with conventional cuprophane membranes.⁴ Haemodialysis with high flux dialysers and polysulfone or polyacrylonitrile membranes lowers β_2 microglobulin concentrations, and an improvement in shoulder pain in patients changed to high flux dialysers has been reported.⁵ The mechanism of the improvement is not clear; possibly amyloid is no longer deposited and the associated inflammation decreases. The improved biocompatibility of these membranes is known to be associated with reduced activation of some mediators of the inflammatory response.

Our patient used polysulfone dialysers after his operation, and his initial improvement was maintained. Monitoring the amyloid deposits throughout his spinal canal should show the effect of high flux dialysis on further deposition of amyloid.

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Strongyloidiasis in ex-Far East prisoners of war

Altogether 38 000 men who had been prisoners of war in the Far East returned to Britain after the second world war. There has recently been growing concern that some of those surviving might still be harbouring the tropical worm *Strongyloides stercoralis*. In 1982 the Department of Health and Social Security agreed to mount a nationwide screening programme and recruited 11 hospitals, seven of them military. The programme was named the tropical disease investigation and was organised by the department's War Pensions Branch, which assigned these former prisoners of war to the hospitals nearest to their homes. I report on the first 500 patients screened at this hospital.

Patients, methods, and results

From April 1982 up to four patients a week were admitted to this hospital for five days of investigations. Their ages ranged from 59 to 81. All patients underwent routine screening for tropical diseases and had a full medical and psychiatric examination with appropriate investigations. Some further tests were aimed specifically at strongyloidiasis: these consisted of a differential white cell count, stool tests, and a string test (Entero test).¹

Strongyloidiasis was identified in 78 of the first 500 subjects tested. Seventy three had a convincing history of classical larva currens rash, and five were asymptomatic but positive for larvae on stool testing. All 78 were treated with thiabendazole 25 mg/kg twice daily for three days. Three patients with a history of rash did not complete the treatment. A minimum of 12 months later we wrote to the 70 patients with symptoms. Of the 64 who replied, 38 claimed to be cured. Because of the unpleasant side effects of thiabendazole only 15 of the remaining 26 agreed to further treatment. Four were considered to be cured 12 months after their second course of thiabendazole. Four of the five asymptomatic patients were reviewed in hospital one to three years after treatment. Three were found to be negative for the larva on stool testing and had normal eosinophil counts; they were judged to be cured. Thus 45 of the 68 patients (66%) reviewed 12 months or more after the initial treatment were found to be free of infection.

Comment

Patients with chronic strongyloidiasis often have few symptoms other than mild looseness of the bowels. The larva currens rash, an intensely irritating recurrent urticarial eruption, is usually unmistakable and is

diagnostic, especially when accompanied by eosinophilia. In most long established cases this rash tends to recur at long intervals. In many patients it may be little more than an inconvenience.

The chief danger to life is the hyperinfection syndrome, in which the immune defences are overwhelmed and there may be massive dissemination of larvae from the general circulation to vital organs, possibly with a fatal outcome.² The syndrome may be provoked by certain malignancies and chronic debilitating diseases, including the acquired immune deficiency syndrome.³ Immunosuppressant drugs such as high dose steroids are an important cause of the hyperinfection syndrome.

Our cure rate was 66%; as thiabendazole produces unpleasant side effects a less toxic and more effective drug is needed.⁴ This hospital now offers a second course of treatment a month after the first.

Strongyloidiasis may run a mild or asymptomatic course: five patients positive for larvae on stool testing had no symptoms. Thirteen patients who did not receive treatment had unexplained eosinophilia. Thus the prevalence of infection reported here (16%) may be an underestimate; 20%, as suggested by Gill and Bell, may be more realistic.⁵ As strongyloidiasis may be becoming more common in Britain doctors intending to treat their patients with immunosuppressant drugs should ask whether they were prisoners of war in the Far East or have lived in the tropics. Unexpected reactions to treatment with immunosuppressants could necessitate a life saving course of treatment.

The 11 hospitals taking part in the Tropical Disease Investigation are the Royal Liverpool Hospital; London School of Tropical Medicine; City Hospital, Edinburgh; Coppetts Wood Hospital, London; Royal Naval Hospital Haslar, Gosport; Royal Naval Hospital, Plymouth; Queen Elizabeth Military Hospital, Woolwich, London; Princess of Wales Royal Air Force Hospital, Ely; Princess Mary's Royal Air Force Hospital, Halton, Aylesbury; Princess Alexandra Hospital, Wroughton, Swindon; and Royal Air Force Hospital, Nocton Hall, Lincolnshire.

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Laparoscopic incisions at the lower umbilical verge

When punctured with a cone skin splits along the direction of its collagen bundles; the topographical alignment of these fibres is commonly referred to as Langer's lines.¹ Incisions along these lines are believed to heal with less formation of keloid than incisions crossing the lines.^{2,3} If Langer's lines run vertically at the lower umbilical verge vertical incisions here should be cosmetically superior to horizontal incisions. We carried out a study to test this.

Patients, methods and results

The study was in two parts, the first being to determine which incisional axis, horizontal or vertical, would produce the best cosmetic result and the second to determine the direction of Langer's lines at the lower umbilical verge. We obtained the approval of the local ethical committee and the participating patients' informed consent for the study.

Twenty women undergoing laparoscopy for the first time were allocated alternately to receive a vertical or horizontal incision. A number 11 scalpel blade and a 7 mm operating laparoscope were used; incisions were closed with a single 2-0 plain catgut subcuticular horizontal mattress suture. Eighteen women were available for review three months later and used a 10 cm visual analogue scale to assess the cosmetic result of their scars. The women with vertical scars graded the result as 7.6, 8.2, 8.4, 9.1, 9.8, 10, 10, 10, and 10 (total 83.1, median 9.8); the nine with horizontal scars graded the result as 3.6, 4.3, 4.7, 5.1, 5.3, 6.5, 6.9, 7.1, and 10 (total 53.5, median 5.3). The medians were significantly different ($p < 0.01$, Wilcoxon double sided rank sum test).

The direction of Langer's lines at the lower umbilical verge was determined by two methods. Firstly, Langer's skin splitting experiment¹ was recreated in 10 women, whereby a cone shaped trocar was used to pierce the skin at the lower

margin of the umbilicus. The direction of skin splitting was vertical in all cases. Secondly, full thickness skin biopsy specimens were taken from beside the umbilical incisions of six patients (three horizontal and three vertical incisions). Routine histological sections showed that in all cases collagen was aligned vertically at the lower umbilical verge. Furthermore, when a vertical incision was made 68% fewer blood vessels were transected (means of 14.6 with vertical incisions and 46 with horizontal incisions per field at 25 objective magnification). Clinically this was shown by less bleeding after operation.

Comment

Long before Langer's experiments it was appreciated that the orientation of a wound had a bearing on its ability to heal. Langer's demonstration of the lines of congregated collagen bundles gave a reason for this: incisions that cut across these lines tend to gape as the wound edges are perpendicular to the lines of tension; these lines of tension pull the wound edges apart, encouraging the scar to widen and keloid to form.

Although all of the incisions in the first part of the study were sutured for the purposes of comparison, we noticed that the edges of vertical incisions naturally opposed themselves and did not require suturing. This was in stark contrast with the horizontal incisional wounds, which tended to gape. Avoiding sutures has advantages for wound healing and the incidence of wound infection.⁴

Cosmetic result is difficult to assess objectively. As the most important opinion is that of the woman who bears the scar we asked each woman to assess her own scar. The results clearly favoured a vertical incision.

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Inhaling heroin during pregnancy: effects on the baby

In 1984 drug pushers moved into two areas of high unemployment and poor housing served by our neonatal unit. We were suddenly confronted with the problem of antenatal drug abuse and its effects on neonates. An estimated 95% of heroin abusers in Merseyside inhale heroin ("chasing the dragon") rather than inject it. The effect of this mode of abuse on the newborn infant has been less well documented than the effect of intravenous heroin abuse.

Patients, methods, and results

Between December 1984 and June 1986, 24 babies (one set of twins) born to women known to have abused heroin during their pregnancies were admitted to the special care baby unit for observation for signs of narcotic withdrawal. Forty eight controls were obtained retrospectively by selecting the baby born immediately before and the baby born immediately after each baby in the study group. Characteristics of the index babies and the control group were compared with the Mann-Whitney U and χ^2 tests.

The women who abused heroin were more likely to be younger, single, and smokers and to book later for antenatal care (table). All had taken heroin by inhalation. One had occasionally injected heroin and had abused amphetamines and diazepam in early pregnancy. All except one admitted abusing drugs when questioned in the antenatal clinic, but they were reluctant to give details of substances abused. Sixteen mothers took drugs throughout pregnancy. Thirteen had been prescribed methadone in a detoxification programme. Sixteen had partners who used heroin.

The babies of the heroin abusers were born earlier and were smaller than the controls. One third of the study group were below 37 weeks' gestation compared with 4% of the controls. The babies who had withdrawal signs had weights below the 50th centile, but this was not significant. Eight babies showed signs attributable to opiate withdrawal: irritability (eight), tremor (seven), vomiting (six), snuffles (six), hypertonicity (five), high pitched cry (five), fever (three), diarrhoea (three), sweating (three), and convulsions (two). Their mothers had taken heroin throughout pregnancy; five had also taken methadone. Seven babies

Details of mothers and babies

	Heroin users	Controls	p Value
Mothers*			
Age (years):			
Range	17-30	17-38	<0.001
Median	20	25	
No (%) of primigravidae	12 (52)	18 (37)	NS
No (%) unmarried	17 (74)	10 (20)	<0.001
Time of booking (weeks):			
Range	10-31	8-26	<0.001
Median	18	12	
No (%) who smoked	19 (83)	22 (46)	<0.01
No (%) who used alcohol	10 (43)	20 (42)	NS
Babies†			
M:F	0.85:1	1:1	NS
Gestational age (weeks):			
Range	31-41	33-41	<0.001
Median	38	40	
Head circumference (cm):			
Range	27.5-35.8	28.8-37.7	<0.001
Median	32.6	34.7	
Birth weight (g):			
Range	1320-3910	1280-4240	<0.001
Median	2550	3510	
Birth weight (g) of term babies‡:			
Range	2120-3480	2620-4420	<0.001
Median	2900	3540	

*Twenty three heroin users, 48 controls.

†Twenty four babies born to heroin users, 48 controls.

‡Sixteen babies born to heroin users, 46 controls.

were symptomatic by 18 hours of age, the eighth not until 96 hours. Three babies had prolonged symptoms. Two of these had convulsions, but only one was given chlorpromazine. Phenobarbitone 10 mg/kg/day by intramuscular injection is ineffective for moderate to severe symptoms,¹ so oral chlorpromazine 3 mg/kg/day in divided doses² was given with good effect.

Comment

In our study one third of the babies showed signs of withdrawal, in contrast with 70-85% of babies born to mothers who injected heroin.^{1,2} Symptoms were similar but less severe after inhalation, possibly a consequence of smaller amounts of heroin reaching the fetal circulation due to the unpredictable absorption from the nasal mucosa. Drug abuse is often irregular, but conversion to oral methadone (accepted as effective and safe for people who inject heroin³) exposes the fetus to a regular dose of an opiate that is protein bound and longer acting.⁴ Convulsions are a recognised feature of neonatal heroin withdrawal, particularly in neonates of mothers receiving methadone as substitution treatment,⁵ and occurred in two of our babies whose mothers had taken methadone. The practice of substituting methadone antenatally needs to be reconsidered for women who inhale.

In view of its epileptogenic properties⁴ we question the use of chlorpromazine as a sedative and currently recommend 0.125 mg doses of oral morphine sulphate for withdrawal symptoms.

No baby had withdrawal signs if the mother had stopped inhaling heroin before the third trimester of pregnancy.

We were surprised by the number of women who were ignorant of the possible harmful effects of their habit on the baby. The government's antidrugs campaign should emphasise the dangers of inhaling as well as injecting drugs during pregnancy and the potential adverse effects on the neonate.

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