Lactic acidosis occurring during phenformin therapy

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Summary
A case of severe lactic acidosis is described in a diabetic taking phenformin who was otherwise healthy. Substitution of metformin for phenformin did not lead to a recurrence of the lactic acidosis.

Case history
The patient was a 47-year-old woman who developed diabetes mellitus in 1965. She was initially controlled on chlorpropamide and phenformin. However, her diabetic control became less satisfactory and insulin therapy was substituted in October 1967. Subsequently her diabetes became unstable and phenformin 100-150 mg daily was added in November 1968. Since then her blood glucose levels have become more steady, but have been high, in the range 240-300 mg/100 ml. Glycosuria appeared occasionally but never ketonuria. She remained well until 30 June 1970 when she was admitted with a 2-month history of malaise, anorexia, weight loss and vague abdominal ache.

On examination she was febrile, not dehydrated and not in shock. Pulse, 72/min; BP, 110/70. Examination of her alimentary, cardiovascular, respiratory and nervous systems revealed no abnormality.

Investigations: Blood glucose, 55 mg/100 ml; Na+, 130 mEq/1; K+, 3-9 mEq/1; urea, 49 mg/100 ml. Astrup, pH 7-32; PCO₂, 11 mmHg; plasma HCO₃, 11 mEq/1; buffer base, 29 mEq/1; base deficit, −19 mEq/1. Blood lactic acid, 95-2 mg/100 ml (control 6-5 mg/100 ml) (Boehringer kit using u.v. method).

Phenformin was withdrawn and she was treated with intravenous sodium bicarbonate (1 l of 1·4% solution). Twenty-four hours after admission the blood lactic acid had fallen to 56-4 mg/100 ml. She continued to improve on conservative management and 2 weeks later the blood lactic acid was 10-6 mg/100 ml. She was discharged from hospital, and subsequently has been well-controlled on insulin and metformin, with no further episodes of lactic acidosis.

Discussion
Accumulation of lactic acid has repeatedly been shown to result in metabolic acidosis, often with fatal results (Huckabee, 1961). Many reports have described lactic acidosis occurring in diabetic patients taking phenformin (Tranquada, 1964). However, in the majority of these reported cases the lactic acidosis may well have occurred secondary to conditions associated with hypoxia, such as myocardial infarction (Iseri, Evans & Evans, 1963), haemorrhage (Lepage, 1946) or sepsicaemia (Waters, Hall & Schwartz, 1963). Lactic acidosis also has occurred in diabetics treated with other drugs in conjunction with phenformin (Daughaday, Lipicky & Rasinski).

It has been stated (Sadow, 1969) that lactic acidosis is unlikely to occur in patients treated with phenformin unless some other factor is present. In this case, the patient was not otherwise ill and was not on therapy other than phenformin and insulin. Finally, the substitution of metformin for phenformin did not lead to recurrence of lactic acidosis.

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References


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Case reports

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Pregnancy after haematocolpos

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FERTILITY following haematocolpos has rarely been studied. The following case in which unilateral haematocolpos, haematotrichelos and haematometrium was released by making an incision between the two vaginas provided a formerly occluded horn with a 'normal' horn of uterus to act as a control. Both were exposed to the same patient's ovum and the same semen. It may be assumed, therefore, that implantation occurred in the more fertile horn.

Case report

On 29 May 1956, at 16 years of age the patient presented with a 2-week history of sharp, stabbing, intermittent lower abdominal pain radiating from the right to the left lower abdomen, recently more severe and accompanied by nausea and vomiting. There were no bowel or urinary symptoms. She had a regular 28-day menstrual cycle lasting 3–4 days. A firm, cystic mass which filled the whole pelvis was explored by laparotomy. On opening the peritoneal cavity, altered blood was seen on the right side. The cystic mass which filled the pelvis appeared to have both cornua of the uterus lying above it and both the Fallopian tubes leading from these appeared normal, though the right one was engorged. The ovaries were both normal. On vaginal examination the cystic mass bulged into the vagina anteriorly. Stale blood was aspirated from this and, on incision of the vagina, 30 fluid oz of stale blood drained. It could now be appreciated by using a uterine sound, that the cervix in the vault of the vagina communicated only with the left cornu of the uterus. Between this cavity (formerly occluded) and the right cornu there was a thin rim of cervix. A tube was temporarily stitched into the incision between the two vaginas. It was noted that the right kidney was absent and the left kidney hypertrophied.

Postoperatively an intravenous pyelogram confirmed absence of the right kidney with normal function on the left.

The patient was asked to attend again if marriage was envisaged.

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