40. Differences between Asian and white diabetics cannot be explained by an increased prevalence of obesity in Asians as 55% of Asians with the non-insulin dependent diabetes were within 20% of their ideal weight.

The low incidence in Asians of HLA-DR3 and HLA-DR4 antigens,[4] which are strongly associated with insulin dependent diabetes[5] might explain our findings. In addition, epidemic infections with viruses such as Coxsackie B and mumps, which have been implicated in the aetiology of insulin dependent diabetes, occur more commonly in temperate climates.[6] Pulmonary tuberculosis occurred more commonly than any single diabetic complication, suggesting that all Asian diabetics presenting for the first time should undergo routine chest x ray examination and possibly sputum examination for acid fast bacilli.

In conclusion, our results showed that there was a low prevalence of insulin dependence among Asian diabetics, possibly related to genetic and environmental factors, and that some of these patients were treated with insulin inappropriately.

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Contemporary Themes

Screening of diabetics for retinopathy by ophthalmic opticians

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Abstract

Diabetes mellitus is a major cause of blindness in England and Wales in those aged between 30 and 64. Photocoagulation can frequently prevent blindness provided the retinopathy is detected at an appropriate stage but unfortunately the benefits are small if the changes are advanced. Early detection of diabetic retinopathy by regular examination is needed.

We have shown that ophthalmic opticians have the skill to detect retinal changes at a treatable stage. Out of 844 eye checks, 80 were reported by ophthalmic opticians to justify referral to an ophthalmologist and 20 of these required photocoagulation treatment. Of a sample of 197 patients rechecked by an ophthalmologist reported by ophthalmic opticians not to justify referral, only one needed treatment.

With local agreement this system of detecting retinopathy could be easily applied anywhere in the United Kingdom. No extra personnel or facilities are needed.

Introduction

Diabetes is a common cause of blind registration in the elderly[1] and the commonest cause up to the age of 65 in England and Wales.[2] Blindness is usually the result of retinal changes. There is no evidence that the incidence of blindness in diabetics is likely to be dramatically reduced by improved metabolic control or other means since sight threatening retinopathy seems to develop as a result of prolonged metabolic disturbance over many years. Retinal photocoagulation remains the best form of treatment as it delays deterioration in vision and prevents blindness in proliferative[3,4] and exudative maculopathy[5,6]—provided treatment is given when the changes are early.

Unfortunately diabetics continue to be referred to ophthalmologists with advanced retinal changes and visual acuities so severely depressed that photocoagulation is ineffective. This state of affairs may arise either from failure to detect retinopathy at an appropriate stage or a delay in treatment. We suspected that delay in detection is the more important factor in the Frenchay district because many diabetics still do not have a regular retinal examination and not all doctors supervising diabetic care are skilled in retinal assessment. Hence we set out to see if ophthalmic opticians, who are highly skilled at retinal examination, would be willing to screen the eyes of diabetic residents in the Frenchay health district (population 210 000) annually and if so to assess whether their findings were accurate. A preliminary report was published in 1982.[7]

Methods

In January 1980 all ophthalmic opticians in the district were asked to attend a meeting with a consultant ophthalmologist (JCDH) and physician (CJB-C). They were invited to participate in a programme to screen for retinopathy in diabetics already under medical care and to have their findings subsequently assessed by a consultant or senior registrar in ophthalmology. Diabetic patients, except those already under the care of a consultant opthalmologist or blind, would be asked if they would be willing after examination by their ophthalmic optician to attend the eye hospital for re-examination. The reasons would be explained to them.

A new diabetic card was printed to replace previous ones, with space to record appointments with the ophthalmic optician for annual eye checks. The cards would be distributed to diabetic clinics, general practitioners, hospital wards, and ophthalmic opticians' premises in the health district to enable all diabetics in the district to use the scheme if they wished. The forms on which ophthalmic opticians were to record their findings in diabetic patients attending for a check had two carbon copies. One was to be sent to the general practitioner, one to the coordinator (CJB-C), and the top copy retained for their own records. Data would include the patient's name and address, general practitioner, corrected visual acuities, and

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retinal findings. The ophthalmic opticians were also asked to report either that the retinas were normal or showed minimal background changes with few microaneurysms and scanty scattered haemorrhages, therefore indicating that referral to an ophthalmologist was not required, or that there were potentially sight threatening changes—that is, new vessels on the disc or elsewhere or exudates threatening the macula—or an appreciable change in visual acuity in the absence of other pathological changes, in which case referral to an ophthalmologist was recommended. Non-diabetic changes would be reported in the usual way. A copy of all reports was sent to JCDH, and all those with sight threatening retinopathy and a sample of those with normal retinas or mild background changes would be invited to attend the eye hospital for re-examination.

TABLE I—*Ophthalmologist's findings in the group of 31 patients reported to have potentially sight threatening retinopathy*

3 vasoproliferative changes needing treatment
7 circinate maculopathy needing treatment
1 circinate maculopathy too advanced to treat
11 background changes not needing treatment
6 non-diabetic retinal changes
3 normal

The visual acuities of the treated eyes were as follows: In the three patients with neovascularisation one of the eyes of one patient had a corrected visual acuity of 6/36 and the remaining eyes had visual acuities of 6/18 or better. In those with exudative changes one eye had a visual acuity of 6/36 and the other 13 eyes had visual acuities of 6/12 or better.

TABLE II—*Ophthalmologist's findings in the group of 21 patients reported to have potentially sight threatening retinopathy*

2 vasoproliferative changes needing treatment
3 circinate maculopathy needing treatment
1 circinate maculopathy too advanced to treat
1 haemorrhage and macular oedema, untreatable
9 background changes not needing treatment
5 non-diabetic retinal changes

In study 1 repeat examinations were to be performed by an ophthalmologist using direct and indirect ophthalmoscopy after mydriasis. In study 2 retinal photography with colour frames of each retina taken to cover the posterior pole was used to check the opticians' findings.

Subsequent meetings of the ophthalmic opticians and investigators would be held to discuss progress, identify differences between mild and sight threatening retinopathy, and keep the ophthalmic opticians informed of current views on diabetic retinopathy. Before starting the studies approval was obtained from all consultant ophthalmologists in Avon, general practitioners in Frenchay health district, and the area medical officer.

Results

STUDY 1

In the 20 months starting 1 July 1980, the coordinator received 345 reports of annual diabetic eye checks. Twenty three patients were already attending an ophthalmologist. Of the remainder, the ophthalmic opticians reported potentially sight threatening retinal changes in 37 and normal appearances or background retinopathy only in 285.

Attempts were made to contact all 37 patients with considerable retinal changes for further assessment at the eye hospital. Four failed to attend and two had died. Table I shows the results. The first 206 of the 285 patients with opticians' reports of normal fundi or mild changes were invited to attend for the same check. Seventy six failed to attend and three had died. Of the 127 patients who were checked, seven had mild background retinopathy and in the remaining 120 the findings were normal.

STUDY 2

In the period of 22 months beginning 1 March 1982 a further 492 reports on annual eye checks reached the coordinator. The ophthalmic opticians reported potentially sight threatening changes in 35 patients and mild changes or no abnormality in 457. Of the 35 reported to have serious changes, 11 could not attend or refused assessment, but of these five were found on inquiry to have received photocoagulation after referral by their general practitioner to an ophthalmologist. Three had died. Table II shows the results.

The first 152 patients with reports of mild or no retinal changes were invited to attend the eye hospital for an examination by retinal photography. Seventy seven failed to attend and five had died. Of the 70 patients who were checked, 14 showed mild background retinopathy, one definite maculopathy, and 55 normal fundi.

Discussion

The development of retinopathy in insulin dependent and probably in non-insulin dependent diabetics is related to the duration of the disease,[8] although this is not true in children before puberty.[9] No test has been evolved which will accurately predict which diabetics will develop serious retinal changes and those who will not. Regular thorough ophthalmoscopic examinations are necessary to detect sight threatening changes while these are at a stage amenable to treatment with photocoagulation.

A study performed to determine the accuracy of internists and diabetologists at assessing diabetic retinopathy at a university centre in the United States showed that this group had a serious error rate of 60%.[10] Few diabetologists or general practitioners in the United Kingdom have facilities available to perform ophthalmoscopy in a darkened room and many remain reluctant to carry out a retinal examination after the instillation of a mydriatic because of the fear of inducing angle closure glaucoma. Nevertheless, it is extremely rare for this disease to be induced by instilling mydriatics, even in the aged, and the danger is much less than the failure to detect sight threatening changes in diabetics.

For rapid screening of many patients in ophthalmic units photography clearly has advantages over direct examination of the fundus in that the doctors' time is limited to evaluating a series of standard photographic frames. We agree with other reports that, provided good photographic technical help is available, the photographs produced allow a detailed assessment of any retinopathy present.[11]

The readiness of patients thought by ophthalmic opticians to have sight threatening retinopathy to be rechecked by an ophthalmologist in the eye hospital, however, contrasts with the poor attendance of those with mild or no diabetic retinal changes. Possible reasons for the reluctance of diabetics with minimal or absent retinal changes may be the reassurances by their ophthalmic opticians coupled with the difficulty of attending the Bristol Eye Hospital, which is situated outside the boundaries of the Frenchay health district. The fact that they were warned not to drive because mydriatics would be used may well have led them to feel that the inconvenience of transient visual disturbances outweighed any possible benefit.

We have shown that ophthalmic opticians can correctly assess diabetic retinal changes in a high proportion of patients, and indeed 20 patients with diabetic retinopathy were detected who required laser therapy. Of the sample of 197 patients rechecked by an ophthalmologist reported by the ophthalmic optician to have no serious changes, only one had retinopathy requiring referral.

This study was not set up to screen all diabetics in the health district not already blind or attending an ophthalmologist. There is no reason to think that the patients studied were representative of the diabetic population and some diabetics in the locality had either not received new diabetic cards or did not wish to use this service.

For a population of diabetics to be screened effectively a high level of cooperation between patients and their medical adviser is needed. Ideally we believe that patients should be screened at least every year by medical staff concerned with their direct management.[12] Attendance at eye units, either for clinical or photographic retinal examination, frequently entails travel outside the patient's locality, often an additional hospital visit, and close interdisciplinary cooperation in keeping records up to date. Most ophthalmologists in the United Kingdom do not have the

resources to provide a screening programme for an estimated 600 000 diabetics nationwide on a permanent basis, having to concentrate on assessing diabetics referred with potentially sight threatening disease and carrying out treatment. If, however, diabetologists and general practitioners are unhappy with their own ability to assess the fundi of diabetics accurately the use of ophthalmic opticians would appear to provide an acceptable alternative provided such a screening programme is adequately supervised and that the agreement is obtained of local general practitioners, ophthalmologists, and diabetologists.

Ophthalmic opticians are highly competent in retinal examination without pupillary dilatation, are obliged to report any ocular abnormality detected to the patient's general practitioner, and usually work within easy reach of a patient's home or workplace. A previous feasibility study found screening by ophthalmic opticians satisfactory.[13] Ophthalmic opticians are paid £8·60 for an eye examination; given that a high proportion of diabetics already attend an ophthalmic optician, any extra expenditure on examination in this scheme would probably be much less than might be expected.

There is now greater awareness that diabetic retinopathy often responds well to treatment with a laser, and an increased number of ophthalmologists are now trained to manage diabetic retinopathy. Nevertheless, of 278 people aged under 65 registered blind in the County of Avon between 1977 and 1983, much the commonest cause of registration was diabetes (17%); of these, 70% had vasoproliferative changes (Burns-Cox, unpublished data).

Diabetics with retinopathy referred from the Frenchay health district to an ophthalmologist are usually seen for consultation within two months of referral and on average have laser therapy performed, when necessary, within one month of consultation. Hence better screening of diabetics for retinopathy is a most important factor in reducing the number of people being blinded by diabetic retinopathy.

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Will the government's mass media campaign on drugs work?

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On 27 February the government launched a media campaign against drug abuse among young people in Britain, contrary to the recommendations made by the Advisory Council on the Misuse of Drugs.[1] As a leading article in the *BMJ* pointed out before the launch, "media drug campaigns may be worse than a waste of money"; they may arouse an interest in drugs that people might not otherwise have had, thus perhaps increasing drug abuse rather than halting its growth.[2] Since that criticism of the government's decision more details about the campaign and the rationale behind it have emerged, and it is worth examining again the arguments for and against the use of a media campaign to prevent drug abuse.

Lessons from previous campaigns

Studies of mass media campaigns on drugs have generally pointed to their disappointing outcomes. Such campaigns have been largely unsuccessful in influencing attitudes and behaviour in the desired direction.[3] Moreover, evidence suggests that mass media prevention campaigns aimed at increasing knowledge about drug abuse have been either unsuccessful[4] or in some cases counterproductive, by stimulating interest in drugs[5] or by provoking members of target audiences to develop arguments against warnings given in television advertisements about drug abuse.[6]

Discouraging and confusing evidence about the effectiveness of mass media health campaigns is not unique to campaigns to prevent drug abuse. The same picture has emerged from studies of mass media campaigns on many other topics, such as smoking, venereal disease, and alcoholism.[7] State of the art reviews, however, have also pointed out that the lack of success in many campaigns may be due to unrealistic expectations about the potential and power of the media, and to campaigns being badly conceptualised and evaluated.[6 8 9] The emerging consensus from reports on mass media health campaigns is one that emphasises that the mass media *can* have a role, albeit a limited one, in preventive medicine and health promotion. Among the factors that seem crucial to the potential success of media campaigns are extensive research before the campaign into the composition and characteristics of intended target audiences, careful design and testing of messages, clear definitions of realistic goals and objectives, and thorough evaluation.

When launching its present media drug campaign the government emphasised that the recommendations of the Advisory Council on the Misuse of Drugs against a national campaign had been considered carefully and that the campaign was not being embarked on without detailed and intensive market research. Despite such assurances, however, a closer look at the campaign details that have so far been disclosed suggests that important lessons from research into mass media campaigns have not been taken into account in the planning of the campaign.

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