on clothing. Infective larvae hatch in two days. These penetrate human skin on contact, causing the characteristic furuncular lesions recognisable by the posterior tip of the larva barely visible at the centre. The most effective management is to cover the lesion with petroleum jelly. Deprived of air, the larva partly emerges and can then be easily expressed with digital pressure.

There has been one previous report of this infection known to have been acquired outside the recognised distribution of the fly; this occurred in a British woman who had returned from holiday in Spain.³ The only explanation that we can offer for the infection occurring in these children in northern Europe is that their father, who had made several recent visits to Africa on business, may have brought back eggs from a tumbu fly among his possessions.

This curious occurrence, once again, illustrates the weakness of rigidly maintaining our geographical preconceptions about the incidence of infectious disease, as further evidenced by the recent reports of "airport malaria."⁴

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Decreased intraperitoneal insulin requirements during peritonitis on continuous ambulatory peritoneal dialysis

Continuous ambulatory peritoneal dialysis is being increasingly used in the management of the final stage of chronic renal failure due to diabetes mellitus. One of the principal advantages over haemodialysis is the excellent control of blood glucose which can be achieved with regular intraperitoneal insulin administered with the dialysate; usually four times daily. We report considerable reductions in the requirements for intraperitoneal insulin during severe peritonitis, which most patients using continuous ambulatory peritoneal dialysis experience about twice a year.²

Methods and results

We studied six patients in the final stage of chronic renal failure due to diabetes mellitus during an episode of severe bacterial peritonitis. This was diagnosed by abdominal pain, turbid effluent, dialysate white cell count greater than 100 μ l, and positive bacterial culture (*Staphylococcus epidermidis* in five cases and *Staph aureus* in one). All patients were treated with cephalothin intraperitoneally at a dose of 500 mg l of dialysate for 10 days, by which time symptoms and signs had resolved completely; the mean time to clear fluid was five days. Patients were instructed to maintain their blood glucose within the range 7-13 mmol/l (126-234 mg/100 ml) by checking a capillary blood sample and using a sliding scale of neutral insulin injection administered intraperitoneally with the dialysate at each change of bag.

All patients required considerably less insulin during the acute phase of peritonitis, especially in the first three days (see table). Two patients became profoundly hypoglycaemic, both on day three and presented in coma. By the 10th day after the onset of infection insulin requirements had virtually returned to normal.

Comment

During severe infections most diabetic patients exhibit increased insulin requirements due to the resulting catabolic state. Clearly, this practice would have disastrous consequences during an episode of peritonitis in diabetic patients using continuous dialysis, who receive insulin by the intraperitoneal route. Many of these patients exhibit

Total daily requirement for insulin (IU) during bacterial peritonitis. Figures in parentheses represent percentage amount of normal daily insulin dose

Case No	Usual requirements for insulin	Day 2	Day 4	Day 7	Day 10
1	78	60 (77)	58 (74)	70 (90)	80 (103)
2	110	70 (64)	100 (91)	100 (91)	106 (96)
3	158	120 (76)	120 (76)	136 (86)	150 (95)
4	136	110 (81)	130 (96)	136 (100)	136 (100)
5	146	108 (74)	126 (86)	126 (86)	146 (100)
6	108	90 (83)	102 (94)	108 (100)	108 (100)

pronounced autonomic neuropathy, which reflects the advanced nature of the underlying disease, with little or no awareness of impending hypoglycaemia. Coma may be the presenting symptom.

Reduced intake of carbohydrate due to anorexia is, therefore, unlikely to explain the fall in intraperitoneal insulin requirements in these catabolic patients; the principal reason is probably the increased absorption of insulin due to mesothelial damage, an occurrence also described with a number of antibiotics administered intraperitoneally during peritonitis.³

For peritonitis in diabetic patients using continuous dialysis we recommend that regular doses of intraperitoneal insulin are reduced and that monitoring of blood sugar is performed before every change of bag. Where possible patients should not be left alone, especially if they have diminished awareness of hypoglycaemic symptoms, as coma might ensue.

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"Missed pill" conception: fact or fiction?

When pregnancy occurs during the use of the combined low dose oral contraceptive pill the patient often insists that she has missed taking only one, or at most two, of the pills. As the combined oral contraceptive pill suppresses gonadotrophin production and therefore folliculogenesis,¹ the clinician is invariably sceptical: ovulation occurring within 48 hours of removal of the oestrogen suppression of pituitary gonadotrophin production seems highly unlikely. We report the demonstration of ovarian folliculogenesis during the seven day pill withdrawal in 28 day pill cycles, which makes the genuine occurrence of "missed pill" conceptions seem less mythical.

Patients and results

We studied 19 healthy nulliparous subjects aged from 20 to 30 years who were using the low dose combined oral contraceptive pill; all gave informed consent. All had normal menstrual histories before oral contraceptive use. They had been on treatment for at least three months and had regular monthly withdrawal bleeds.

Ultrasonographic examination of the ovaries was performed on the last day of one pill pack (day 21), on the last "pill free" day (day 28), and on the seventh day of the next pill pack (day 7). An Elscint Dynex sector scanner, with a 3.5 MHz probe, was used which is capable of measuring down to 1.5 mm.

The results are shown in the table along with the proprietary names of the oral contraceptives used by each subject. All subjects showed some ovarian follicular activity by the last day of the pill free phase and half developed multiple follicles with a dominant follicular diameter of 7 mm or greater, the diameter seen on day 7 of the normal cycle.² Continuation of the gonadotrophin stimulation of these dominant follicles would have led to ovulation.³ By the seventh day of the new pill pack the follicular ap-

Ultrasound findings and oral contraceptive taken

Case No	Pill	Ovarian follicular appearances (maximum diameter (mm))		
		Day 21	Day 28	Day 7
1	Microgynon	None	Multiple (7)	None
2	Microgynon	None	Multiple (3)	None
3	Ovranette	None	Multiple (3)	None
4	Microgynon	None	Multiple (3)	None
5	Microgynon	20 mm cyst	Multiple (3) + 20 mm cyst	20 mm cyst
6	Eugynon 30	None	Multiple (7)	None
7	Marvelon	None	Multiple (5)	None
8	Trinordiol	None	Multiple (5)	None
9	Microgynon	25 mm cyst	Multiple (7) + 25 mm cyst	17 mm cyst
10	Trinordiol	None	Multiple (7)	None
11	Eugynon 30	None	Multiple (7)	None
12	Microgynon	None	Multiple (8)	5 mm follicle
13	Microgynon	None	Multiple (4)	None
14	BiNovum	None	Multiple (7)	None
15	Ovranette	None	Multiple (9)	None
16	Logynon	None	Multiple (5)	None
17	Ovranette	None	Multiple (5)	None
18	Microgynon	None	Multiple (10)	None
19	BiNovum	None	Multiple (6)	None

pearances had returned to the dormant condition shown by the first scan in all but one subject (case 12) and she showed reduction in follicular diameter.

No pills were missed by any subject during the study cycles. In two subjects (cases 5 and 9) small cysts were detected at the first scan and at the second and third examinations, unaffected by the development and regression of the other follicles. One subject (case 1) inadvertently missed a pill on day 5 of a cycle after completing the study. She was examined 24 hours later and a 10 mm follicle was seen. She was unable to attend for further examinations.

Comment

The demonstration of ovarian folliculogenesis in all 19 subjects, and to a significant degree in nine, on the seventh pill free day, means that during the early days of the subsequent pill cycle, some women harbour significantly developed follicles, ready to respond to any gonadotrophin surge which might occur if oestrogen suppression were to fail because of a missed pill. By the seventh day of pill use, in all but one subject, the follicles had disappeared. Missing a pill after this time would seem to be less important.

If a pill were missed during the first seven days of the pack and rebound gonadotrophin production continued to mature a partially developed follicle, then the normal practice of taking two pills the next day might theoretically add positive oestrogen feedback to the gonadotrophin production and make even more likely the risk of ovulation. This possibility has not been proved as it is difficult to find for study women taking the pill for reasons other than contraception.

To reduce the risk of missed pill conception a 28 day pack containing 23 pills and 5 blanks could be substituted for the current 21 day pack. This would still permit a withdrawal bleed without the risk of significant follicular development. The use of a 5 day pill free period with the current 21 day packs might cause confusion for some women but would be equally effective.

With the current 21 day pill pack we strongly recommend that alternative contraception be used when a pill is missed during the first seven days of a pack, even if the woman has been using oral contraception for some time. This is probably not necessary when a pill is omitted later in the course. Women using oral contraceptives should also be warned of the danger of delaying restarting treatment after the seven pill free days.

We thank the volunteers who made themselves available for examination when requested.

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Potential hazard of clotting during blood transfusion using a blood warming pack

It was recently reported to the regional blood transfusion centre that an anaesthetist at a district hospital had found blood clots in the blood warming bag at the end of a transfusion. All the equipment was returned for examination.

Equipment and investigations

The equipment consisted of an empty blood pack connected via a micro-aggregate blood filter to a standard Y recipient set, and a part pack of compound sodium lactate intravenous infusion BP (Hartmann's solution for injection; Ringer lactate solution for injection). The distal end of the recipient set was connected to a blood warming bag (Fenwal code 4C2416) (see figure).

Transfusion system with blood warming pack. (A Compound sodium lactate intravenous infusion. B Blood Pack. C Micro-aggregate filter. D Standard recipient set filter and drip chamber. E Blood warming pack.)

Blood clots were present in the filter chamber of the recipient set on both sides of the filter and along the entire length of the fluid pathway.

One ml aliquots of whole blood (420 ml blood collected into 63 ml of CPDA-1) and plasma reduced blood (whole blood from which 200 ml plasma had been removed) were added to 1, 2, 3, and 4 ml of compound sodium lactate. Four tubes of each were prepared. These were incubated in a water bath at 37°C for three minutes and examined at minute intervals for signs of clotting. The plasma reduced blood (1 to 1 dilution) did not clot at 20 minutes but the contents of the other tubes clotted within three to six minutes. Whole blood did not clot in 20 minutes in the 1 ml of whole blood to 1 and 2 ml of compound sodium lactate solution, but the other two dilutions clotted at eight and 11 minutes.

Comment

Compound sodium lactate intravenous infusion contains calcium chloride 0.27 g/l giving a calcium content of 2 mmol/l (8 mg/100 ml), just below the normal serum concentration of 2.30-2.65 mmol/l (9.2-10.6 mg/100 ml). The citrate in CPDA-1 acts as an anticoagulant by chelating calcium, but the amount required is much greater than if 1 mol of citrate firmly chelated one atom of ionised calcium. Plasma citrated with CPDA-1 has a final citrate concentration of about 25 mmol/l and a final calcium concentration of approximately 1.8 mmol/l (7.2 mg/100 ml), a molar ratio of about 12.5:1. Yet it takes only 500 mg of calcium chloride added to a unit of whole blood to provide sufficient calcium to "satisfy" all the citrate present.¹

The experiments show that 2 ml of compound sodium lactate intravenous infusion causes clotting with 1 ml of plasma reduced blood in five to six minutes and 3 ml causes clotting with 1 ml of whole blood in 10 to 11 minutes at a temperature of 37°C, the temperature at which the Fenwal blood warmer operates.