reliable than the Aschheim-Zondek test. The following modifications are those now in use.

1. Aschheim-Zondek Test

The method used is that described by Robson (1947), with the following modifications. Four mice (obtained from dealers as 3-weeks-old females) are used instead of five. The pre-treatment of urine (testing with universal indicator, addition of acid, or shaking with ether when toxic) and the addition of 1 g. of sulphosalicylic acid to 30 ml. of urine have been discarded in favour of the following: four drops of 20% thymol in alcohol are added to 30 ml. of urine immediately on arrival of the specimen. This simple modification has reduced the percentage of urines which prove toxic to the test mice. This is in conformity with the findings of Zondek and Black (1946), who decided that toxicity was not a property of normal urine, but was formed, on standing, by bacteria in the urine. It should be added that the mice tolerate thymol extremely well, and the effect on the ovaries of the test animals seems more clear-cut.

2. Hogben Test

The method used is that published by Landgrebe and Samson (1944), with the following modifications. Well-fed toads weighing 60–100 g. are used, and must respond by ovulating to 70 i.u. of chorionic gonadotropin instead of 100 i.u. We find that stock animals can be divided into two quite distinct groups with regard to sensitivity, and this test dose enables the less sensitive animals (about 20% of a fresh stock) to be discarded. Toads are used every ten days, as they have been shown to be more sensitive than if used at 21-day intervals (Landgrebe, 1948). They are not, however, used continuously, because they lose weight. It may be that with different conditions of husbandry this would not occur. So in our laboratory they are used three times in one month and the next month not at all—e.g., animals used on Jan. 3, 13, and 25 will be rested during February and used again on March 1, 11, and 23, resting the following month, and so on. This means that a single *Xenopus* toad is used 18 times in a year.

By means of the Scott (1940) technique 60 ml. of urine are concentrated into 5 ml. of extract. One toad only is used for each test, and it receives 2.5 ml. of extract in the dorsal lymph sac (see Landgrebe, 1948). If the toad ovulates within 24 hours the result is recorded as positive. If, however, no ovulation

results in 24 hours a second toad is injected with the remainder (2.5 ml.) of the same extract. If both toads are still negative 48 hours after the beginning of the test the result is recorded as negative. This enables 25% more tests to be done with the same number of test animals without loss in accuracy. We find that toads which have previously ovulated can be made to deposit eggs if they are injected, 24 hours after their last ovulation, with "negative urine" or distilled water. It is therefore of the utmost importance that toads be taken from the correct tanks, otherwise many false positive results will be obtained.

Comparison of Results

Slips for confirmation or otherwise are sent out with the results of the tests, but unfortunately owing to lack of co-operation of the medical practitioners only 14% were returned during 1948. It has been assumed in the following table that our errors are duly reported. In the words of one of our local practitioners, "I don't bother to tell you when you are right, but I soon let you know if you are not." Even if this assumption is incorrect the comparison between the two methods is still valid, as a similar proportion of confirmations were received for each test. The first items in the accompanying Table are a summation of data gleaned from the literature.

Test	Source	No. of Tests	Definitely Correct	Doubtful	False Negative	False Positive
A.-Z.	42 authors 13 Edinburgh P.D.L.	26,163 5,455 12,567	97.9% 97.2% 99%	0.05% 0.18%	1.6% 0.72%	1.2% 0.08%
Hogben	14 authors Edinburgh P.D.L.	7,707 5,666	98.9% 99.65%	0 0	1.1% 0.32%	0 0.03%

It will be seen that the Hogben test has produced more reliable results than the A.-Z. test both at Edinburgh and elsewhere—this in spite of the fact that our modification of the A.-Z. has increased the accuracy from an average of 98.4% over many years to 99% in 1948.

The number of false positives (two) given by the Hogben test compares favourably with that given by the A.-Z. test. One of these Hogben false positives was found with urine from a patient with a history of persistent abortion over several years. According to the clinical report received later, she had a discharge for a few days following the dispatch of the specimen. The second false positive did not, however, support the clinical findings, although two toads ovulated to the specimen of urine sent. Thus any attempt to sensitize the test further should be avoided.

Some false negative results are probably due to specimens being collected too soon after the first missed period: ten days should elapse before urine is sent for test. We cannot decide how many of our false negative results are due to this, since in many cases little or no information is sent with specimens of urine.

Conclusion

It is shown that the Hogben is a more reliable test than the A.-Z. Its many other advantages over the A.-Z. have been outlined by several different authors (Elkan, 1946; Herring, 1944; Landgrebe and Samson, 1944; Milton, 1946; Weisman and Coates, 1944; Zwarenstein and Duncan, 1944). With our modifications the advantage of economy is even more obvious. Some of our animals have been used for test over 40 times and are giving consistent and reliable results. We have estimated that, including running costs of the laboratory, a Hogben test can be carried out at less than half the cost of an A.-Z. test.

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A SIMPLE WEIGHT-REDUCING DIET

BY

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Fifteen years ago I devised a reducing diet, and have since used it for a large number of patients. The essential instructions are as follows:

1. Eat or drink as much as you like (or can get) of :

Lean meat, poultry, game, rabbit, hare, liver, kidney, heart, sweetbread—cooked in any way, but without addition of flour, breadcrumbs, or thick sauces.

Fish (not tinned), boiled or steamed only ; no thick sauce. Eggs, boiled or poached only.

Potatoes, boiled, steamed, or baked in skins, but not fried, roast, sauté, or "chips" ; not potato powder.

Other vegetables of all kinds (fresh, tinned, or dried) cooked in any way not involving the use of fat.

Salad and tomatoes without oil or mayonnaise.

Beetroot, radishes, watercress, parsley.

Fresh fruit of any kind, including bananas. Also bottled fruit if bottled without sugar. Not tinned or dried fruits (including dates, figs, and raisins).

Sour pickles, not sweet pickles or chutneys.

Clear soup, broth, "bovril," "oxo," "marmite."

Salt, pepper, mustard, vinegar, Worcester sauce (no other sauces).

Saccharin for sweetening.

Water, soda-water, and non-sweetened mineral waters.

Tea and coffee (milk only as allowed below).

2. You may have milk (not condensed) up to half a pint (284 ml.) daily. No cream.

3. You may have three very small pieces of bread per day and take them either one at each main meal or all three at one meal as desired ("very small" means not exceeding 1 oz.—28 g.).

4. You may have *nothing else whatever* ; particularly note that this means :

No butter, margarine, fat, or oil (except for cooking meat, not fish).

No sugar, jam, marmalade, honey, sweets, chocolate, cocoa.

No puddings, ices, dried or tinned fruits, nuts.

No bread (except as above), cake, biscuits, toast, patent reducing breads, cereals, oatmeal, "all-bran," "ryvita," "vitawheat."

No barley, rice, macaroni, spaghetti, semolina, sausages, cheese.

No cocktail savouries, alcohol (beer, cider, wines, and spirits).

Weigh before you begin, and thereafter weekly, on the *same scales*, in the *same clothes*, and at the *same time* of day.

The general principle of the diet is simply to allow unrestricted consumption of specified low- and moderate-calorie foods, with measurement of only two foods, milk and bread. It is therefore very simple, and patients generally report it as easy to carry out, even in these days, whether eating at home or in restaurants or as guests.

The opening words "eat or drink as much as you like" seem to predispose to willing co-operation. Encouragement to eat unlimited potatoes generally occasions pleasant surprise. The lay public has deeply rooted the notion that potatoes are more fattening than anything else and, consequently, the obese have usually been denying themselves potatoes, which, in fact, are not of high calorie value unless covered and impregnated with fat in cooking. Obese subjects can eat liberal helpings of boiled, steamed, or baked (without fat) potatoes three times a day and still continue to lose weight.

Weight lost by patients who adhere faithfully to the diet, without any lapses, varies from 15 to 35 lb. (6.8 to 15.9 kg.) in 12 weeks. More can be lost (up to 60 lb. (27.2 kg.) in the very fat) by going on. Prolonged experience enables one to say that a patient with simple obesity who does not lose weight is eating or drinking outside the permitted articles.

After weight reduction has been achieved the patient is left knowing the foods which are most fattening. He or she should be advised to return to ordinary diet but to maintain weekly weighing and check any observed tendency to regain weight by moderate restriction of consumption of the articles listed in Instruction 4.

Hitherto I have not had the diet printed, except for hospital use, but in response to requests from practitioners I have arranged with Messrs. H. K. Lewis & Co., Ltd., 136, Gower Street, W.C.1, to produce it as a printed diet card with the instructions on the front and the weight record on the back. (Price 7d. post free.) The instructions are prefaced by a warning that the diet should not be undertaken except on the advice and under the supervision of a doctor. A footnote states that the card is intended for sale only to registered medical practitioners.

Medical Memoranda

Pylorospasm in the Adult, Complicated by Uraemia

In the *B.M.J.* of Jan. 17, 1948 (p. 99), Mr. A. Hobson mentions the connexion of hypertrophic pyloric stenosis with uraemia. I have recently treated a case similar to his, although mine was undoubtedly pylorospasm instead of true hypertrophic stenosis.

In Price's *Practice of Medicine* (1938) it is remarked that "spasm is often stated to give rise to pyloric obstruction, but the evidence that it can do so is inconclusive, except in the hypertrophic pyloric stenosis of infants." In contrast to this, Beckman (U.S.A.) in his *Treatment in General Practice* under the headings of "nervous dyspepsia" and "pylorospasm" describes cases very similar to that of my patient.

CASE REPORT

In January, 1916, while in the Army, a professional man now aged 60 had jaundice with acute pain and was in hospital for four months. In September, 1916, he underwent appendectomy for alleged chronic appendicitis, and has suffered from flatulent dyspepsia ever since. He was first seen by me in December, 1919, when he had a temperature of 102° F. (38.9° C.) and a much-enlarged and tender gall-bladder.