Decreasing the levodopa dosage resulted in a significant impairment in the clinical rating scale of Parkinsonian signs. The mean score with standard treatment was $19.5 (\pm \text{SEM } 2.35)$ and on the reduced dose $22.7 (\pm 3.42)$ ($p < 0.05$) (table). Increasing the dose produced no significant improvement in rating, although two patients experienced dyskinesia. There was no significant change in any other measurement. In particular, respiratory function did not change (table). The peak flow rate and maximum voluntary ventilation were significantly lower ($p < 0.05$ and $p < 0.02$ respectively) than values predicted using the patients' age, sex, and height* (table). There were no significant differences from the predicted value in forced expiratory volume in one second or vital capacity. The maximum pressure values during inspiration and expiration were probably low, though there are no appropriate control data for patients of this age.

Mean ($\pm$ SEM) summed scores of clinical signs of Parkinsonism and results of respiratory function tests at three dosages of levodopa. Also shown are mean predicted values⁴ based on patients' age and height

	Values at:			Predicted value
	Standard dose	Increased dose	Reduced dose	
Summed clinical sign score	19.5 ± 2.35	19.3 ± 2.8	$22.7 \pm 3.42^*$	
Maximum voluntary ventilation (l/min)	55.3 ± 8.9	63.8 ± 10.1	58.5 ± 10.8	95.1^*
Peak flow rate (l/min)	246.0 ± 30.3	237.0 ± 30.4	251.5 ± 41.6	405.5^{**}
Forced expiratory ventilation in one second	1.5 ± 0.21	1.6 ± 0.32	1.6 ± 0.27	1.9
Vital capacity (l)	2.33 ± 0.33	2.28 ± 0.31	2.36 ± 0.33	2.6
Maximum inspiratory pressure (kPa)	-5.75 ± 1.55	-4.28 ± 1.21	-5.98 ± 1.27	
Maximum expiratory pressure (kPa)	7.23 ± 1.22	6.66 ± 0.83	6.78 ± 1.15	

Compared to results during standard treatment: * $p < 0.05$; ** $p < 0.02$.

Comment

Improvement in maximum voluntary ventilation,⁶ peak flow rate, and forced expiratory volume in one second² has been reported after levodopa treatment has been started in patients with Parkinson's disease. We therefore wished to establish whether the assessment of respiratory function in patients with Parkinson's disease would be of use as a simple index of optimal therapeutic response. The patients studied were receiving fairly low doses of levodopa, which raises the possibility that they might have had a mild form of Parkinson's disease. Nevertheless, there was still evidence of ventilatory impairment as indicated by a low maximum voluntary ventilation and peak flow rate. Despite significant deterioration in the clinical rating scale when the dose of levodopa was reduced, however, there was no significant change in any of the respiratory function tests. Maximum voluntary ventilation and peak flow rate are more effort dependent than spirometric variables, and presumably the low values in Parkinson's disease reflect muscle disorders, perhaps akinesia in particular.

Our findings suggest that the use of respiratory function tests as an independent measure of the efficacy of drugs in Parkinson's disease does not seem to be helpful.

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Effect of long-term treatment with beta-blocking drugs on plasma lipids and lipoproteins

Recent studies have shown that beta-blockers increase plasma concentrations of triglycerides and urate and reduce concentrations of high-density lipoprotein (HDL)-cholesterol.^{1,2} As the treatment has lasted only two to 12 months in most of these studies, we investigated whether a similar effect could be shown in patients with essential hypertension³ who had been treated with beta-blockers for an average of 54 months, (range 8-79) before the study.

Patients, methods, and results

Fifty-one patients were taking beta-blockers: 47 were treated with propranolol (160-480 mg/day), two with atenolol (100 mg/day) and two with metoprolol (200 mg/day). Twenty-five men and 16 women (80% of the group) also received hydroflumethiazide (50 mg/day), which had been given for a similar period of time. Forty-two patients who were not on beta-blockers served as controls; they were taking methyldopa (750-2000 mg/day), clonidine (0.075-0.450 mg/day), and prazosin (1.5-6.0 mg/day). Twenty-one of these men and 13 women (81% of the group) also received 50 mg hydroflumethiazide per day. The controls had been treated for a similar length of time to the patients taking beta-blockers. As diuretics also affect plasma concentrations,⁴ the values in seven patients treated with beta-blockers either alone or combined with hydralazine were also compared with those in seven age-matched untreated hypertensive patients. All patients had been fasting for 12 hours before blood samples were drawn and had omitted their morning medication. Weight and height were also recorded and the relative weight calculated. Plasma triglyceride and total cholesterol concentrations were measured enzymatically (Boehringer Mannheim). HDL-cholesterol was measured after precipitation of low density (LD) and very low density (VLDL) lipoproteins from plasma with MgCl_2 and dextran sulphate.⁵ Urate concentrations were measured enzymatically.⁶

There were no significant (unpaired t test) differences in any of the investigated values between the groups. HDL-cholesterol tended to be lower in men treated with beta-blockers, whereas the opposite was seen in women treated with beta-blockers and in patients on beta-blockers who were not taking diuretics. Triglyceride values tended to be higher in men on beta-blockers and patients on beta-blockers not taking diuretics. As can be seen from the t values, these trends were far from significant. Urate concentrations correlated positively with triglyceride values ($r = 0.62$; $p < 0.0001$) and negatively with HDL-cholesterol values ($r = -0.44$; $p < 0.0001$).

Comment

The reason why this study failed to show that long-term treatment with beta-blockers has an effect on plasma lipid and urate concentra-

Plasma lipids and urate and relative weights in patients on long-term beta-blocker treatment and controls with essential hypertension (values are means $\pm$ SD)

	On beta-blockers*	Not on beta-blockers	t Values
Men			
No	31	26	
Mean age (and range) yrs	57 (41-71)	58 (41-70)	0.17
HDL-cholesterol (mmol/l)	1.12 ± 0.38	1.20 ± 0.30	0.89
Total cholesterol (mmol/l)	6.53 ± 1.33	6.40 ± 0.84	0.50
Total triglycerides (mmol/l)	2.42 ± 0.95	1.93 ± 1.65	0.08
Urate ($\mu\text{mol/l}$)	427 ± 138	445 ± 198	0.42
Relative weight (kg/m^2)	28 ± 4	28 ± 3	0.82
Women			
No	20	16	
Mean age (and range) yrs	56 (42-69)	56 (42-67)	0.19
HDL-cholesterol (mmol/l)	1.46 ± 0.28	1.28 ± 0.29	1.85
Total cholesterol (mmol/l)	7.41 ± 1.29	7.17 ± 1.22	0.58
Total triglycerides (mmol/l)	2.03 ± 1.07	2.09 ± 1.16	0.42
Urate ($\mu\text{mol/l}$)	373 ± 108	360 ± 105	0.36
Relative weight (kg/m^2)	29 ± 5	28 ± 5	0.48
Not on diuretics†			
No	7	7	
Male:female	3:4	3:4	
Mean age (and range) yrs	49 (31-60)	50 (32-63)	0.42
HDL-cholesterol (mmol/l)	1.26 ± 0.41	1.21 ± 0.26	0.40
Total cholesterol (mmol/l)	6.86 ± 1.22	6.76 ± 1.01	0.16
Total triglycerides (mmol/l)	2.09 ± 1.13	1.60 ± 0.95	0.89
Urate ($\mu\text{mol/l}$)	388 ± 121	392 ± 96	0.07
Relative weight (kg/m^2)	31 ± 7	29 ± 7	0.52

*Mean duration of treatment ($\pm$ SD) was 52 ± 16 months (range 8-72 months) for men and 55 ± 11 months (range 35-79 months) for women.

†Patients treated with beta-blockers either alone or combined with hydralazine v untreated patients.

Conversion: SI to traditional units—Cholesterol: 1 mmol/l $\approx$ 39 mg/100 ml. Triglycerides: 1 mmol/l $\approx$ 89 mg/100 ml. Urate: 1 $\mu\text{mol/l}$ $\approx$ 0.0168 mg/100 ml.

tions is unclear. The groups compared may have been too small to obtain statistical significance. These groups were similar in size to those of others,^{1,2} however, and since the trends were different in men and women this would seem to be an unlikely explanation. Alprenolol-induced increases in urate concentration have been shown to return baseline levels within two years despite continuous treatment.³ If this decreasing effect of alprenolol on urate is also true for other beta-blockers, no difference in urate values should be expected between patients treated long term with beta-blockers and those not treated with beta-blockers. In fact, no differences were found in this study, where the patients taking beta-blockers had been treated with such agents for an average of more than four years before the study. Moreover, this study confirmed the positive correlation between urate and triglyceride concentrations, and since triglyceride values correlate negatively with HDL-cholesterol concentrations, the negative correlation between urate and HDL-cholesterol concentrations is not surprising, although the underlying mechanism is unknown. Thus the lack of a difference in the plasma lipid and lipoprotein concentrations between patients on long-term beta-blocker treatment and those not on such treatment may be explained by the observed interrelationships between urate and these lipids and by assuming that propranolol, like alprenolol, has a decreasing effect on triglyceride and HDL-cholesterol concentrations, as well as on urate values.

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Arthritis and arthralgia associated with toxocaral infestation

Arthritis and arthralgia have been associated with various worm infestations—for example, filariasis¹ and dracontiasis.² Commonly retinal lesions have been associated with toxocaral infestation,³ but encephalitis and disease of the liver, lung, and heart may occur. We report a case of arthritis and arthralgia associated with toxocaral infestation.

Case report

In April 1977 an 18-year-old woman presented with a seven-day history of blurring of vision in the left eye. She had kept dogs and rabbits as pets for many years. On examination visual acuity was 6/6 on the right and 6/24 on the left. Examination of the left fundus showed an area of new choroiditis and a pigmented scar near the macula. The vitreous was noted to be cloudy. White cell count was $8.3 \times 10^9/l$ and erythrocyte sedimentation rate 3 mm in first hour. No eosinophil count was carried out. A toxoplasma dye test gave negative results. Her symptoms settled with oral prednisolone 30 mg daily and betamethasone eye drops.

In November 1977 she presented with transient swelling and stiffness of the right elbow and left wrist and ankle. On examination limitation of movement and slight swelling of the affected joints were noted. White cell count, erythrocyte sedimentation rate, liver function tests, antistreptolysin O titres, autoantibodies, rheumatoid factor, Wassermann reaction, and toxoplasma dye and haemagglutination tests were all normal. HLA typing was A2, A28, B12, and B14. Her symptoms improved on treatment with benorylate.

Between January 1978 and January 1979 she suffered repeated episodes of choroiditis in the left eye and arthralgia. A toxocaral fluorescence antibody test was performed, which was positive. The eosinophil count was $2 \times 10^9/l$.

She was treated with a 21-day course of diethylcarbamazine citrate (3 mg/kg). After this her ocular and joint symptoms settled rapidly and oral steroids and non-steroidal anti-inflammatory drugs were tailed off.

Comment

We are unaware of any other reports of arthritis and arthralgia associated with toxocaral infestation. In visceral larva migrans larvae of *Toxocara canis* migrate through lymphatic and vascular channels throughout the body. Commonly the liver, lung, heart, and eyes are affected. Presumably joint symptoms might occur from direct joint disease as in dracontiasis. In this case joint aspiration was not possible owing to the transient, flitting nature of her arthritis.

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Polycythaemia rubra vera and congenital deafness in monozygotic twins

Polycythaemia rubra vera occurring in families is rare, and we can find no previous report of it in monozygotic twins. The cases we describe provide an interesting parallel with the recent report of primary thrombocythaemia in uniovular twins.¹

Case reports

CASE 1

A 49-year-old woman who had been deaf since birth presented in 1954 after an episode of haematemesis and melaena. On examination splenomegaly was noted, and investigation showed haemoglobin concentration 14.4 g/dl; white cell count $37.2 \times 10^9/l$ with a normal differential; platelet count $319 \times 10^9/l$, and hypercellular bone marrow. Polycythaemia rubra vera was diagnosed, and she was treated with phosphorus-32 and splenic irradiation.

Over subsequent years she suffered from chronic gastrointestinal blood loss from an undetermined site, with asymptomatic hypochromic microcytic anaemia (haemoglobin concentration 6.4-10.0 g/dl) that showed rapid rises to 17.0 g/dl and 20.4 g/dl after courses of oral iron. In March 1968, with a haemoglobin concentration of 21.3 g/dl, she suffered a fatal mesenteric vein thrombosis. Her white cell count had remained raised during the whole of the illness.

CASE 2

The twin of the first patient, who was physically identical to her and shared the same blood group (B rhesus positive), presented in January 1980, aged 75 years, with a rash of some months' duration. Skin biopsy showed the histology of eczema, which responded satisfactorily to topical steroids. The tip of the spleen was palpable, and splenomegaly was confirmed by technetium scan.

Investigations showed: haemoglobin 19.3 g/dl; red cell count $6780 \times 10^9/l$; packed cell volume 0.614; white cell count $21.0 \times 10^9/l$ (54% neutrophils, 39% lymphocytes, 5% monocytes, 2% eosinophils); platelet count $235 \times 10^9/l$; red cell volume 2020 ml (48 ml/kg); arterial oxygen pressure 13.1 kPa; and neutrophil alkaline phosphatase score 225 (normal range 10-110). Haemoglobin electrophoresis showed a normal pattern and an intravenous pyelogram no abnormality. A bone-marrow aspirate was hypercellular with no other abnormality. The bone-marrow karyotype was 46xx with no Ph¹ chromosome. Like her twin sister, she had been deaf since birth. Audiometry showed high-tone loss of inner-ear origin compatible with congenital deafness. She was treated by regular venesection to maintain a packed cell volume below 0.45. White cell and platelet counts remained unchanged.