The renal unit in Inverness: the shape of things to come?

Some British renal units treat most patients referred with end stage renal failure but still fail to achieve patient treatment rates considered acceptable in other European countries.^{1,2} Part of the problem is due to inadequate referral of patients by non-specialists.³ Because British renal units serve far larger populations than their European counterparts,³ it has been suggested that smaller renal units, situated in district general hospitals, might provide a more accessible service and encourage referral.⁴ We describe the mode of operation and quality of service provided by a small renal unit in a district general hospital, managed by a general physician with an interest in nephrology.

The unit

The four bedded unit was established in March 1976 and provides dialysis facilities for the Highland Region and Western Isles of Scotland, which has a population of about 231 000 (Highland Health Board estimate). Geographically the region is the largest in the United Kingdom. The unit staff consists of two nursing sisters, three staff nurses, one enrolled nurse, a domestic, a part time dialysis technician, and a part time dietitian. To the end of 1983 dialysis facilities were regularly available from 0750 to 1620 on six days a week and the nursing staff introduced an on call rota to deal with out of hours emergencies. Medical cover was provided by a consultant physician with an interest in renal diseases; participation by the junior medical staff has been erratic and unnecessary for the proper working of the service. Vascular access and Tenckhoff catheter insertion were provided by two general surgeons. Criteria for accepting patients on to the programme were not rigorous; most patients referred for treatment were accepted. Most of the patients having dialysis have been placed on the waiting list for a transplant at Aberdeen.

Forty four patients have been treated since March 1976, with an actuarial patient survival of 76% at one year and 71% at two years. The patient acceptance rate was 28.1 per million population per year. There were 26 men and 18 women with a mean age of 42.4 ± 13.6 (range 10-62). The ratio of patients aged over 50 to those younger was 0.51 (15:29). Three diabetics (7% of the dialysis population) were treated.

Growth of patient numbers on different forms of treatment, 1975-83.

Continuous ambulatory peritoneal dialysis has been the fastest growing form of treatment in recent years (see figure) and our experience has been very satisfactory. Only two patients have required a change of treatment in 189 patient months; the peritonitis rate has been one episode in seven patient months. Two of the five transplants performed from 1976 to the end of 1983 were from living related donors.

Comment

We suggest that a single physician with an interest in renal diseases can provide a service in a district general hospital equal to that achieved in larger centres. The main problems with the unit have been those of distance from the local transplant centre and the necessity for continuous medical cover by a single physician.

The advantages of small renal units are obvious. Patients have easier

access to a local centre and can establish a close relationship with the nursing staff. Less obviously, such units can offload some of the patient burden from larger centres: we currently treat 29 patients who would otherwise be managed in Aberdeen. Moreover, patient survival rates of 76% at one year and 71% at two years are satisfactory when compared with those from the rest of Europe.⁵

Nevertheless, the patient acceptance rate in Inverness (28.1 patients per million per year) is almost identical to that of Scotland as a whole (28.7).³ Patient groups which appear to be selected against are those over 50 and diabetics; the ratio of patients over 50 to those under 50 was 0.51, as against 0.9 and more in comparable European countries,³ and only 7% of the dialysis population were diabetic. The pattern is similar to that noted in the rest of the United Kingdom.³ Because few patients have been refused dialysis we assume that many others are never referred. Although the unusual demography of the Highland Region must be remembered, we suggest that the presence of an active local renal unit does not guarantee referral of patients in high risk groups.

We thank the nursing staff, who have enabled this unit to run smoothly, and Mr J Logie, Mr R Baker, and the many surgical senior registrars for their help with surgical problems.

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Maggots dyed with chrysoidine: a possible risk to anglers

Searle and Teale first drew attention in 1982 to the possibility that bladder tumours in coarse fishermen might be the result of exposure to the azo dye chrysoidine.¹ They initially reported that a study from Poland had shown chrysoidine to be carcinogenic in mice² but later found that this work could not be repeated. An epidemiological study conducted in West Yorkshire failed to find any increased prevalence of use of dyed maggots by patients with bladder cancer, although the authors emphasised that the confidence limits of their study were wide.³

It has recently been argued that the evidence for a link between chrysoidine and bladder cancer is now entirely circumstantial,⁴ but until further epidemiological studies and studies of carcinogenicity in animals are conducted I think that any strong circumstantial evidence should be reported.

Case reports

Two brothers born in 1912 and 1930 had fished together most weekends from 1954 to 1978 often for nine hours a day. They always used dyed maggots for bait, and although they tried several colours they favoured the bronze (chrysoidine stained) variety. Their hands became stained with the dye and it took several days for this to wear off. In winter the maggots became cold and sluggish and the men often put them into their mouths to warm them and "make them more attractive to the fish."

The eldest brother was seen in 1979 with severe haematuria. He subsequently died of uraemia secondary to a transitional cell carcinoma of the bladder proved by histological examination.

The younger brother first noticed haematuria in 1971 at the age of 41 but was not diagnosed as having a bladder tumour until 1976. He later developed an invasive transitional cell carcinoma and underwent radical radiotherapy

and then cystectomy. He survived, but evidence of secondary deposits in the lung were later found.

Both men worked throughout their lives on the production line of a major car manufacturer. They never worked in the dye, rubber, tanning, or aluminium industries. Both were heavy cigarette smokers.

Comment

Epidemiological evidence for an association between bladder cancer and exposure to β -naphthylamine and benzidine, which are used in the manufacture of dyes, was shown conclusively by Case in 1954; recently it has been shown that workers in the manufacture of dyes who also smoke are at the greatest risk.⁵ Little industrial evidence exists, however, to suggest that exposure to finished dyes is a cancer risk, perhaps because they are used carefully and in dilute aqueous solutions.⁵ Chrysoidine has been manufactured and used for 100 years, and there is no evidence to suggest that its industrial use has led to an increased incidence of bladder cancer.⁴ The two men reported on here, however, had been exposed to high concentrations of chrysoidine dye for a long period (24 years) under conditions that would be quite unacceptable in industry.

That these two men were brothers as well as anglers might suggest a genetic predisposition to bladder cancer, but I am unaware of any evidence for an increased incidence in siblings. I must conclude, therefore, that smoking and prolonged heavy exposure to chrysoidine dye are the two factors most likely to have led to the development of transitional cell tumours of the bladder in these two related cases.

I thank Mr D Farrar and Mr J M O'Brien for allowing me to report on their patients.

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Acquired platelet dysfunction with eosinophilia

A bleeding disorder comprising non-thrombocytopenic purpura and eosinophilia occurs commonly in children in south east Asia¹ but has not been reported in other geographical areas or in non-indigenous children visiting south east Asia. We describe a child who developed the condition on returning to the United Kingdom after living in Malaysia for two and a half years.

Case report

A girl aged 8½ presented to her general practitioner with a three week history of painless bruising, which had first occurred two weeks after her return to the United Kingdom from Malaysia. Apart from having widespread small ecchymoses she was well. A routine blood count showed normal numbers of platelets ($212 \times 10^9/l$) associated with eosinophilia. She was referred to the haematology clinic for further investigation. There was no history of ingestion of drugs, allergy, rashes, or respiratory symptoms. She was habitually constipated and had not suffered from any gastrointestinal disturbance while abroad. A sister aged 10 and a brother aged 3½ were well and asymptomatic.

Examination showed a fit child with scattered old bruises up to 2 cm in diameter on the legs, arms, and back. There were no other abnormal physical findings. Initial investigations showed haemoglobin concentration $12.1 g/dl$; white cell count $7.2 \times 10^9/l$ (absolute differential neutrophils $2.66 \times 10^9/l$, lymphocytes $2.80 \times 10^9/l$, monocytes $0.08 \times 10^9/l$, and eosinophils $1.66 \times 10^9/l$); and erythrocyte sedimentation rate 4 mm in the first hour. A capillary resistance (Hess) test gave negative results, a chest radiogram was normal, and

three stools were negative for parasites, as were stools of her siblings. One week later she had a new bruise 2.5 cm diameter on the forehead. Routine coagulation tests, including prothrombin time, activated partial thromboplastin time, thrombin time, and factor VIII assay, gave normal results. A template (Simplate) bleeding time was 20 minutes. A normal platelet aggregation pattern was found with adenosine diphosphate, ristocetin, and adrenaline, but the platelets did not react with even high concentrations of collagen.

Three further stools were examined for parasites after a purge with sodium picosulphate. These tests, together with a Sellotape test and serological examination for filariasis, schistosomiasis, and toxocariasis gave negative results. Immunofluorescence tests for antibodies to cell nuclei, mitochondria, smooth muscle, parietal cells, and thyroid microsomes gave negative results, but immune complex concentrations were 62.7% (normal 0-24%). Serum IgG, IgA, and IgM concentrations were normal. A further episode of bruising occurred seven weeks after presentation, but three months later she was completely asymptomatic, though unwilling to provide further blood samples for analysis.

Comment

Acquired platelet dysfunction associated with eosinophilia is most common in children¹⁻⁴ and rare in young adults.³ The condition has a benign course lasting two to 12 months. Investigation usually shows a prolonged bleeding time but negative Hess test results. The most consistent defect of platelet aggregation is impaired endogenous release of adenosine diphosphate with collagen,¹⁻³ but abnormalities of adrenaline and adenosine diphosphate aggregation may also occur.¹⁻⁴ Parasitic infection has been reported in up to 60% of patients.¹⁻⁴ The parasites most commonly identified are *Ascaris*, *Enterobius*, and *Ankylostoma*.

Our patient showed the salient features of a syndrome that has hitherto been regarded as peculiar to south east Asian children. Evidence of parasitic infection could not be found at presentation or subsequently. The cause of the condition is unknown, but finding an increased concentration of immune complexes suggests a possible mechanism. It is known that immune complexes may trigger the platelet release reaction.⁵ This could produce a "storage pool defect," the magnitude of which may be related to an increasing concentration of immune complexes. This syndrome should be considered in children with obscure bruising who have recently returned from south east Asia.

We thank Dr P B A Kernoff of the haemophilia centre and haemostasis unit, Royal Free Hospital, who recognised the relevance of our findings.

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