FIG 2—Dendrogram constructed from S_{AB} values. The similarity between any two isolates or groups of isolates is represented by the horizontal position of the node joining them. Place of birth of patients is also shown

Symptomatic disease was present for some months before treatment was started, and cavities were present on the chest radiograph. Compliance with treatment was not complete. The two children who lived with the index case developed clinical tuberculosis, as did a close relative living in the same road, but *M. tuberculosis* was not cultured from these subjects. The fact that transmission may have occurred before the diagnosis prevents any conclusion regarding the behaviour of the index case.

Two isolates (7847 and 5354) were related, with an S_{AB} value of 0.86, but no epidemiological link between them was found by reviewing their hospital records. Fingerprints based on insertion element IS6110/986 have been shown to be stable during passage through culture and guinea pigs,² and did not change over several years in five patients with relapsed tuberculosis.⁷ The factors governing how and when the insertion elements move are not yet known. Without a theoretical model and estimates of the probability of specific transpositions, S_{AB} values are measures of the similarity of patterns and it is not possible to generate true phylogenetic distances between isolates.^{8,9} None the

less, it is reasonable to assume that isolates related by higher S_{AB} values evolved from common ancestors more recently than those with lower values.

Two clusters of isolates were found to have S_{AB} values greater than 0.25. In one cluster four out of five of the isolates came from patients who had been born in the same city and the fifth also had an Anglo-Saxon name whereas in the other cluster all three patients had been born in India or Pakistan. Geographical separation of the pools of infection may have led over a long period to the evolution of distinct clusters of fingerprint patterns. The patterns seen in the immigrant group would then be the result of reactivation of infection acquired as children in Asia.

This study confirms the potential use of DNA fingerprinting techniques for studying routes of transmission of tuberculosis. As more data accumulate a global database of fingerprints should be established to support this early suggestion that cases form clusters by ethnic origin. Confirmation of this idea would allow old questions about the relative importance of reactivation and reinfection in the pathogenesis of tuberculosis to be addressed anew.

We acknowledge the collaboration of Dr J van Embden and his group in establishing this technique, S Hinshelwood for useful discussions, and Detective Inspector Sawers of West Midlands Criminal Investigation Department for his help. PG-F is funded by a Medical Research Council training fellowship, NGS is partly funded by the Overseas Development Administration.

- 1 Zainuddin Z, Dale J. Polymorphic repetitive DNA sequences in *Mycobacterium tuberculosis* detected with a gene probe from a *Mycobacterium fortuitum* plasmid. *J Gen Microbiol* 1989;135:2347-55.
- 2 Hermans PWM, van Soolingen D, Dale J, Schuitema A, McAdam R, Catty D, et al. Insertion element IS986 from *Mycobacterium tuberculosis*: a useful tool for diagnosis and epidemiology of tuberculosis. *J Clin Microbiol* 1990;28:2052-8.
- 3 Mazurek GH, Cave MD, Eisenach KD, Wallace RJ, Bates JH, Crawford JT. Chromosomal DNA fingerprint patterns produced with IS6110 as strain-specific markers for epidemiologic study of tuberculosis. *J Clin Microbiol* 1991;29:2030-3.
- 4 Hermans PW, Schuitema ARJ, Van Soolingen D, Verstynen C, Bik E, Thole J, et al. Specific detection of *Mycobacterium tuberculosis* complex strains by polymerase chain reaction. *J Clin Microbiol* 1990;28:1204-13.
- 5 Godfrey-Faussett P, Khoo S, Wilkins EGL, Stoker NG. Tuberculous pericarditis confirmed by DNA amplification. *Lancet* 1991;337:176-7.
- 6 Schmid J, Voss E, Soll DR. Computer assisted methods for assessing strain relatedness in *Candida albicans* by fingerprinting with the moderately repetitive sequence Ca3. *J Clin Microbiol* 1990;28:1236-43.
- 7 Otal I, Martin C, Vincent-Levy-Frebault V, Thierry D, Gicquel B. Restriction fragment length polymorphism analysis using IS6110 as an epidemiological marker in tuberculosis. *J Clin Microbiol* 1991;29:1252-4.
- 8 Bishop MJ, Friday AE, Thompson EA. Inference of evolutionary relationships. In: Bishop MJ, Rawlings CJ, eds. *Nucleic acid and protein sequence analysis, a practical approach*. Oxford: IRL Press, 1991:359-85.
- 9 Campbell A. Evolutionary significance of accessory DNA elements in bacteria. *Ann Rev Microbiol* 1981;35:55-83.

(Accepted 1 June 1992)

Tobacco advertising on post offices

Selena Gray, Gary Bolger, Giok Ong

Bristol and District Health Authority, Bristol BS1 3NP
Selena Gray, senior registrar in public health medicine
Giok Ong, research assistant

West Berkshire Health Authority
Gary Bolger, consultant in public health medicine

Correspondence to:
Dr Gray.

BMJ 1992;305:223-4

Post offices are a valuable asset to the local community and widely used by people of all ages. A study was undertaken to document the amount of tobacco advertising on post offices in Bristol, to examine the relation between advertising and deprivation, and to provide baseline data against which to monitor the effect of the recent voluntary agreement on shopfront advertising.¹

Methods and results

The study included all Bristol sub post offices listed in the *Yellow Pages* telephone directory. Main post

offices (Post Office Counters Ltd) were excluded from the analysis. All were visited and photographed between July and October 1991. Details of the different sites used for tobacco advertising, of the type of items sold, and whether smoking was banned on the premises were collected. From the photographic record an estimate was made of the total area of advertising on each post office. Wards were defined as deprived if they had a Jarman score of 1 SD above the mean (+16 or more).²

Eighty six post offices in 43 electoral wards (range 1-6 per ward) in Bristol were surveyed. Forty (46.5%) of the 86 carried tobacco advertising, 31 (36.0%) on windows, 18 (20.9%) on nameboards, six (7.0%) on sunblinds, and 14 (16.3%) on other areas. Of the 40 post offices, half had advertising on one site only, 12 on two sites, and eight on three or more sites; 15 of the 40 (37.5%) carried less than 1 m² of advertising space, 10 (25%) 1-2 m², six (15%) 2-3 m², and nine (22.5%) over 3 m².

	Post offices in deprived wards (n=16)	Post offices in other wards (n=70)	χ^2 with Yates's correction; df=1	p Value
No (%) carrying adverts	11 (68.8)	29 (41.4)	2.9	0.089
No (%) with adverts on two or more sites	5 (31.2)	15 (21.4)	0.3	0.61
No (%) with area of adverts $\geq 1\text{ m}^2$	8 (50.0)	17 (24.3)	3.0	0.08

Seventy five post offices (87.2%) sold non-post items, and 51 (59.3%) sold cigarettes. Post offices selling cigarettes were significantly less likely than those not selling cigarettes to ban smoking on the premises (11/51 v 16/33 odds ratio 0.3, 95% confidence interval 0.1 to 0.8; χ^2 test with Yates's correction = 5.5; p=0.009). No details on smoking bans were obtained in two shops. Post offices in deprived areas were more likely to carry tobacco advertising and to have a larger area of tobacco advertisements, although these differences fell short of statistical significance (table).

Comment

Tobacco advertising is widespread in Bristol, 30% of post offices carrying 1 m² or more of tobacco advertising. There seems to be a suggestion of more advertising in relatively deprived areas, findings which are similar to that of a study of billboard advertising in the Newcastle Metro.¹ Tobacco advertising in the United Kingdom is controlled by a voluntary agreement with the tobacco industry.¹ There has been recent agreement

to decrease the total number of external permanent advertising signs on shopfronts over the next five years, but the agreement makes no reference to the total area of advertising or the proportion of shops carrying advertising. Such a vague agreement has very little chance of being closely monitored and even less of being effective.

The Health of the Nation suggests a target for the reduction of the prevalence of cigarette smoking in men and women to 22% and 21% respectively by the year 2000.⁴ Evidence from New Zealand shows that a ban in tobacco advertising was associated with an immediate drop in both smoking prevalence and total consumption of cigarettes,³ yet despite this the British government is currently not supporting the proposed European Community Directive on a complete ban on tobacco advertising. Surely the time has come for the government to acknowledge the problems inherent in monitoring the voluntary agreement, recognise the strength of the new evidence on the effectiveness of tobacco advertising bans, and reconsider its position on this important public health issue.

We thank Miss S Lansbury, who visited and photographed all the post offices.

1 Voluntary agreement on tobacco products; advertising and promotion and health warnings. London: Department of Health, 1992.
2 Jarman B. Identification of underprivileged areas. *BMJ* 1983; 286: 1705-8.
3 Matthews P. Medicine and the media. *BMJ* 1986; 293: 442.
4 Secretary of State for Health. *The health of the nation*. London: HMSO, 1991.
5 Tobacco advertising bans work. London: Action on Smoking and Health, 1991.

(Accepted 27 April 1992)

Treatment of amiodarone induced thyrotoxicosis with carbimazole alone and continuation of amiodarone

Peter H Davies, Jayne A Franklyn, Michael C Sheppard

Department of Medicine,
University of Birmingham,
Queen Elizabeth Hospital,
Birmingham B15 2TH
Peter H Davies, senior house
officer
Jayne A Franklyn, senior
lecturer
Michael C Sheppard,
professor

Correspondence to:
Dr Franklyn.

BMJ 1992;305:224-5

The antiarrhythmic drug amiodarone contains 37% iodine and is recognised to cause abnormal results of thyroid function tests in euthyroid patients as well as overt thyrotoxicosis or hypothyroidism in up to 10% of patients given the drug long term.¹ Withdrawal is recommended when the drug has induced thyrotoxicosis but is often inappropriate because of the underlying cardiovascular problem. The elimination half life of the drug, 90 days, determines that any response to withdrawal is slow. In addition, thyroidal iodine uptake is suppressed during treatment and after withdrawal¹ so that radioactive iodine treatment is ineffective. Thyroidectomy under local or general anaesthesia is an alternative² but may be hazardous in patients with cardiovascular disease.

Drug treatment is preferable to surgery in those with amiodarone induced thyrotoxicosis but treatment with thionamides alone has been found ineffective,³ especially in patients continuing amiodarone. Successful combination treatment with methimazole or propylthiouracil and potassium perchlorate has been reported in patients stopping amiodarone,⁴ as well as successful combination treatment with antithyroid drugs and high dose steroids,⁵ although adding potassium perchlorate or steroids has been found unhelpful by other researchers. None of these regimens are without hazard because of serious potential side effects of potassium perchlorate and prednisolone.

In view of these problems of treating amiodarone induced thyrotoxicosis we have explored other options. We describe treatment with carbimazole alone in five consecutive patients presenting with thyrotoxicosis and continuing amiodarone treatment.

Patients, methods, and results

Amiodarone induced thyrotoxicosis was diagnosed in each patient (all men; mean age 56.4 (range 31-72) years) from clinical features and circulating thyroxine, triiodothyronine, and thyrotrophin. Amiodarone (mean dose 180 (range 100-200) mg/day; mean treatment duration 27 (14-18) months) had been prescribed for resistant recurrent arrhythmias associated with ischaemic heart disease in four patients (two with supraventricular tachycardia and two ventricular tachycardia) and associated with the Wolff-Parkinson-White syndrome in one. Presenting features included weight loss (in all patients), tremor (two), increased sweating (two), fatigue (two), and worsening angina (two). No patient had a history of thyroid disease. A nodular goitre was present in one and none had ophthalmopathy other than lid lag. Concentrations of thyroxine and triiodothyronine were raised in all (free thyroxine, mean 70 (range 51.0-120) pmol/l, (normal range 9-24 pmol/l); free triiodothyronine, mean 13.0 (range 9.7->20) pmol/l, (normal range 3.9 pmol/l)) and thyrotrophin was suppressed to <0.5 mU/l. Thyroid autoantibodies were weakly positive in one patient (antimicrosomal titre 1:400, antithyroglobulin 1:80).

After amiodarone induced thyrotoxicosis had been diagnosed, treatment with carbimazole was started (starting dose 20-60 mg/day, mean dose 37 mg/day). Patients were biochemically euthyroid (had normal concentrations of free thyroxine and free triiodothyronine) after 3-16 (mean 8.6) weeks of carbimazole treatment and were clinically euthyroid after a mean of 14 weeks' treatment. Carbimazole doses were titrated

BMJ: first published as 10.1136/bmj.305.6847.223 on 25 July 1992. Downloaded from http://www.bmj.com/ on 25 April 2023 by guest. Protected by copyright.