All three patients now described had psoriasis responsive to haemodialysis. The beneficial effect of this treatment is unlikely to be due to coincidence. While McEvoy and Kelly noted that their patient relapsed 11 months after the withdrawal of dialysis, our second patient had psoriasis that reappeared promptly after dialysis was stopped and at a time when immunosuppressive treatment would have been expected to maintain a remission. The delay in the appearance of more extensive psoriasis in case 2 and the ultimate relapse in the patient of McEvoy and Kelly was probably due to and dependent upon the reduction of immunosuppressive treatment required after transplantation.

Studies on ^{14}C -thymidine incorporation in DNA of transforming lymphocytes suggest that haemodialysis causes a loss of factors from normal and uraemic plasma that are essential for DNA synthesis.³ These changes are independent of any lymphopenia caused by dialysis. Similar blood-borne factors responsible for epidermal DNA synthesis may exist and would explain our observations in psoriasis.

We thank Sister Arnold, Ryehill Hospital, Newcastle upon Tyne, who noted the phenomenon and drew our attention to it; Dr R Elliot, Professor D N S Kerr, and Professor S Shuster for advice and permission to report the cases; and Mrs Hogben for secretarial help.

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(Accepted 25 October 1977)

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Effects of naloxone on auditory hallucinations

Recent work suggests that naturally occurring endorphins and opiate receptors in the brain have a role in the pathogenesis of some symptoms of schizophrenia.¹⁻³ Terenius *et al*² showed an increased endorphin content in the cerebrospinal fluid of chronic schizophrenics during an active phase of the illness, and Gunne *et al*³ have shown that auditory hallucinations could be abolished in schizophrenic patients by the administration of naloxone, a pure morphine antagonist.

We describe a schizophrenic patient with severe auditory hallucinations which responded to treatment with naloxone, though they had previously been relieved by self-administered morphine and heroin.

Case report

A 28-year-old woman had a 10-year history of psychiatric illness. She presented initially with mutism, and first complained of auditory hallucinations in 1969. These consisted of voices speaking to her and discussing her. Later she complained of confusion in her thoughts, difficulty in apprehending what was said to her, indefinable panic, and specific fear of the voices. She appeared tense, expressionless, silent, and immobile. She reported reasonable control over the hallucinations on flupenthixol decanoate 80 mg weekly with thioridazine 100 mg at night, though the hallucinations continued to vary in intensity and disruptiveness.

She had first abused drugs in 1970—chiefly opiates, but also amphetamines and lysergide. Her psychotic symptoms seemed least troublesome when she used opiates regularly, and she completed a diploma course in sociology while a registered addict. She took opiates to relieve her symptoms, and said that the voices disappeared almost immediately after an intravenous injection of heroin. These effects wore off within a few hours of the injection.

Trial—In a single-blind procedure 0.4 mg naloxone or isotonic saline was injected intravenously on three separate occasions when her auditory

hallucinations were most troublesome. The effects on her hallucinations were monitored every five minutes for the first 20 minutes, and every 10 minutes for a further three hours by asking her to report on their intensity. Five minutes after intravenous naloxone the patient reported that her hallucinations were less intense; at 15 minutes they had disappeared and she became mildly euphoric. The mood elevation lasted for two hours, and the hallucinations had returned to their usual intensity after three hours. The time course of these changes closely followed that reported by the patients after taking morphine or heroin, and was similar to that shown by Gunne *et al*.³ No effects were observed after isotonic saline, there was no alteration in mood, and her hallucinations were totally unaffected.

Comment

The effects of naloxone reported here are important because the immediacy of the clinical response might suggest a direct effect on the psychopathological processes of auditory hallucinations. This contrasts sharply with the known effects of neuroleptic drugs, which take much longer to produce clear-cut effects on psychotic symptoms.

Comfort⁴ has suggested that morphine-like drugs may be the only effective anti-psychotic for some patients. Our patient was not a typical schizophrenic, and no general conclusions can be drawn about schizophrenia. Nevertheless, the comparable effects of morphine and naloxone on her symptoms suggest that drugs with a high affinity for opiate receptors could be developed as an effective means of controlling hallucinations in schizophrenia, and that intravenous naloxone could be used as a short-term emergency measure in patients with distressing hallucinations. These observations may also have important implications for the role of endorphins and opiate receptors in the pathogenesis of auditory hallucinations in schizophrenia, as both morphine and naloxone may act as competitive inhibitors of an endorphin fraction possibly present in excess in such patients.

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(Accepted 25 October 1977)

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Mid-trimester septic abortion and Escherichia coli septicaemia in a copper IUCD user

Reports of septic abortion in association with intrauterine contraceptive devices (IUCDs) have been mainly a North American phenomenon in which the Dalkon shield has principally figured. Nevertheless, in Great Britain figures do not show an increase in septic abortion in IUCD users and certainly do not single out the Dalkon shield.¹ We report a case of septic mid-trimester abortion and septicaemia in a Gravigard (copper 7) user.

Case report

A 25-year-old nulliparous woman was admitted with a five-day history of slight vaginal bleeding after an episode of 13 weeks' amenorrhoea. A Gravigard IUCD had been fitted in 1976. The uterus was compatible in size with a gestation of 16 weeks and an ultrasonic scan reported a pregnancy of 15 weeks' gestation. She was treated as having a threatened abortion and discharged on the following day. There was no fever during her admission. She was readmitted one week later in the early hours with a 24-hour history of heavy vaginal bleeding and fever. Her temperature was 39°C. Blood and a high vaginal swab were sent for culture and the IUCD was removed. She was started on co-trimoxazole (Septrin) and metronidazole (Flagyl). She aborted spontaneously a normal-looking fetus and placenta 36 hours later, at which time her temperature was 38°C. Cultures were taken from the placenta.

The blood culture grew *Escherichia coli* O75—about 30 organisms/ml, sensitive to gentamicin, tetracycline, and co-trimoxazole but insensitive to ampicillin and cephalosporins—and a microaerophilic streptococcus, Milleri group F—sensitive to penicillin, tetracycline, erythromycin, and co-trimoxazole. The same organisms were isolated from the high vaginal swab and placenta. The placenta also grew *Staphylococcus aureus*. Microscopy of the placenta showed that the decidual tissue was infiltrated with polymorphs.

Her fever fell rapidly after the uterus had been emptied and she was able to be discharged home after a few days.

Comment

E. coli septicaemia in association with septic abortion in Gravigard users has been reported in the USA.^{2,3} The cervical appendage of the Gravigard consists of a single monofilament nylon thread, in contrast to the Dalkon shield, which has a tail of many multifilaments contained within an outer nylon sheath. Bacteria may be found inside this sheath between the multifilaments and it has been suggested that bacteria can ascend by a wick action and exit into the uterine cavity.⁴ Nevertheless, the recent reports of sepsis with other devices suggest that bacteria can gain access to the cavity other than along the inside of multifilamentous tails. Preliminary reports of a hysterectomy study in progress at the University of Southampton have shown that all tailed IUCDs, both monofilamentous and multifilamentous, lead to the presence of a few bacteria in the uterine cavity.⁵ These are similar to the vaginal flora. Bacteria have not been found in the cavities of the few tail-less IUCD users studied so far.

Bacteria can ascend the outside of monofilamentous tails as well as any route along the inside of multifilamentous tails. Therefore, all patients with IUCDs should be advised to seek early confirmation of any suspected pregnancy. Consideration should be given to removing the device early in the pregnancy. If there is any difficulty in removal, the threads should be cut as short as possible.

We thank Dr Graham and the Department of Microbiology at the Royal Hampshire County Hospital, Winchester.

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(Accepted 25 October 1977)

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Diabetes in identical triplets

Studies on identical twins have helped to throw some light on the relative contribution of genetic and environmental factors concerned in the aetiology of diabetes mellitus. Despite the accumulation of several hundred twin pairs, a search of published work has disclosed no cases of identical triplets who are concordant for diabetes. The Joslin Clinic does report a set of identical triplets, two of whom are diabetic.¹

We have recently had the opportunity to study such a set of triplets.

Patients

The triplets were born in Dublin in 1921 of Irish parents who were awarded the King's Bounty. Introduced by Queen Victoria in 1847, this was a sum of money paid to the parents of triplets or quadruplets and was

probably one of the last such awards to be made in Ireland. They have a similar environmental as well as genetic background, genetic similarity being confirmed on HLA and blood-group typing (O-positive, A₂A₃B12 BW40). There is no family history of diabetes mellitus.

The first triplet was diagnosed in 1964 (blood sugar concentration 15 mmol/l (270 mg/100 ml)); the second in 1971 (18 mmol/l (324 mg/100 ml)); and the third in 1976 (15 mmol/l (270 mg/100 ml)). Examination in 1976 showed background retinopathy in the first and third, though not in the second, confirmed on retinal photography. No other abnormality was noted and all were controlled on diet and oral drugs. The results of investigations including full blood count, profile (U + E and liver function tests), and measurements of the serum iron concentration and total iron binding capacity were all normal. Tests for pancreatic acinar and islet-cell antibody, thyrogastric, smooth-muscle and mitochondrial antibody, and antinuclear factor were all negative.

Factors concerned in assessing frequency of diabetic identical triplets

Frequency of triplets	1/6400 births
Identical triplets ¹	15% triplets
Perinatal mortality ² (triplets)	353/1000 births
Mortality 4 weeks—1 year ³ (triplets)	40/1000
Chance of survival 1–55 years for all three (Expectancy Life Tables, 1931)	88%
Chance of developing clinical diabetes	1%

The factors concerned in assessing the frequency of diabetic triplets are listed in the table. If the likelihood of developing clinical diabetes is taken as 1% and concordance for diabetes is assumed⁴ the frequency of male identical triplets of 55 with diabetes is 1 in 25 000 000. The male population over 55 in the UK is 6 000 000, which makes this an extremely rare event.

Discussion

The subject of diabetes mellitus in identical twins has been well studied.^{4,5} It has been shown that almost all twins diagnosed over the age of 40 are concordant for diabetes and half have a diabetic parent. The average time between diagnosis in such twins is 2.6 years and no association has been shown with any HLA type or with the presence of islet-cell antibody. The triplets fit well into this pattern. They are typical maturity-onset diabetes and concordance has been shown, although there is no family history of diabetes. They have none of the HLA types associated with juvenile-onset diabetes (B8 BW15 B18) and, although there is an association between HLA-A3 and haemochromatosis, their serum iron concentration and total iron-binding capacity are normal.

Perhaps surprisingly, there were 12 years between diagnosis of the first and last triplets, but the onset of diabetes is notoriously difficult to date. The first triplet diagnosed was asymptomatic and may not have developed symptoms for some years. The last triplet was appreciably lighter at diagnosis than the other two and this may have delayed the onset of symptoms; indeed, the finding of microaneurysms at the time of diagnosis does suggest that he had been diabetic for considerably longer than his symptoms of two months suggested.

The strong family history and high rate of concordance for diabetes found in the twin studies reinforce the view that genetic factors are dominant in the aetiology. The failure to demonstrate association with HLA type suggests genetic heterogeneity.

In summary, we report identical triplets concordant for diabetes for the first time and show them to fit into the pattern expected from the identical twin studies.

We should like to acknowledge the helpful comments of Dr D A Pyke; the triplets have been included in the British Diabetic Association twin study.

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(Accepted 25 October 1977)

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