pressure was 125/90 mm Hg and temperature 38.9°C. The left pupil was larger than the right but both reacted normally to light and accommodation. There was a small herpes simplex lesion on his lower lip. After admission he had a further grand mal seizure, again lasting five minutes.

Results of investigations were: serum concentration of creatinine 160 µmol/l (1.8 mg/100 ml), urea 17.3 mmol/l (104 mg/100 ml), sodium 134 mmol/l, and potassium 4.98 mmol/l; haemoglobin concentration 9.3 g/dl; platelet count $386 \times 10^9/l$, and chest x ray picture normal. A CT brain scan showed the area of low density secondary to the old subdural haematoma. Lumbar puncture results were: pressure 20 cm water, red blood cells 3000/l, white cells nil, protein concentration <0.1 g/l, and glucose 3.1 mmol/l (56 mg/100 ml) (blood glucose 5.1 mmol/l; 92 mg/100 ml).

His medication included atenolol 100 mg daily, prednisolone 20 mg daily, and cyclosporin A 10 mg/kg/day. The serum cyclosporin A value immediately before his first seizure was 690 µg/l. No evidence of bacterial or fungal infection was found. The only viral antibody titre to be raised was that to herpes simplex, rising from 1/64 one month before admission to 1/128 on the day of admission.

Cyclosporin A was stopped for 48 hours and then reintroduced at the same dose. After stopping cyclosporin A his temperature was normal and he was clinically well with no residual neurological signs apart from the unequal pupils, which were of long standing. The serum creatinine concentration had fallen to 110 µmol/l (1.2 mg/100 ml).

Comment

Reported neurotoxic manifestations of cyclosporin A include tremors, ataxia, muscle weakness, paraesthesia, and seizures.^{4,6} There have been few reports of seizures in adults associated with cyclosporin A in renal transplantation, and most individual cases described have been in children after bone marrow transplantation. In both reports of seizures with renal transplantation^{7,8} the actual cyclosporin A concentrations at the time of the seizure were not given, and in the second report the seizures were associated with malignant hypertension.

The rapid improvement in the general condition of our three

patients and the reduction in serum creatinine concentrations seen during the recovery period suggest that these represent examples of cyclosporin A related seizures. The corresponding high plasma concentrations of the drug in cases 1 and 2 particularly lend support to this theory. Cyclosporin A values are not measured routinely in our unit and the dosage of the drug is adjusted by reference to the clinical picture and serum creatinine concentration. This would explain the very high values in the first two patients, who had no clinical features of toxicity until the time of their seizures. The relatively lower concentration in case 3 may have been high enough to precipitate seizures in a patient with a potential epileptic focus.

Interestingly, the seizures occurred early in the course of cyclosporin A treatment, and although the starting dose may have been greater than that used in some centres, extremely high serum concentrations were achieved. We think that these cases emphasise the need for caution with the use of cyclosporin A in regard to both clinical observation and regular monitoring of serum drug concentrations.

References

- 1 Calne RY, Rolles K, White DJG, *et al.* Cyclosporin A initially as the only immunosuppressant in 34 recipients of cadaveric organs: 32 kidneys, 2 pancreases, and 2 livers. *Lancet* 1979;ii:1033-6.
- 2 Powles RL, Clink HM, Spence D, *et al.* Cyclosporin A to prevent graft versus host disease in man after allogeneic bone marrow transplantation. *Lancet* 1980;ii:327-9.
- 3 Calne RY, White DJG, Thiru S, *et al.* Cyclosporin A in patients receiving allografts from cadaver donors. *Lancet* 1978;ii:1323-7.
- 4 Joss DV, Barret AJ, Kendra JR, Lucas CF, Desai S. Hypertension and convulsions in children receiving cyclosporin A. *Lancet* 1982;ii:906.
- 5 Atkinson K, Briggs JC, Darveniza P, Boland J, Concannon A, Dodds A. Cyclosporin associated central nervous system toxicity after allogeneic bone marrow transplantation. *N Engl J Med* 1984;310:527.
- 6 Atkinson K, Briggs JC, Concannon AJ, *et al.* Hepatic and central nervous system toxicity of cyclosporin A in man after allogeneic marrow transplantation. Abstracts, 12th annual meeting, Australian Society for Immunology, 8-10 December, 1982. 80.
- 7 Najarian JS, Strand M, Fryd DS, *et al.* Comparison of cyclosporin A versus azathioprine-ALG in renal transplantation. *Transplant Proc* 1983;15,suppl 4:2463-8.
- 8 The Canadian Multicentre Transplant Study Group. A randomised trial of cyclosporin in cadaveric renal transplantation. *N Engl J Med* 1983;309:809-15.

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Clinical Algorithms

Infertility

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It takes two to be infertile, so the woman and her partner should always be investigated as a couple. Postcoital tests are not very reliable and their timing is important: they must be done at the time of ovulation. The test may need to be repeated.

Where the surgical procedures mentioned in the algorithm fit into the schedule of infertility investigations is open to argument. Many gynaecologists do them early. A sensible approach is to get patients on to the waiting list soon but not hold up the rest of the investigations until the surgery has been performed. With any luck the patient will be pregnant by the time her turn comes. A history suggestive of endometriosis or pelvic sepsis puts tubal investiga-

tion high on the list. Tubal blockage may be suitable for surgery if the tubal damage is minimal, but badly blocked or damaged tubes are not amenable to surgery. Irreparable tubal blockage was the original indication for in vitro fertilisation. Nowadays subfertile male infertility or unexplained infertility is a commoner and a more rewarding indication.

Among patients who do not have tubal blockage, those with an inadequate luteal phase, menopause praecox, or unexplained infertility present the greatest problems. The results of treatment for an inadequate luteal phase are disappointing. If clomiphene or clomiphene plus chorionic gonadotrophin is given at ovulation it is not difficult to raise progesterone concentrations to the values found in conceptual cycles, but this seldom results in pregnancy.

In patients with menopause praecox treatment is useless. Persuade the patient kindly but very firmly that prognosis is hopeless and that none of tomorrow's great discoveries will be of any avail.

Unexplained infertility is a mixed bag of conditions that are difficult to diagnose. Autoimmunity or an immune reaction by the

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Infertility

wife is possible, but this is very difficult to establish, and treatment (condom therapy or intrauterine insemination) is doubtful. The doctor and his patient may be driven to in vitro fertilisation or artificial insemination from a donor. Other conditions that may account for unexplained infertility include a luteinised unruptured follicle and menstrual abortion. Menstrual abortion may account for a substantial proportion of these cases.¹ Infertility clinics are silting up with this category as other conditions, more amenable to treatment, are removed. Many of these patients with unexplained infertility are turning to in vitro fertilisation, though a fraction of

the resources spent on in vitro fertilisation devoted to research on unexplained infertility would remove many women from this category because the understanding and cure of some of these conditions are almost within our grasp.

Reference

¹ Ahmed A, Klopper A. Detection of subclinical abortion by assay of pregnancy specific B₁ glycoprotein. *Br Med J* 1984;288:113.

Personal Paper

What it is like to lose a lung

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When the hospital doctor told me that arrangements were in hand to have my left lung surgically removed, he obviously expected me to be thrilled to the core at my good luck that an operation was possible. Always a poor sport, however, I felt far from whooping with delight. Firstly, I wanted to know a lot more about what was going to happen to me. What would I feel like after such a big operation? Would I ever be able to function normally again and, if so, how long would I take on the road back?

After all, I thought, any old idiot can die, but it takes real talent to live with certain degrees of disability. I was not at all sure that fortitude and endurance were my best qualities. The only person that I had met who lived with only one lung was a woman who had spent the last 30 years playing Camille on a chaise longue. True she seemed to be happy enough, but it certainly was not a role that I envied.

I asked the questions but the answers I got were vague and, to me, unsatisfactory. "Your recovery depends on how positive your thinking is," said the surgeon. Sister let her voice trail away in a mist of conjecture—"Well, it is a very major operation after all." The physiotherapist muttered from the side of her mouth as if she should not be saying anything at all, "I think the first four months are the worst."

There could have been many reasons why I had to go into the operation without really knowing what to expect and one of them could have been that all the staff were so very busy, scudding about the wards without a moment to spare. Another reason could have been that all the people I was asking had two good lungs and were obviously hoping to keep it that way. Their theoretical knowledge may have been exhaustive but their actual experience of what it felt like was zilch. Whatever the reasons, none of us patients was told much and the whole ward leaned heavily on astrological predictions and clutching at straws.

Still the staff meant well. A sweet faced little woman doctor took the trouble to come and make reassuring noises as I was trolleyed away to the operating theatre. "There is nothing, really nothing, to be frightened of—Mr Thing has done this operation hundreds of times. He is so expert he could do it standing on his head with his

eyes shut." I trundled off to oblivion sincerely hoping that he would not try anything so bizarre while I was on the table, even though he was obviously bored out of his skull by the whole oft repeated procedure.

When I came to in the intensive care ward, the man in the next bed (it was a mixed ward) was trying to die and the nursing staff were refusing to permit it. This happened about seven times in the next few hours and each time they pounced on him and thumped him enthusiastically away from those pearly gates. The nurses in this ward were lean and watchful. They walked on the balls of their feet and gave the impression that if you snapped them in half the word "Efficiency" would be lettered right through them, like in a stick of seaside rock. It was evident that a patient had to be immensely determined to succeed in dying in the intensive care ward, and, as I did not feel up to making that kind of effort, I decided that I had better live.

Even though I had not got much in the way of information about my operation, I had acquired a couple of notions. One was that I was going to find it difficult to breathe but this was not the case at all. Breathlessness was never a problem except when I was upset. If I was calm I was not breathless—it was as simple as that.

Repository for old razor blades

The other idea, based on wincing observation of the really impressive hook shaped scars on patients who had already had their operations, not to mention watching them gulp down the painkillers, was that the wound would hurt. This proved a correct assumption, despite all that the hospital staff said about how improved techniques had lessened the pain. In the immediate aftermath of the operation though, I could feel the wound only vaguely through a general drugged muddleheadedness and malaise. It was not until I got back into the surgical ward that it began to feel as if the surgical team had used me as a repository for their old razor blades. Even so it was fairly bearable during the day when I could sit up and vary the pressure on my back, but the nights were dreadful.

The ward was kept extremely hot. They could have grown pomegranates and paw paws with ease on any of the window sills. We slept propped up on a heap of pillows, all plastic covered under their cotton slips and capable of retaining heat with great efficiency. Every wriggle generated more heat until sweat poured

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