Parovarian Cysts Complicating Pregnancy, etc.

Cases 56 and 63 were small parovarian cysts, in the pelvis. Of the former series, Cases 2, 46, 47, 48, 50, and 51 were also parovarian cysts; of these, Cases 48 and 50 were in the pelvis, and were delivered with difficulty by forceps, one child (Case 50) being born dead.

The recorded cases of parovarian cysts complicating pregnancy, etc., are few in number. Thus, in McKerron's classical work,² out of 1,290 cases only 9 were parovarian cysts; of these, six were removed in the third month and the patients went to term; two were removed in the fourth month and one (at least) went to term, although the pedicle was twisted; the ninth of McKerron's collected cases was removed in the sixth month and the patient was delivered prematurely. In Dsirne's³ collection of cases there were only four parovarian cysts, and the tumours were removed in the fifth, third, fifth, and second months; three of the patients went to term, and one was delivered prematurely at the seventh month. Three out of his four cases had a pelvic abscess in the puerperium.

Of my own eight cases of parovarian cyst only four were seen during pregnancy. Of these, Case 2 was delivered of a living child by forceps, and the cyst was removed eight weeks later. Case 47 had a parovarian cyst of the size of an emu's egg; the pedicle had undergone torsion. It was removed two hours after the occurrence of the torsion at the thirteenth week of pregnancy, together with the ovary, which was infiltrated with blood. The patient aborted twelve days later, but has since had four children (two boys and two girls). This was the only case in which the ovary was removed. In Case 56 the cyst was removed immediately after Caesarean section at term, and thrombosis of the femoral vein occurred. In Case 63 the cyst was removed at the thirty-first week, and death occurred from pulmonary embolism on the twenty-fourth day.

A consideration of McKerron's (9), Dsirne's (4), and my own (8) cases leads to the conclusion that parovarian cysts, intrinsically so benign, have special dangers as a complication of pregnancy. From such a small number of cases it is impossible to establish rules of treatment, and it is greatly to be desired that those gynaecologists who have had a considerable experience will publish all their cases.

My present feeling is strong against the advisability of operating on these cases in the second half of pregnancy, except at term or during or after labour, and for parovarian cysts in the pelvis Caesarean section may be advisable, though rarely necessary for benign non-adherent ovarian cysts.

REFERENCES.

- ¹ *Med. Soc. Trans.*, vol. 43; *BRITISH MEDICAL JOURNAL*, 1920, i, pp. 179, 246, 320; and (with table and extra plate) *Tumours Complicating Pregnancy, Labour, and the Puerperium*, Harrison and Sons, 1920.
² McKerron: *Pregnancy, Labour, and Child-bed with Ovarian Tumour*, 1903. ³ Dsirne: *Arch. f. Gynäk.*, Bd. 42, Heft 3, S. 415.

TIME-SAVING METHODS IN DIABETIC URINALYSIS.

BY

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For the detection of reducing substances in the urine there exists no better test than Fehling's, provided care is taken to see that the amounts of urine and mixed Fehling solutions are equal and the whole raised just to the boil. The presence of glucose will, of course, in a new case showing a low percentage, be confirmed by fermentation with yeast in the Einhorn saccharimeter.

To determine the daily (twenty-four hours) output of glucose a fairly accurate saccharimetry is required, and if dealing with a large number of specimens it becomes necessary to do this quickly and economically. The following procedure has been found of use in the saccharimetry of some 2,000 specimens.

In the case of urine with from 0.1 to 0.5 per cent. glucose,

take 2 c.cm. 1 in 10 mixed Fehling's solution in a test tube and about 15 drops of Gerrard's reagent; heat, and as the mixture comes to the boil deliver the urine from a Dreyer pipette a drop at a time. (The advantage of the Dreyer pipette is that, held vertically, it drops very consistently—various pipettes differing very little—22 to 24, say 23, drops to the cubic centimetre, enabling the following simple table to be prepared.)

TABLE I.

Drops of Urine.	Glucose per cent.		Drops of Urine.	Glucose per cent.	
	Calc.	Approx.		Calc.	Approx.
5 ...	0.460	0.5	16 ...	0.144	0.2
6 ...	0.384	0.4	17 ...	0.135	
7 ...	0.328		18 ...	0.127	
8 ...	0.288	0.3	19 ...	0.121	
9 ...	0.256		20 ...	0.115	
10 ...	0.230		21 ...	0.109	
11 ...	0.209	0.2	22 ...	0.105	
12 ...	0.191		23 ...	0.100	
13 ...	0.177				
14 ...	0.165				
15 ...	0.154				

Where less than five drops suffice to decolorize dilute the urine 1 in 5 and read as follows:

TABLE II.

Drops of Urine.	Glucose per cent.		Drops of Urine.	Glucose per cent.	
	Calc.	Approx.		Calc.	Approx.
5 ...	2.30	2.3	15 ...	0.77	0.8
6 ...	1.92	1.9	16 ...	0.72	0.7
7 ...	1.64	1.6	17 ...	0.67	0.7
8 ...	1.44	1.4	18 ...	0.63	0.6
9 ...	1.28	1.3	19 ...	0.60	0.6
10 ...	1.25	1.3	20 ...	0.57	0.6
11 ...	1.04	1.0	21 ...	0.54	0.5
12 ...	0.95	1.0	22 ...	0.52	0.5
13 ...	0.88	0.9	23 ...	0.50	0.5
14 ...	0.82	0.8			

If less than five drops of 1 in 5 urine decolorize, dilute 1 in 10, or (where the specific gravity exceeds, say, 1032) 1 in 20, and read as follows:

TABLE III.

Drops of Urine.	1 in 10 Urine. Rough percentage Glucose.		Drops of Urine.	1 in 20 Urine. Rough percentage Glucose.	
5 ...	...	...	5 ...	...	10
6 ...	...	...	4 ...	...	8½
7 ...	...	...	3½ ...	...	7
8 ...	...	...	3 ...	...	6
9 ...	...	...	3 ...	...	5½
10 ...	...	...	2½ ...	...	5

At these percentages many will prefer to do a formal titration or to use the polarimeter. (Gerrard's reagent is prepared by decolorizing boiling mixed Fehling's solution by means of a 5 per cent. solution of potassium cyanide delivered from a burette.) The polarimeter will nearly always give a lower reading than titration, owing to laevorotatory substances. If it is desired to express this as laevulose, multiply the difference by 0.284. On more than one occasion I have found dextro- and laevo-rotatory substances present in such proportions (that is, as 28:72) as to give a zero reading in the polarimeter, as against 1 per cent. total reducing substance.

To arrive at the glucose output for the day, look up in Table IV the number of litres corresponding to the number of ounces reported by nurse or patient, and multiply by ten times the glucose percentage. Glucose having been found, ketone bodies are to be looked for. Rothera's test may be done as follows: Make up a batch of 2-gram packets of ammonium sulphate. For the test, empty a packet into a small porcelain dish—say, the bowl of a crucible—add about 2 c.cm. of urine, a few drops of 5 per cent. sodium nitroprusside, and then some strong ammonia. The sodium nitroprusside need not be made up fresh each time; keep in a brown well stoppered dropping bottle, shutting off after use. You will know if the solution goes off by its changing colour—first paling, and then turning green (owing to sulphur compounds in the air).

If Gerhardt's test is positive, the ammonia coefficient ought to be done. Gerhardt's test, it will be remembered, detects relatively considerable quantities of aceto-acetic acid by the cautious addition to the urine of a solution of

iron perchloride, when in a positive case a wine colour, paling considerably on heating (distinction from salicylates, etc.), will develop.

The time-saving method about to be described enables the ammonia coefficient to be determined as a routine if desired. Two data are required—the ammonia percentage and the urea percentage. The ammonia may be determined by Malfatti's method, only slightly modified as below, and the urea by the sodium hypobromite method, using, however, Hinds's modification of the original and unsatisfactory ureameter of Doremus.

In Malfatti's method the reaction of the urine is determined *en passant*, as it is first necessary to neutralize the urine. Proceed as follows: Deliver from a Dreyer pipette into the bowl of a small crucible ten drops of urine, and a drop of phenolphthalein, and from another Dreyer pipette deliver drops of decinormal alkali until the colour appears.

To determine roughly the ammonia for the purposes of the coefficient add now two drops of formalin to the neutralized urine—this will discharge the indicator colour—and proceed to add drops of decinormal alkali as before to reneutralization (when roughly each drop represents 0.02 per cent. ammonia). Table V shows at a glance the ammonia coefficient and will save much laborious calculation. An ammonia coefficient of 10 per cent. or more indicates danger of diabetic coma.

TABLE IV.—Converting Ounces into Litres.

Oz.	Litres.	Oz.	Litres.	Oz.	Litres.	Oz.	Litres.	Oz.	Litres.
35	1.00	71	2.03	106	3.03	141	4.03	176	5.03
36	1.03	72	2.06	107	3.06	142	4.06	177	5.06
37	1.06	73	2.09	108	3.09	143	4.09	178	5.09
38	1.09	74	2.12	109	3.12	144	4.12	179	5.12
39	1.12	75	2.15	110	3.15	145	4.15	180	5.15
40	1.15	76	2.18	111	3.18	146	4.18	181	5.18
41	1.18	77	2.2	112	3.2	147	4.2	182	5.2
42	1.2	78	2.23	113	3.23	148	4.23	183	5.23
43	1.23	79	2.26	114	3.26	149	4.26	184	5.26
44	1.26	80	2.29	115	3.29	150	4.29	185	5.29
45	1.29	81	2.32	116	3.32	151	4.32	186	5.32
46	1.32	82	2.35	117	3.35	152	4.35	187	5.35
47	1.35	83	2.38	118	3.38	153	4.38	188	5.38
48	1.38	84	2.4	119	3.4	154	4.4	189	5.4
49	1.4	85	2.43	120	3.43	155	4.43	190	5.43
50	1.43	86	2.46	121	3.46	156	4.46	191	5.46
51	1.46	87	2.49	122	3.49	157	4.49	192	5.49
52	1.49	88	2.52	123	3.52	158	4.52	193	5.52
53	1.52	89	2.55	124	3.55	159	4.55	194	5.55
54	1.55	90	2.58	125	3.58	160	4.58	195	5.58
55	1.58	91	2.6	126	3.6	161	4.6	196	5.6
56	1.6	92	2.63	127	3.63	162	4.63	197	5.63
57	1.63	93	2.66	128	3.66	163	4.66	198	5.66
58	1.66	94	2.69	129	3.69	164	4.69	199	5.69
59	1.69	95	2.72	130	3.72	165	4.72	200	5.72
60	1.72	96	2.75	131	3.75	166	4.75	201	5.75
61	1.75	97	2.78	132	3.78	167	4.78	202	5.78
62	1.78	98	2.8	133	3.8	168	4.8	203	5.8
63	1.8	99	2.83	134	3.83	169	4.83	204	5.83
64	1.83	100	2.86	135	3.86	170	4.86	205	5.86
65	1.86	101	2.89	136	3.89	171	4.89	206	5.89
66	1.89	102	2.92	137	3.92	172	4.92	207	5.92
67	1.92	103	2.95	138	3.95	173	4.95	208	5.95
68	1.95	104	2.98	139	3.98	174	4.98	209	5.98
69	1.98	105	3.0	140	4.0	175	5.0	210	6.0
70	2.0								

TABLE V.—Ammonia Coefficient expressed as a Percentage to the Nearest Integer.

Drops of N/10 Alkali.	Percentage Urea.															
	0.8	1	1.2	1.4	1.6	1.8	2	2.2	2.4	2.6	2.8	3	3.2	3.4	3.6	
1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	
2	4	3	3	2	2	2	2	1	1	1	1	1	1	1	1	
3	6	5	4	3	3	3	2	2	2	2	2	2	1	1	1	
4	8	6	5	4	4	3	3	3	3	2	2	2	2	2	2	
5	10	8	6	5	4	4	4	4	3	3	3	3	2	2	2	
6	12	9	8	7	6	5	5	4	4	4	3	3	3	3	3	
7	13	12	9	8	7	6	5	5	4	4	4	4	3	3	3	
8	15	12	10	9	8	7	6	6	5	5	4	4	4	4	3	
9	17	14	12	10	9	8	7	6	6	5	5	5	4	4	4	
10	19	15	13	11	10	9	8	7	6	6	6	5	5	4	4	
11	21	17	14	12	11	9	8	7	6	6	6	6	5	5	5	
12	23	18	15	13	12	10	9	8	7	7	6	6	6	5	5	
13	25	20	17	14	12	11	10	9	8	7	7	7	6	6	6	
14	27	21	18	15	13	12	11	10	9	8	7	7	7	6	6	
15	29	23	19	16	14	13	12	11	10	9	8	7	7	7	6	
16	31	25	20	18	15	14	12	11	10	9	9	8	8	7	7	
17	33	26	22	19	16	15	13	12	11	10	9	9	8	8	7	
18	34	28	23	20	17	15	14	13	12	11	10	9	9	8	8	
19	36	29	24	21	18	16	15	13	12	11	10	10	9	9	8	
20	38	31	26	22	19	17	15	14	13	12	11	10	10	9	9	

TREATMENT OF DIABETES BY RAW FRESH GLAND (PANCREAS).

BY

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THERE are many theoretical objections to the use of raw pancreas by the mouth in the treatment of diabetes; the chief are:

1. That the internal secretion of the gland is destroyed and thereby rendered inert by the action of the gastro-intestinal ferments.

2. That the administration of raw gland by the mouth has been tried before in the treatment of diabetes, and has failed in the hands of careful observers.

3. That it is difficult to be certain that the right part of the gland is being administered when given by the mouth.

In spite of these and other objections the use of raw fresh gland has yielded such striking results during the two and a half years I have been using it that I think they are worth recording.

I find that raw gland seems to do all that insulin does in a diabetic case, while it is free from the grave risks attendant on the use of insulin (for example, hypoglycaemia). While so far I have not used it in a sufficient number of cases to claim that it is a complete substitute for insulin, the facts I have collected point in that direction. It renders the urine free from sugar within twenty-four hours of the initial dose; it lowers the blood sugar, and the ketone bodies disappear from the urine. This clearance in twenty-four hours has occurred in all cases in which the raw gland has been used. It has been found that if in the course of routine administration the gland is withheld the sugar constantly reappears in the urine.

The method used in the administration of raw gland is as follows:

The patient is first carefully dieted and kept at rest. If this fails to clear the sugar from the urine he is at once given raw gland and a diet arranged according to his weight and the type of work he has to do. The first essential is that the gland should be perfectly *fresh*. In this I think lies the explanation of the failure of other observers to obtain any useful results with raw gland. I found repeatedly that after keeping and heating the gland was useless; even if taken in large doses sugar invariably appeared in the urine of the patient. So that it seems probable that the internal secretion of the pancreas is a labile substance easily destroyed and rendered inert by heating and keeping.

In the second place it must be given raw, and is best given finely minced. Cooking in any degree renders it useless. The dose which I have usually given—more or less an experimental one—is one tablespoonful of the raw fresh gland substance daily; in one case I found that a tablespoonful every other day just kept the urine sugar-free, only a faint reaction being given on the "off" days. I am now beginning to try larger doses as I feel sure there is no risk of inducing a condition of hypoglycaemia with raw gland, as there is with insulin. The raw pancreas is obtained from the butcher, and whether it be that of sheep or ox or pig does not seem to affect the result.

The first case in which I tried the oral administration of raw fresh gland was in a panel patient, a man who was suffering from a severe form of diabetes, ketone bodies being present in his urine. This was in the summer of 1922, before the introduction of insulin. I first examined him in the spring of 1922, and after treating him for some time sent him into the local hospital. He was admitted and treated by a variety of diets (Allen and modified Allen, etc.), all of which signally failed to do him any good, and he rapidly became emaciated. He came back to me in June, and as an experiment I suggested to him that he should try a tablespoonful of raw fresh pancreas daily. The result was striking: his urine became rapidly sugar-free and he began to put on weight. After three weeks of gland treatment he felt so well that he returned to work, and has since held a responsible position as foreman engineer in an ironworks. Recently—that is, after a lapse of two and a half years—he visited me again, and I found him well nourished, and discovered that he was still carrying on the gland treatment; he informed me that he had not lost a day's work in the interim. I got his blood sugar tested, and found that it was 0.129 per cent.; his urine was sugar-free, but became loaded with sugar when I got him to stop taking the gland for a day or two.