pm atropine value of 257 (205 to 309) l/min ($t=2.4$, $df=10$, $p<0.05$) but not different from the 4 pm placebo values.

Discussion

This study had investigated the dual role of parasympathetic efferent activity and plasma adrenaline in the pathogenesis of nocturnal asthma. Parasympathetic blockade in this study caused a significant reversal of the nocturnal fall in peak flow rate as shown in our previous work.³ In the first arm of the study parasympathetic blockade reversed completely the nocturnal fall in peak flow rate, but the effect was not complete in the second arm.

Infusions of adrenaline in a dose more than sufficient to reverse the nocturnal fall in plasma adrenaline both before and after parasympathetic blockade produced no significant increase in the peak flow rate at 4 am. Thus, although infusions of adrenaline in higher concentrations can cause bronchodilatation in both normal and asthmatic subjects (fig 2),^{14,15} alterations of plasma adrenaline within the concentrations seen on a diurnal basis do not have any significant physiological effect on expiratory airflow limitation either by direct action on bronchial smooth muscle, modulation of vagal neurotransmission,⁸ mediator release from inflammatory cells,^{4,16} or by increasing microvascular leakage.⁹

Our results agree with the earlier observation that a diurnal variation in pulmonary function can occur after adrenalectomy,¹⁷ again confirming a lack of a primary role for adrenaline in nocturnal asthma. These observations do not detract from the therapeutic benefit of oral or inhaled β_2 agonists in nocturnal asthma, when (as in this situation) pharmacological concentrations of the agonist are achieved at the receptor.

We conclude that the nocturnal fall in plasma adrenaline does not account for the other factor(s) that act with parasympathetic nervous activity to increase

airflow limitation at night in asthma. The effect of the α sympathetic and non-adrenergic non-cholinergic nerves and also the study of diurnal variation of airway oedema and inflammatory mediators in nocturnal asthma may be of relevance for future research.

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(Accepted 22 June 1990)

Effect of erythropoietin on anaemia in patients with myeloma receiving haemodialysis

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Br Med J 1990;301:476-7

Sustained renal impairment in multiple myeloma is usually a consequence of glomerular and tubulointerstitial deposition of M component and of amyloidosis.¹ As peritubular endothelial cells are thought to be the site of production of erythropoietin² anaemia in patients with myeloma who are dependent on dialysis may be partly due to a lack of production of erythropoietin. In vitro experiments have shown that marrow cells from patients with myeloma respond to erythropoietin.³ We report the successful use of erythropoietin in two patients with myeloma who were dependent on transfusions and were receiving haemodialysis.

Case reports

CASE 1

A 55 year old woman presented in May 1988 with end stage renal failure. She had myelomatosis with a serum M component band of IgA λ light chain (15 g/l) and Bence Jones proteinuria (1.53 g/24 h). Abnormal plasma cells made up between 10% and 90% of the

marrow, which had an increased iron content. She was normotensive and normocalcaemic and did not have any lytic lesions or evidence of hyperparathyroidism on skeletal examination. Renal ultrasound scanning showed slightly small kidneys with normal outlines. Renal biopsy was not done. Between November 1988 and March 1989 she received two courses of melphalan and prednisolone and three courses of carmustine, vincristine, and adriamycin; her serum concentration and urinary excretion of M component fell to 6 g/l and 1.02 g/24 h respectively. She was given 14 units of blood between January and November 1989.

In November 1989, when her haemoglobin concentration was 51 g/l, recombinant human erythropoietin was started at a dosage of 120 IU/kg/week intravenously in divided doses after dialysis. After five weeks the dosage was increased to 240 IU/kg/week with an improved response. Her haemoglobin concentration had risen from 51 g/l to 97 g/l after 14 weeks of treatment (figure).

CASE 2

A 53 year old man presented in August 1988 with end stage renal failure and myeloma with a serum M component band of IgG κ light chain (2 g/l) and Bence Jones proteinuria (1.5 g/24 h). Abnormal plasma cells made up about 10% of his marrow, which contained adequate but not excess iron. He was normotensive and normocalcaemic and had lytic lesions but no evidence of hyperparathyroidism on skeletal examination. His kidneys appeared normal on ultrasound scanning. Renal biopsy showed tubular

Response to erythropoietin in two patients with multiple myeloma receiving haemodialysis

atrophy, interstitial inflammatory changes, and eosinophilic casts characteristic of myeloma. Two courses of melphalan and prednisolone had no appreciable effect on his serum and urine M component concentrations, and because they were fairly low he was kept under observation only. He received nine units of blood between September 1988 and November 1989.

Intravenous erythropoietin 120 IU/kg/week after dialysis was started in November 1989. He received 10 ml iron dextran, which contained 500 mg elemental iron, intravenously eight weeks after starting treatment because his serum ferritin concentration had fallen to 95 µg/l. By 14 weeks his haemoglobin concentration had risen from 62 g/l to 95 g/l (figure).

Comment

Both patients showed an appreciable response to erythropoietin and no longer required regular transfusions. Their exercise tolerance and sense of wellbeing were considerably improved. Neither patient developed hypertension, and there were no thrombotic complications, although one patient (case 2) required slightly more heparin (750 units) during dialysis after week 4. Both patients remained normocalcaemic and had normal serum concentrations of aluminium, vitamin B-12, and folate throughout erythropoietin treatment. There was no appreciable change in white cell and platelet counts or in serum and urine M component concentrations.

In conclusion, multiple myeloma is a progressive disease that may cause severe anaemia in those with serious renal impairment. As these patients are generally not suitable for transplantation the use of erythropoietin may alleviate the symptoms of anaemia and reduce the need for regular blood transfusions with their attendant risks. Further studies are required to determine the efficacy and timing of treatment with erythropoietin—for example, it could be given between periods of chemotherapy—in this particular group of patients.

We thank Dr Frieda Houghton of Boehringer Mannheim UK (Pharmaceuticals) for support and for supplying the erythropoietin, and Dr S Sharp for interpreting the bone biopsy specimens.

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(Accepted 29 June 1990)

Correction

Treatment of osteoporosis with human parathyroid peptide and observations on effect of sodium fluoride

An omission occurred in this paper by Dr J Reeve and others (11 August, p 314). The following table should have been included:

Clinical details of patients treated with human parathyroid peptide or sodium fluoride

Treatment group	Mean (SD) age	Median (range) No of vertebral fractures	Mean (SD) spinal trabecular bone mineral density (mg/cm ³)		Mean (SD) daily dose of principal treatment	No who stopped treatment abruptly because of adverse symptoms or raised alkaline phosphatase	Weeks of treatment withdrawal
			Initial	2 Years from start of treatment			
Parathyroid peptide:							
Women (n=11)	65.0 (5.9)	5 (1-9)	47.6 (12.5)	73.2 (18.3)	500 units		
Men (n=1)	67	3	44	81	500 units		
Sodium fluoride (calcium):							
Women (n=11)	70.6 (6.6)	4 (1-6)	33.4 (16.2)	49.5 (12.1)	37.1 (10.3) mg	6*	15 (10)

*One patient sustained a fracture to the femoral neck shortly after stopping treatment because of raised plasma alkaline phosphatase activity

THE MEMOIR CLUB

It is always much more pleasant to examine away from one's own hospital; it is more relaxing since you have not the responsibility of examining your colleagues' children, whom you do not want to fail. I was for many years extern examiner to a university in the midlands. The professor and I had been longstanding friends, a friendship which had started when we were together in Cairo during the war. He was a somewhat eccentric professor—an understatement. In Cairo we often went together to the souk, where he went to the carpet shops. Many carpets were rolled out for his inspection while he and I sat sipping Turkish coffee. Having found no carpet to his liking, he politely excused himself and we went to another shop further down where a similar scene took place. When we had visited the fourth shop, I asked him if he really wanted to buy a carpet. He said not at all but he liked Turkish coffee. I am sure the local shopkeepers knew him well as he did this frequently. When asked by him after the war to be an extern examiner I accepted with alacrity; he was now professor of surgery. I said he was unusual, but I was to find out more. He lived in a large double fronted house near the university. There were two large bedrooms on the

first floor with bay windows. He slept in one and the one on the other side was the visitors' room and was obviously for me. When I went in I found there was a double door, and linoleum on the floor. I soon found that the usual inhabitant of that room was his monkey. He had had two at one time, a male and a female, but by the time I was there one had died and the other was now getting quite elderly. I found that for the four days of my visit he took the monkey into his room, in fact into his own bed with him, but on the last night of my visit to him I found that the monkey had got troublesome in the middle of the night and the professor, poor chap, found it was easier to leave it alone and for him to go downstairs and sleep on the settee in the kitchen—a poor preparation for a full day's examination. He was a splendid fellow; a loyal friend to all, including the monkey.

From *Blood, Sweat, and Cheers* by Ian Fraser. Published under the BMJ's Memoir Club imprint. ISBN 0 7279 0246 6. Price: Inland £14.95; abroad £17.50; USA \$29.00. BMA members: Inland £13.95; abroad £16.50; USA \$27.00.