eyesight, who might be expected to respond well to treatment. Our findings show that such early diagnosis will be achieved only rarely if we rely solely on the efforts of patients to contact members of their immediate family.

Patients are usually elderly and are often badly shaken to learn that they have a potentially blinding disease. They may be confused by an explanation about the prescribed regimen of eye drops. Not surprisingly then, even if the doctor remembers to tell them to, many forget to write off to relatives. Clearly, in every eye unit, and possibly in every general practice, someone should take on the responsibility of helping patients with glaucoma to alert members of their family that they also may have the disease.

We thank Mr M J Absolon, Mr I H Chisholm, Mr J I McGill, and Mr C B Walker for agreeing to our studying patients under their care.

1 Crick RP. Computerised clinical data base for glaucoma—10 years' experience. *Research and Clinical Forums* 1980;**2**:29-39.
2 Miller SJH, Paterson GD. Studies on glaucoma relatives. *Br J Ophthalmol* 1962;**46**: 513-22.
3 Coakes RL. The role of a family glaucoma clinic. *Research and Clinical Forums* 1980;**2**:15-9.
4 MacKean JM, Elkington AR. Referral routes to hospital of patients with chronic open angle glaucoma. *Br Med J* 1982;**285**:1093-5.

(*Accepted 11 July 1984*)

Department of Surgery, University of Southampton SO9 4XY
J M MACKEAN, BA, DBO, research fellow
A R ELKINGTON, FRCS, senior lecturer

Correspondence to: Mr A R Elkington, Southampton Eye Hospital, Southampton SO9 4XW.

Hypoxia, depression of testosterone, and impotence in pickwickian syndrome reversed by weight reduction

Research in our departments has shown low serum testosterone values accompanied by organic sexual impotence in patients with hypoxic chronic obstructive airways disease[1 2] and pulmonary fibrosis.[3] A correlation between pressure of arterial oxygen (Pao_2) and serum testosterone values supported a causal relation, arterial carbon dioxide pressure ($Paco_2$) having been excluded as the factor responsible.[1 3] In individual patients testosterone values and sexual potency fluctuated with severity of disease and changes in Pao_2.[2-4] As patients with hypoxia of obstructive sleep apnoea (pickwickian) syndrome had not been so investigated we performed similar endocrine studies on a man with this condition.

Case report and investigations

A 58 year old man with no previous illnesses and not receiving drugs presented with a six month history of daytime somnolence and inability to concentrate which developed during weight gain of 20 kg after stopping smoking when asymptomatic nine months before. Snoring had become accentuated and, whereas sexual intercourse used to occur about twice a week, he had been impotent with no intercourse or early morning penile erections for six months. He was obese, short necked, and cyanosed. As there was no history to suggest chronic bronchitis or emphysema he was considered to have pickwickian syndrome and was admitted for investigation and weight reduction.

Investigations were performed before (day 0) and at intervals during a weight reduction diet (days 1-126; see table). Pituitary stress tests were performed on days 0 and 126. Pulmonary function tests and sexual activity were assessed before and after weight reduction. Hormone assay methods were as described[3 4] and correlations between Pao_2 and various hormone values tested by a least sum of squares linear fit.

Day 0—Weight was 96·5 kg, forced expiratory volume in one second (FEV_1) 1·7 l, forced vital capacity (FVC) 2·6 l, and FEV_1/FVC 65%. Responses to injected gonadotrophin releasing hormone (GnRH) at zero, 30, and 60 minutes were: serum luteinising hormone (LH) 6·4, 23·0, and 20·0 U/l (normal < 9·0, 20·0-42·0, and 20·0-38·0 U/l) and serum follicle stimulating hormone (FSH) 3·0, 5·5, and 6·4 U/l (normal < 7·0, 4·0-18·0, and 4·5-21·0 U/l). Responses to injected thyrotrophin releasing hormone (TRH) at zero, 30, and 60 minutes were: serum thyroid stimulating hormone (TSH) < 1·0, < 1·0, and < 1·0 mU/l (normal < 8·0 mU/l, increment of > 3·6 mU/l, and value less than that at 30 minutes) and serum prolactin concentration 140, 300, and 240 mU/l (normal 60-360 mU/l, increment of > 65% of basal value, and value less than that at 30 minutes). Chest *x* ray picture and electrocardiogram were normal.

Day 126—Weight was 76 kg, FEV_1 2·2 1, FVC 3·2 1, and FEV_1/FVC 69%. Responses to injected GnRH were: serum LH 4·5, 32·0, and 28·0 U/l and serum FSH 5·0, 12·0, and 13·0 U/l. Responses to injected TRH were: serum TSH < 1·0, 4·1, and 1·8 mU/l and serum prolactin concentration 60, 360, and 230 mU/l. Sexual intercourse was occurring at least twice weekly and early morning erections had returned.

The table shows the blood gas and serum hormone responses to weight reduction. Pao_2 was positively correlated with serum concentrations of testosterone, FSH, triiodothyronine, thyroxine, and sex hormone and thyroid binding globulins.

Comment

Up to 42% of men with pickwickian syndrome may be impotent[5] yet their sex hormone values have never before been evaluated. In this classic example of the syndrome a reduction of body weight produced improved respiratory function and blood oxygenation accompanied by return to normal of depressed serum testosterone concentrations and sexual activity. We have made similar observations in patients recovering from the severe hypoxia of acute cor pulmonale failure[2 4] but, possibly owing to lifelong tolerance to severe hypoxia, have found that men with cyanotic congenital heart disease have no such endocrine disturbance. That profound hypoxia during rapid eye movement sleep fails to occur in these latter patients whereas it does in chronic obstructive airways disease, pulmonary fibrosis, and pickwickian syndrome may also be relevant.

Sequential measurements of body weight, arterial blood gas tensions, and various serum hormone values in man with pickwickian syndrome before (day 0) and during weight reduction diet

Day	Body weight (kg)	Pao_2 (kPa)	$Paco_2$ (kPa)	Testosterone (nmol/l)	Sex hormone binding globulin (nmol/l)	Free testosterone index	Calculated free testosterone (pmol/l)	LH (U/l)	FSH (U/l)	Triiodothyronine (nmol/l)	Thyroxine (nmol/l)	Thyroid binding globulin (mg/l)	Free thyroxine (pmol/l)	TSH (mU/l)
0	96·5	5·5	7·3	4·9	29	0·16	80	5·0	2·6	0·9	69	7	15	< 1·0
1		6·1	7·5	4·3										
2		6·0	6·8	5·1	32	0·16	81	8·7	3·0	1·3	84	9	14	< 1·0
3		6·4	7·1	5·1	35	0·15	78	6·4	3·0	1·3	67	10	16	< 1·0
6	89·5	7·9	6·1	8·0	50	0·16	100	4·9	3·4	1·5	94	11	16	< 1·0
7		6·9	6·1	9·2	48	0·19	120	4·9	3·2	1·5	84	12	17	< 1·0
10	86·5	7·6	6·1	14·0	50	0·28	180	9·0	6·0	1·5	96	16	15	< 1·0
15	85·2	7·7	6·5	15·0	58	0·26	180	5·8	7·2	1·4	80	13	17	< 1·0
57	78·7	8·8	6·0	17·0	63	0·27	200	5·8	7·2	1·3	91	13	18	< 1·0
58		8·4	5·7	22·0										
126	76·0	9·2	6·1	15·0	43	0·34	210	4·5	5·0	1·8	88	13	18	< 1·0
Normal range	67·0*	10·7-13·3	4·7-6·0	11·0-36·0	5-45	0·3-1·8	200-600	UD-9·0	UD-7·0	0·9-2·8	55-144	12-30	9-25	UD-8·0
Correlation with Pao_2				r = 0·843; p < 0·01	r = 0·747; p < 0·05	r = 0·813; p < 0·01	r = 0·866; p < 0·01	r = 0·281; NS	r = 0·703; p < 0·05	r = 0·741; p < 0·05	r = 0·670; p < 0·05	r = 0·730; p < 0·05	r = 0·781; p < 0·05	NS

UD = Undetectable. NS = Not significant.
*Ideal weight.
Conversion: SI to traditional units—Pao_2 and $Paco_2$: 1 kPa ≈ 7·5 mm Hg. Testosterone: 1 nmol/l ≈ 0·29 ng/ml. Sex hormone binding globulin: 1 nmol/l ≈ 0·29 ng/ml. Free testosterone: 1 pmol/l ≈ 0·29 pg/ml. Triiodothyronine: 1 nmol/l ≈ 0·65 ng/ml. Thyroxine: 1 nmol/l ≈ 0·08 μg/100 ml. Free thyroxine: 1 pmol/l ≈ 0·8 pg/ml.

The correlation between PaO_2 and serum concentrations of testosterone, FSH, thyroid hormones, and hormone binding globulins suggests a causal association. Normal basal LH and FSH concentrations and normal pituitary responses to injected GnRH in this case and patients with respiratory disease[3] suggest hypothalamic suppression, though additional hypoxic testicular suppression seems possible. While thyroid hormone values tended to increase with improved PaO_2 the rise was less than with testosterone, and in respiratory disease also the hypothalamopituitary-testicular axis seems to be particularly sensitive to hypoxia. Absent TSH responses to injected TRH before weight reduction and their return to normal after diet along with a rise in serum thyroxine concentration suggested reversible pituitary suppression of TSH even though serum thyroxine values were normal throughout. These normal values were also found in occasional instances in our patients with respiratory disease[3] in the presence of pituitary suppression of TSH.

1 Semple Pd'A, Beastall GH, Watson WS, Hume R. Serum testosterone depression associated with hypoxia in respiratory failure. *Clin Sci* 1980;**58**:105-6.
2 Semple Pd'A, Beastall GH, Hume R. Male sexual dysfunction, low serum testosterone and respiratory hypoxia. *British Journal of Sexual Medicine* 1980;**64**:48, 53.
3 Semple Pd'A, Beastall GH, Brown TM, Stirling KW, Mills RJ, Watson WS. Sex hormone suppression and sexual impotence in hypoxic pulmonary fibrosis. *Thorax* 1984;**39**:46-51.
4 Semple Pd'A, Watson WS, Beastall GH, Hume R. Endocrine and metabolic studies in unstable cor pulmonale. *Thorax* 1983;**38**:45-9.
5 Guilleminault C, Dement WC. *Sleep apnoea syndromes*. New York: Alan R Liss, 1978.

(*Accepted 11 July 1984*)

Chest Unit, Inverclyde Royal Hospital, Greenock PA16 OXN
PETER D'A SEMPLE, MB, MRCP, consultant physician
ALASTAIR GRAHAM, MB, registrar in medicine
YVONNE MALCOLM, SRD, dietitian

Department of Clinical Biochemistry, Royal Infirmary, Glasgow G4
GRAHAM H BEASTALL, PHD, top grade biochemist

Department of Clinical Physics and Bioengineering, Southern General Hospital, Glasgow G51
WALTER S WATSON, PHD, principal physicist

Correspondence to: Dr P d'A Semple.

Fixed drug eruption masquerading as herpes simplex labialis

Drug eruptions are common, but the true incidence is unknown as many are not reported. Fixed drug eruptions are less common and may not be recognised. We report a case that was misdiagnosed as herpes simplex labialis.

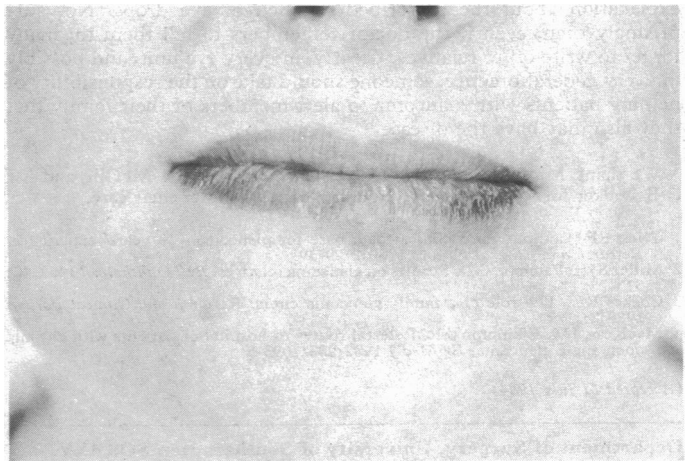
Case report

A 38 year old woman took Equagesic tablets (aspirin, meprobamate, and ethoheptazine) intermittently for pain in her leg. She developed an erythematous lesion on the left lateral margin of the lower lip and surrounding skin (figure), which became vesicular and resolved after 10 days leaving faint pigmentation. It recurred one month later, and herpes simplex labialis was diagnosed. During the next six months the lesion recurred five times and was eventually accompanied by similar lesions on the dorsum of her hand, thigh, and abdomen. A challenge test to Equagesic and to meprobamate caused a recurrence of the lesions. There was no recurrence after Equagesic was stopped.

Comment

Fixed drug eruptions characteristically recur at the same sites whenever the offending agent is given. Initially the lesion is erythematous, mildly oedematous, and sometimes vesicular. After seven to 10 days it becomes a dusky violaceous colour, and after repeated attacks the pigmentation may become permanent. Eruptions often occur on the palms and soles but may affect the glans penis and mucous membranes, and the condition comes into the differential diagnosis of oral and genital herpes.[1]

The pathogenesis is unknown, but during the acute phase of the eruption a factor was identified in the serum of 21 affected patients that induced lymphocyte transformation.[2] Skin transplanted from an affected site to a non-affected site loses its capacity to react, while normal skin transplanted to an affected site becomes reactive.[3]



Fixed eruption on left lateral margin of lower lip caused by ingestion of Equagesic.

Fixed drug eruption should be considered when lesions recur at the same site. The drugs associated with fixed drug eruption are as follows:

Commonly implicated

Barbiturates
Phenolphthalein
Phenylbutazone
Sulphonamides
Tetracyclines

Less commonly implicated

Acetarsol
Acriflavine
Amidopyrine
Amoxycillin
Ampicillin
Amylobarbitone
Arsenicals
Aspirin
Atropine
Bisacodyl
Buthalitone
Butobarbitone
Carbromal
Chloral hydrate
Chlordiazepoxide
Chlormezanone
Chlorphenesin carbamate
Codeine
Co-trimoxazole
Cyclizine
Dapsone
Dimethylchlortetracycline
Diphenhydramine
Dipyrone
Disulfiram
Emetine
Erythromycin
Glutethimide
Griseofulvin
Hydroxyurea
Isoaminile citrate
Meprobamate
Methaqualone
Metronidazole
Minocycline
Nystatin
Oxyphenbutazone
Paracetamol
Penicillins
Phenacetin
Phenazone
Phenobarbitone
Phthalylsulphathiazole
Quinine
Salicylates
Succinylsulphathiazole
Sulphadiazine
Sulphadimethoxine
Sulphadimidine
Sulphamerazine
Sulphamethoxazole
Sulphamethoxydiazine
Sulphamethoxypyridazine
Sulphaphenazole
Sulphathiazole
Sulphobromophthalein
Trimethoprim

1 Baker H. In: Rook A, Wilkinson DS, Ebling FJG, eds. *Textbook of dermatology*. 3rd ed. Oxford: Blackwell Scientific Publications, 1979:1121-2.
2 Gimmez-Camarasa JM. Lymphocyte transformation test in fixed drug eruption. *N Engl J Med* 1975;**292**:819-21.
3 Bruinsma W. *A guide to drug eruptions*. 3rd ed. Oosthuizen, Netherlands: De Zwaluw, 1982:63-7.

(*Accepted 17 July 1984*)

Bristol Royal Infirmary, Bristol BS2 8HW
J BOYLE, MB, MRCP, senior registrar, department of dermatology
B MOUL, MPS, staff pharmacist, regional drug information centre

Correspondence to: Dr J Boyle.