

## RECOVERY FROM DIABETIC COMA OF ABRUPT ONSET WITH EXTREME HYPERGLYCAEMIA

BY

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Exceptionally high blood sugars in coma have been recorded both in this country and in America. The highest figures quoted by Joslin (*Treatment of Diabetes Mellitus*, 7th ed., Henry Kimpton) are 1,850 mg. per 100 c.cm. in a case of Dillon and Dyer's which recovered, and 2,060 mg. in a fatal case reported by Lawrence. The following case in which the blood sugar rose to 1,960 mg., occurring in a young woman with no previous history of diabetes, is of interest.

### Case History

A married woman aged 31 was admitted to King's College Hospital on June 28 as an air-raid casualty. She was quite conscious, had slight superficial wounds of the scalp and left thumb, and, although not shocked, appeared to be anxious. A radiograph of the skull showed no fracture. The routine ward report states that no reducing substances or ketone bodies were found in her urine, but, as the ward was extremely busy at the time, it is not possible to be absolutely certain of this point. On the 29th she vomited her breakfast, and during the day passed 82 oz. of urine, which was not tested. During the following night the nurse reported that the patient had collapsed suddenly with a low-volume pulse, but had recovered rapidly without treatment.

On the morning of the 30th she vomited again and became restless and increasingly drowsy. The knee- and ankle-jerks were absent, but her disks were normal, and the C.S.F. was normal and under normal pressure. During the afternoon she became increasingly restless, then delirious, and finally comatose. At that time she was extremely dehydrated, a smell of acetone was noticed in her breath, and she had air hunger. Up to midday she had passed 51 oz. of urine, but subsequently had to be catheterized. At 6 p.m. her urine was found to be loaded with sugar and ketone bodies, and to have a trace of albumin; chlorides were absent. She was immediately given 60 units of insulin subcutaneously, and a 4% glucose-saline intravenous drip was started. Blood was taken from her ear by capillary pipette, but owing to the dehydration a small amount clotted and the blood-sugar reading of 998 mg. per 100 c.cm., which was estimated by the Folin-Wu method, was certainly inaccurate. 100 units of insulin were given intravenously at about 6.30 p.m., and the glucose-saline drip was changed to one of normal saline. At 7 p.m. blood from the ear was taken easily and the blood-sugar reading was 1,960 mg. per 100 c.cm.

The following Table shows the response of the patient to treatment in the next 48 hours. The restless mania was very troublesome, and has occurred occasionally in other cases of diabetic coma treated in this clinic.

Date and Time	Urine		Blood Sugar (mg./100 c.cm.)	Insulin (Units)	Remarks
	B.	R.			
June 30 6 p.m.	++++	+++	? 998	60 100 i.v.	Eye tension very low. 4% G.S. drip started. Very slow. Changed to normal saline
7 p.m.			1,960	200 i.v. 200	
9 p.m.			1,960		Becoming maniacal. Less air hunger
12 p.m.	++++	+			Very noisy. Sod. amytal 7½ gr. i.v.
July 1 3 a.m.			1,360	60	Very noisy. Sod. barb. 3 gr. i.m.
4 a.m.					Very restless. Morphine ½ gr.
7 a.m.	++++	Trace	250		Quieter. Less dehydration. Normal respirations
11 a.m. 3 p.m.				40	7th litre normal saline completed. Changed to 4% G.S. 45 g. glucose added to drip fluid. Consciousness returning
4 p.m.	+	Trace	89		I.V. therapy discontinued. 5% G.S. run. P.R. for a few hours
8 p.m.					
10 p.m.	+++	Trace	222	20	
July 2 2 a.m.	Trace	+			Glucose drinks started
6 a.m.	Trace	+++			
10 a.m.			392	20	
2 p.m.	+++	0		20	20 g. carbohydrate 2-hourly by mouth from now onwards. Much better

B.=Benedict's test. R.=Rothera's test. G.S.=Glucose-saline.

The patient improved rapidly and was taking food at ordinary times on the third day after the onset of coma. Three weeks later she was discharged on a diet containing 180 g. of carbohydrate, and a mixed dose of 16 units of P.Z.I. and 28 units of soluble insulin. She has had much the same dose ever since, and is quite well.

*Past History.*—It was only after recovery that the past history could be obtained. She had never been ill, and gave no family history of diabetes or any previous frank symptoms of diabetes, except perhaps an occasional "dryness" of the mouth at night. The relation of her very sudden coma to her slight air-raid trauma remains obscure.

I wish to thank Dr. R. D. Lawrence and Dr. W. G. Oakley for their help and encouragement in publishing this case.

## Medical Memoranda

### Unusual Cause of Death in Carcinoma of Cervix

As an appendix to Mr. Foster's records of two cases of adenocarcinoma of the small intestine (*Journal*, 1944, 2, 78), I would like to describe a case of intestinal obstruction due to a secondary deposit of a squamous-celled cervical carcinoma.

#### CASE HISTORY

Female, aged 52, married, 11 children; admitted to Lurgan District Hospital April 11, 1944. Her only previous illness was a "gall-stone" operation many years ago (details of this were not available). She complained of irregular and fairly smart vaginal bleeding for 6 weeks and attacks of epigastric pain, with vomiting and aggravated by food, for 6 months. Apart from some tenderness in the epigastrium, nothing abnormal was found on clinical examination. Vaginal examination revealed a hard area in the cervix. Biopsy of this enabled a diagnosis of cervical carcinoma, Stage I or early Stage II, to be made.

The patient was then transferred to the Royal Victoria Hospital, Belfast, with a view to radium therapy. There she underwent a Wertheim's hysterectomy, and was discharged on June 2 feeling very well. At operation the bladder was found to be adherent to the front of the uterus at the junction of the body and cervix. There were a few nodules on the posterior surface of the cervix; there was also an enlarged gland in the left parametrium. Histology revealed that the adhesions to the bladder were infiltrated with malignant cells. The diagnosis was thus squamous carcinoma of cervix, early Stage IV.

Two days after discharge from Belfast she was readmitted to a medical ward in Lurgan Hospital, complaining of colicky epigastric pain and vomiting. The possibility of biliary colic was considered, and she was kept under observation. She went out against advice on June 17, her condition being almost unchanged. Five days later she was readmitted to Lurgan Hospital still complaining of abdominal pain, with copious vomiting of brownish-green material. The diagnosis of small-gut obstruction was made, and after five pints of glucose-saline by intravenous drip had been given laparotomy was carried out. The ileum was greatly distended and many vascular adhesions were present in the pelvis. These were divided, but were considered insufficient to cause an obstruction. About an inch from the ileocaecal valve was a hard annular stricture which completely occluded the ileum; distal to this the gut was normal. An ileo-transversostomy was performed and the abdomen closed. Unfortunately the patient died in 6 hours (48 days after hysterectomy).

A very limited post-mortem examination was carried out and the growth removed. The peritoneal coat and mucous membrane appeared intact, but the lumen would admit a match-stick only with difficulty. The muscle coats were infiltrated with a whitish substance which apparently did not involve the peritoneum or the mucous membrane. Histology revealed this to be a squamous-celled carcinoma.

#### DISCUSSION

Apart from the single gland in the left parametrium, no evidence of secondary deposits in the gut or elsewhere was found at hysterectomy: the ileocaecal region was not specially examined. It is possible that the long history of epigastric pain and vomiting was due to subacute intestinal obstruction, which finally became acute, causing the terminal symptomatology.

The problem to be solved is the determination of the mode of spread. Was it due to implantation during hysterectomy—via the lymphatics of the retroperitoneal tissues or via the blood stream?

I am indebted to Mr. Bassett and Mr. Macafee for permission to publish the details of this case.

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