suggestions as highly unlikely and investigations are being undertaken to exclude them. It is also possible that the three patients suffering from non-neoplastic bowel disease were carrying occult cancers. They are being kept under surveillance.

The lower proportion of positive faeces in patients whose cancers were proximal to the large bowel bears out the findings of Gold and Freedman (1956) that the concentration of C.E.A. in alimentary cancers diminishes from below upwards.

It is clearly of the first importance to apply a quantitative technique to the demonstration of C.E.A. in faeces. It may be possible to define "normal limits" of faecal C.E.A. in the healthy population above which a diagnosis of alimentary carcinoma should be considered. This question is receiving attention. It remains to be seen whether serum or faeces is the best material to examine with a view to designing a diagnostic test.

References

Burtin, P., and von Kleist, S. (1970). In *Carcinoma of the Colon and Antecedent Epithelium*, ed. W. J. Burdette, p. 150. Springfield, Illinois, Thomas Books.

Gold, P., and Freedman, S. O. (1964). *Journal of Experimental Medicine*, 121, 439.

Gold, P., and Freedman, S. O. (1965). *Journal of Experimental Medicine*, 122, 467.

Gold, P., Gold, M., and Freedman, S. O. (1968). *Cancer Research*, 28, 1331.

Kronman, B. S., and Localio, S. A. (1970). In *Carcinoma of the Colon and Antecedent Epithelium*, ed. W. J. Burdette, p. 143. Springfield, Illinois, Thomas Books.

Krupey, J., Gold, P., and Freedman, S. O. (1968). *Journal of Experimental Medicine*, 128, 387.

Lo Gerfo, P., Krupey, J., and Hansen, H. J. (1971). *New England Journal of Medicine*, 285, 138.

Martin, F., and Martin, M. S. (1970). *International Journal of Cancer*, 6, 352.

Moore, T. L., Kupchick, H. Z., Marcon, N., and Zamcheck, N. (1971). *American Journal of Digestive Diseases*, 16, 1.

Thomson, D., Krupey, J., Gold, P., and Freedman, S. O. (1969). *Proceedings of the National Academy of Sciences of the United States of America*, 64, 161.

MEDICAL MEMORANDA

Factitious Hypoglycaemia: Chlorpropamide Self-administration by a Non-diabetic

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Factitious hypoglycaemia produced by using insulin or sulphonylureas classically occurs in women aged between 20 and 40 who either themselves have used insulin or oral anti-diabetic agents or have relatives who are diabetics or are employed in a medical or paramedical capacity (Creutzfeldt and Frerichs, 1969). We add here a further report to the few published cases of factitious hypoglycaemia due to oral anti-diabetic drugs (Duncan, Jensen, and Eberly, 1961; Gittler, 1962; Creutzfeldt and Frerichs, 1969).

Case Report

A married woman, a trained nurse aged 30, was investigated because of occipital headaches for 13 years, periodic episodes of unconsciousness for four months, and glycosuria. Her father and both parental grandparents had diabetes mellitus. She had had intermittent glycosuria since childhood but random blood sugars were normal. The headaches had worsened and for the past four months had been accompanied by nausea, vomiting, and, on about six occasions, "blackouts" preceded by sweating and double vision. She attended three hospitals in succession. Haematological investigations and x-ray examination of the chest and skull at the first hospital showed nothing abnormal. An oral glucose tolerance test gave a fasting glucose of 118 mg/100 ml, 113 at 30 min, 104 at 60 min (urine sugar 7.5 g/100 ml), 84 at 90 min, 75 at 120 min (urine sugar 10 g/100 ml), and 50 at 150 min. The blood glucose was

52 mg/100 ml. An intravenous glucagon test showed fasting blood glucose of 75, 95, and 172 mg/100 ml. After glucagon (1 mg) blood sugars were 219 mg/100 ml at 5 min, 234 at 10 min, 247 at 15 min, 252 at 30 min, 171 at 60 min, and 132 at 120 min. Blood insulin values were reported as normal. Attacks of faintness were treated successfully with intravenous glucose.

On admission to the second hospital for neurological investigation the patient had a "funny turn" two hours after the evening meal. The blood sugar was 24 mg/100 ml, and during the next three days blood glucose levels were 22, 10, 35, and 10 mg/100 ml and she was unrousable on two occasions. Continuous infusion of 5% glucose was started but she again became hypoglycaemic. She was then transferred to the third hospital. No abnormalities were found on physical examination. The blood glucose was 270 mg/100 ml; plasma electrolytes, calcium, liver function tests, E.C.G., and x-ray pictures were normal; plasma cortisol was 22 µg/100 ml (11 a.m.). She was maintained on 5% glucose intravenously (500 ml/three hours) for two days. The infusion was stopped at 11 a.m. when the blood glucose was 105 mg/100 ml. Tolbutamide 1 g was given intravenously at 1 p.m., when the blood glucose was 80 mg/100 ml. The blood glucose fell to 55 mg/100 ml at 106 min but then rose again (see Table). Despite a further 22 hours of starvation

Blood Glucose and Serum Insulin* Values

Date	Time	Blood Glucose (mg/100 ml)	Serum Insulin (µU/ml)	Notes
27/6	11.30 a.m.	270	66	On 5% glucose I.V.
	6.40 p.m.	80	49	"
28/6	9.00 a.m.	90	39	"
	8.00 p.m.	200	35	"
29/6	11.00 a.m.	105	15	
	Noon	85	6	I.V. tolbutamide 1 g
	1.00 p.m.	80	7	
	+ 1 min	80	14	
	+ 5 min	80	15	
	+ 10 min	70	14	
	+ 20 min	65	12	
	+ 30 min	65	9	
	+ 60 min	60	7	
	+106 min	55	5	
	+180 min	65	8	
	+270 min	5	5	
30/6	9.00 a.m.	75	5	Fasting

*Estimated by a modification of the method of Soeldner and Slone (1965).

blood glucose was still 75 mg/100 ml. The serum insulin response to tolbutamide was poor, and fasting insulin values were normal.

The patient's belongings had been searched on admission for insulin or other drugs, mainly because of her occupation, family history, and odd demeanour. Nothing was found. On further search after the normal tolbutamide test a bottle containing three 250-mg chlorpropamide tablets was found in her dressing gown. As final

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confirmation chlorpropamide levels of 16 mg and 14 mg/100 ml were found in two blood samples taken at a two-day interval at a time when she was having repeated hypoglycaemic episodes. These levels were equivalent to about a 5-g dose and a second, smaller dose. She was discharged to psychiatric care.

Comment

The differential diagnosis, which lay between insulinoma, extrapancreatic tumour, hepatic disease, and endocrine disease, was narrowed after investigation to an insulinoma or an extrapancreatic tumour. Normally blood insulin values would have established the diagnosis, but they would have been misleading in this case and could have led to a pancreatectomy. Cases such as this fulfil all the criteria of Whipple's triad (low blood glucose levels, severe recurrent attacks, and symptoms relieved by intravenous glucose), and the initial diagnosis has nearly always been of an islet-cell tumour. In this case results of tolbutamide and glucagon tests were normal, so self-administration was suspected and laparotomy was not performed. It bears many similarities to the other reported case of chlorpropamide self-administration (Duncan *et al.*, 1961), in which blood levels of chlorpropamide reached 25 mg/100 ml.

On reviewing the patient's history it seems likely that the peculiar glucose tolerance test result and particularly the blood glucose levels before the glucagon test may have been faked. Levels of urine glucose of 10 g/100 ml with a blood glucose

of 75 mg/100 ml are obviously spurious. It is of interest that a degree of ataxia was present. This has been reported during the therapeutic use of large doses of chlorpropamide. The other symptoms and signs were almost certainly due to hypoglycaemia. It should be emphasized that when factitious hypoglycaemia is suspected the blood levels of insulin antibodies and of sulphonylureas should be estimated. Obviously the former will not be of assistance in a diabetic subject who has received insulin therapy. We report this case to emphasize how difficult it can be to detect exogenous sulphonylurea administration.

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References

- Creutzfeldt, W., and Frerichs, H. (1969). *Deutsche medizinische Wochenschrift*, **94**, 813.
 Duncan, G. G., Jensen, W., and Eberly, R. J. (1961). *Journal of the American Medical Association*, **175**, 904.
 Gittler, R. D., (1962). In *Clinical Diabetes Mellitus*, ed. M. Ellenberg and H. Rifkin, p. 242, New York, McGraw-Hill.
 Soeldner, J. S., and Slone, D. (1965). *Diabetes*, **14**, 771.

Accidental Gonococcal Infection of the Eyes in Children

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In view of the large increase in the incidence of gonorrhoea in Britain during the past few years the following cases are worthy of report.

Case Reports

A married joiner aged 25 attended the Special Clinic, St. James Hospital, Birkenhead, on 24 March 1971 with a urethral discharge of four days' duration. He admitted extramarital risks with the same consort five days, two weeks, and three weeks previously and to having had marital intercourse since the risk. Urethral smear and culture disclosed a gonococcal infection. He was issued with contact cards for his wife and consort and was treated with procaine penicillin and ampicillin.

Two days later he attended the clinic accompanied by his wife and two children. His consort also attended later the same day and was found to have gonococci in both urethral and cervical smears and cultures. On examination his urethral discharge had cleared up and his urine was clear.

His wife did not complain of any symptoms. On examination, however, a profuse purulent cervical discharge was found. Urethral

and cervical smears and culture disclosed a gonococcal infection. Advice was given regarding hygiene, with particular reference to the children. She then stated that the daughter aged 3½ years had had "inflammation" of the eyes for the previous four days. The wife was treated with procaine penicillin and ampicillin.

On examination of the daughter a bead of pus was present at both internal canthi. Smears and cultures of the pus from both eyes disclosed a gonococcal infection. Examination of the son, aged 2 years, showed no abnormality of the eyes. Penicillin drops were instilled into the eyes of the daughter at two-hourly intervals by the father, and she was given procaine penicillin 600,000 units intramuscularly, which was repeated the following day. The mother refused admission of the daughter into hospital. Next day the eyes were still inflamed and the penicillin eye-drops were continued. Two days later the eyes appeared normal. There was no evidence of vulvovaginitis. She reattended the clinic at frequent intervals for observation and was discharged cured on 18 April.

On 2 April 1971 the father brought his son to the clinic as he had noticed that his eyes had been "swollen" for the previous two days. On examination a bead of pus was present at both internal canthi. A Gram-stained smear from both eyes showed gonococci, but the cultures were negative. Penicillin eye-drops were instilled at two-hourly intervals by the father and he was given procaine penicillin 300,000 units intramuscularly; this was repeated the following day. On 3 April the eyes were still inflamed. The penicillin eye-drops were continued for a further three days, and on 7 April the eyes appeared normal. He was discharged on 16 April.

Comment

It is possible that both children's eyes were infected by one or other parent from towels during routine washing and bathing. With the present high incidence of gonorrhoea it is probable that further accidental gonococcal infection of the eyes will occur in children.

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