

Patient compliance in glaucoma

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SUMMARY Of a randomly selected sample of 40 patients with chronic simple glaucoma 11 were identified as having failed to comply adequately with medical advice. Noncompliers were more likely: to be men, to have had no other medical disorder but glaucoma, not to rank glaucoma as most troubling if they had another illness, to have experienced side effects from the treatment, and not to have appreciated the association between glaucoma and blindness. Detailed clinical study revealed that several interrelated psychosocial factors contributed to noncompliance.

For some years one of the authors has suspected that a substantial proportion of patients with chronic glaucoma fail to comply with medical advice. Noncompliance is particularly hazardous in glaucoma because of the continuing possibility of blindness. And yet the nature of the disorder and its therapy might well foster noncompliance. The patient's collaboration in treatment is obviously mandatory if his intraocular pressure is to be kept under control and visual loss prevented.

The purpose of the present investigation was twofold: to determine how commonly patients with glaucoma do not comply with doctors' instructions, and to study whether they are distinguishable from complying patients.

Method

CLINICAL SAMPLE

Fifty-two patients with chronic open-angle glaucoma were randomly selected from those attending the Stanford Glaucoma Clinic. Twelve of them did not participate: 4 were physically too ill, and 8 refused to co-operate. The average age of the 40 patients who were studied was 69 years with a range from 43 to 88. Twenty-seven were men and 13 were women. Nineteen were married, 10 divorced or separated, 9 widowed, and 2 single. Half the patients had left high school before graduation, 12 were high school graduates, and 8 had a college qualification.

PROCEDURE

Each patient was interviewed by the same inter-

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viewer (L.F.), a graduate in counselling with extensive research interviewing experience. Each interview took about 2 hours and covered a wide range of topics. To determine compliance or not the interviewer commented: 'We all forget to take our medication from time to time. How often have you forgotten to take your medication over the past 2 or 3 months—once, twice, 3 times or more a week?' Details of the times of administration of the treatment, particularly in terms of how rigidly the patient adhered to the schedule advised by the clinic, were sought.

A definition of compliance with regard to the treatment of glaucoma is obviously bound to be arbitrary. An operational criterion was reached by asking several ophthalmologists: How often would they permit a patient to miss his medication before becoming concerned about the implications for his condition? Their replies ranged between not more than once to not more than 4 times a week. We used the most frequently cited criterion of not more than once a week. Most patients were taking a combination of pilocarpine and epinephrine; a minority were on anticholinesterase drops usually in association with epinephrine. Fifteen of the 40 patients also took acetazolamide.

Results

Of the 40 patients 29 were compliers and 11 non-compliers. Of the latter, 9 regularly omitted treatment 2 or more times a week, and the other 2 had ceased medication for extended periods during the previous 3 months.

The 2 groups were compared on a number of demographic, social, cognitive, and clinical variables. The groups differed from one another on 5 of them,

either at a statistically significant level ($P < 0.05$) or at a level approaching significance ($P < 0.1$). Twenty-three (79%) of the 29 compliers had another chronic medical condition besides glaucoma compared to 5 (45%) of the 11 noncompliers ($\chi^2 = 4.36$, DF 1, $P < 0.05$). Commonly associated conditions were arthritis, hypertension, arteriosclerotic heart disease, and diabetes. Most patients suffering from one of these conditions received appropriate long-term treatment. Patients with more than one chronic illness were asked to rank them from most to least troubling: only 1 of the 5 noncompliers ranked glaucoma as their most troubling complaint compared to 14 of the 23 compliers ($\chi^2 = 2.76$, DF 1, $P < 0.1$).

Men were more likely not to comply than women. Ten (37%) of the 27 men in the sample were noncompliers and only 1 (8%) of the 13 women ($\chi^2 = 3.79$, DF 1, $P < 0.1$).

Patients were asked several questions to assess their knowledge of the basic facts about glaucoma and its treatment. There was a trend for a greater proportion of noncompliers, 3/11 (27%), than compliers 2/29 (7%), not to appreciate the association between glaucoma and blindness ($\chi^2 = 3.02$, DF 1, $P < 0.1$). The groups were similar in their knowledge of other aspects of glaucoma such as its pathology and natural history, the purpose of medication, how long medication needs to be taken, whether medication can become ineffective, and the role of surgery.

Seven (64%) of the noncompliers compared to 9 (31%) of the compliers had stopped taking one or other of the prescribed treatments because of uncomfortable side effects ($\chi^2 = 3.53$, DF 1, $P < 0.1$). In many cases the treatment, as a result, had been altered either in dose or by its replacement.

There were no intergroup differences on the other variables examined: age, marital status, educational level, living alone or with others, duration of glaucoma, rating of how severe the patient regarded his condition, the ophthalmologist's rating of severity, the patient's attitude to taking his treatment (a chore or automatic), whether the patient was reminded by others to take his treatment, the patient's desire for additional information about glaucoma, and his efforts to obtain this knowledge.

Discussion

In studies of compliance, two methodological problems arise: its definition and the correct identification of patients as compliers or noncompliers (Blackwell, 1976). We used an operational criterion of two or more omissions of treatment per week, the most common figure of the ophthalmolo-

gists we consulted. As regards the correct identification in the case of glaucoma, there is no objective method of establishing whether a patient is taking his treatment as advised. Only in patients taking acetazolamide in addition to drops can a tablet count be utilised. Therefore we had to rely on the patient's own report.

Of the patients who were categorised 28% were noncompliers. This figure is considerably lower than the 58% noncompliance rate found by Vincent (1972) in his study of 62 patients. His stricter criterion of noncompliance of two or more omissions *per month* probably contributes to the difference. The 28% figure is similar to noncompliance rates found in a wide assortment of medical and psychiatric conditions (Stimson, 1974; Blackwell, 1973).

One of the authors (A.R.R.), who had regularly treated the patients, selected those who he thought had failed to comply with his instructions. Agreement on identification of noncompliers was low between the ophthalmologist and the research interviewer. The former selected only 5 patients, of whom 3 were also indentified by the interviewer. A careful scrutiny of the interview material of the other 2 patients did not arouse suspicions that they were noncompliers. As Yager (1975) has commented, doctors are 'usually very poor at guessing which of their patients are compliant and which are not'.

ARE NONCOMPLIERS DISTINGUISHABLE FROM COMPLIERS?

Only on one variable could the 2 groups be differentiated at a statistically significant level: a greater proportion of compliers than noncompliers had another chronic medical complaint besides glaucoma. We have no data to explain this finding but speculate that when a patient has two or more chronic conditions, which invariably require daily long-term treatment, his sick role is more clearly defined. The patient's life style, especially if one of the conditions produces symptoms or is disabling in some way, is apt to be affected in a more pervasive fashion than that of the patient with symptomless glaucoma alone. Since he is more likely to be taking other medications regularly over an indefinite period to relieve symptoms, taking the additional treatment for glaucoma is straightforward.

The patient's perception of the sick role also seems to have been a factor in Bigger's (1976) study. During a follow-up of patients with asymptomatic elevation of intraocular pressure 37% dropped out, most of them within a month of the initial diagnosis. The institution of treatment in the first month, however, was associated with significantly better compliance in terms of keeping appointments.

In the patient with more than one chronic ailment it does seem important how he perceives the illnesses in terms of how troubling they are to him. Thus in the 5 noncompliers with another chronic illness besides glaucoma 4 ranked the other illness/illnesses as more troubling than the glaucoma; 14 of the 23 compliers by contrast rated their glaucoma as most troubling. These findings point to the importance of two related factors in contributing to compliance—the presence of another chronic illness and the patient's view of glaucoma as his most troubling complaint.

A patient's knowledge of his illness and treatment seems an obvious factor in affecting compliance (Blackwell, 1976). In the present study patients were asked questions about glaucoma and its management which are generally regarded by ophthalmologists as core knowledge: the pressure in the eye is elevated; this pressure leads ultimately to blindness; treatment must be taken daily for life to control the pressure and prevent the development of blindness. The level of core knowledge did not differentiate compliers from noncompliers, but there was a tendency for the latter not to appreciate that blindness was inevitable in the natural history of glaucoma. Vincent (1972) pursued a similar inquiry with his sample and found that compliers and noncompliers differed only on one core item: compliers were more likely to know that intraocular pressure is raised in glaucoma. In that study, as in ours, the same proportions of each group were aware of the role of treatment in reducing pressure and preventing blindness. Thus, despite the fact that noncompliers are as informed as compliers on the relevance of treatment, gaps in other items of core knowledge do appear to contribute to unreliability in following medical advice.

A variety of contradictory findings in the comparison of compliers and noncompliers had been reported on social and demographic characteristics (Stimson, 1974). Thus factors such as age, sex, marital status, educational achievement, and social class have been found to be associated with compliance in some studies but not in others. In the present sample there was a greater likelihood for men (10/27) to be noncompliers than women (1/13). A similar pattern was found among Vincent's (1972) patients. On no other variables of this kind, including age, education, marital status, or living alone or with others, were there differences between compliers and noncompliers.

Another dimension frequently examined in studies of compliance revolves around the illness itself, i.e., its duration and severity; and the treatment, i.e., the complexity of the treatment regime and the side effects of the drugs. In our patients compliance was

not related to the duration of the glaucoma, to its severity as judged by the ophthalmologist, or to the type of medications used. There was a trend, however, for noncompliers to have stopped taking their drops at one time or another because of uncomfortable side effects necessitating a modification in dosage or a change to another drug. This is clearly important in an illness like glaucoma in which the effects of treatment may be more troublesome than the disease itself.

Stimson (1974) comments that the issue least dealt with in studies of compliance is *why* patients fail to follow medical advice. This is more difficult to investigate systematically than a study of easy-to-measure characteristics like age, marital status, education, and duration of illness. Distressing side effects obviously contributed in some patients. But even in these individuals other psychosocial factors were involved. A detailed study of the 11 noncompliers showed that there was no single determinant of noncompliance but rather a complex matrix of psychosocial factors.

Denial was an obvious factor in 7 of the 11 noncompliers, and it showed itself in different ways. For example, 1 patient minimised the severity of his glaucoma, or the importance of regular treatment, or the threat of blindness. Another patient, who missed up to 5 treatments a week, denied having any concerns: 'If I had symptoms I might be worried'. He rated his condition as mild, was optimistic about outcome, and asserted, 'I can see better than before I developed the glaucoma'. He did not expect to go blind as long as he took the drops. The patient never gave glaucoma much thought: 'If I had a sore toe and it bothered me, I would think about it, but glaucoma does not bother me at all'.

Several interrelated factors involving patient, illness, medication, and doctor contribute to non-compliance. The ophthalmologist can therefore rely neither on a simple screening device to identify the unreliable patient nor predict accurately at the time of initial diagnosis whether a patient with chronic simple glaucoma will or ~~will not~~ comply with the treatment advised. These conclusions are not uncommon in studies of noncompliance (Blackwell, 1976; Maddock, 1967; Porter, 1969; Schwartz *et al.*, 1962). We agree with Riffenburgh (1966) when he highlights how significant the relationship between doctor and patient is in ensuring that the latter collaborates conscientiously in his treatment.

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