Original Article

Effect of Education through a Periodic Newsletter on Persistence with Antihypertensive Therapy

Ikuo SAITO and Takao SARUTA*

Sufficient persistence with therapy is important to achieve the desired benefits of antihypertensive therapy. This study was designed to describe the rates of persistence with antihypertensive therapy for 1 year and to assess the effect of patient education by a periodic newsletter on persistence rates in general practice in Japan. Information on 5,324 patients who received the newsletter once a month for 1 year (intervention group; 53.9% of those originally registered) and 666 patients who did not receive the newsletter (control group; 94.3% of those originally registered) was obtained from a physician questionnaire (response rate: 54.3%). The rate of persistence with antihypertensive therapy in the intervention group was similar to that in the control group (91.7% vs. 90.7%, respectively). The patient questionnaire (response rate: 28.2%) indicated that most patients consistently read the newsletter and found it useful in understanding the management of hypertension. The results of this 1-year study showed that about 90% of patients persisted with therapy for 1 year. Although most of them evaluated the newsletter favorably, no clear effect of the newsletter on their persistence with therapy was revealed. However, these results do not rule out a possible effect of education on persistence with therapy over the long-term, and thus there is need of a longer-term study employing follow-up questionnaires. (Hypertens Res 2003; 26: 159–162)

Key Words: persistence, antihypertensive therapy, survey, patient education

Introduction

Despite the beneficial effect of antihypertensive agents in reducing the incidence of stroke, myocardial infarction, and heart failure as complications of hypertension, the incidences of, and deaths from these cardiovascular events still remain high (1), in part because of the failure of patients to stay on therapy long enough to achieve the desired benefits (2). Patient factors affecting compliance include health education, attitudes regarding therapy, access to health care, price of medicine, and fear of side effects. Data on the rates of persistence with antihypertensive therapy and factors associated with persistence with therapy in general practice in Japan are sparse, although such information is important as a basis for developing strategies to improve the treatment and control of hypertension. This study was designed to determine the rate of persistence with antihypertensive therapy in general practice in Japan, as well as to explore the effect of patient education by means of a periodic newsletter on this persistence.

Methods

Between May and July 2000, 2,440 primary care physicians agreed to participate in this study and registered 9,871 drug-treated hypertensive patients who consented to receiving a newsletter (intervention group) and 706 drug-treated hypertensive patients who did not receive the newsletter (control group). The newsletter was directly mailed once a month for 1 year by OCC Japan (Tokyo, Japan) and emphasized the importance of persistence with drug therapy and the adoption of lifestyle modifications that included weight reduction, reduction of excessive alcohol consumption, reduction of high salt intake, and increased physical activity. After July 2001, the participating primary care physicians were asked to complete a questionnaire that inquired about the numbers of patients who continued treatment for 1 year and used antihypertensive drugs in the intervention group...
and the control group. Patients were also asked to complete a questionnaire in order to obtain information on their satisfaction with the newsletter, whether they continued antihypertensive therapy, and the reason for non-persistence in those who failed to continue antihypertensive therapy.

Statistical Analysis

The data were analyzed for significance by a $\chi^2$ test, and $p$ values $< 0.05$ were considered indicative of a significant difference.

Results

The mean age of the 9,871 patients originally registered in the intervention group was 62 years, and 51% were men. According to age group, 11% were 49 years old or younger, 26% were 50 to 59 years old, 35% were 60 to 69 years old, 20% were 70 to 79 years old, and 4% were 80 years old or older; the age of 4% of the patients was not reported. Replies to the physician questionnaire were received from 1,324 (54.3%) of the 2,440 primary care physicians, and information on 5,324 patients in the intervention group (53.9% of those originally registered) and 666 patients in the control group (94.3% of those originally registered) was obtained from the physician questionnaire. No individual patient information was available regarding factors such as blood pressure or previous antihypertensive therapy. Of the 5,324 patients in the intervention group, 4,234 (79.5%) were treated with a calcium antagonist, 1,335 (25.1%) with an angiotensin converting enzyme (ACE) inhibitor, 614 (11.5%) with an angiotensin II antagonist, 545 (10.2%) with a $\beta$-blocker, 281 (5.3%) with an $\alpha$-blocker, 192 (3.6%) with a diuretic, and 79 (1.5%) with other classes of antihypertensive agents (Table 1). The pattern of antihypertensive drug use in the control group was similar to that in the intervention group.

The rate of persistence with antihypertensive therapy in the intervention group was similar to that in the control group. In the intervention group 4,880 patients (91.7%) had persisted with antihypertensive therapy at the end of 1 year, as compared with 604 (90.7%) of the patients in the control group (Fig.1).

Replies to the patient questionnaire were received from 2,779 (28.2%) of the 9,871 patients in the intervention group. When asked how often they read the newsletter, 2,468 (88.8%) replied “always” and 303 (10.9%) “sometimes.” Only 8 (0.3%) had never read the newsletter. Most of the patients evaluated the newsletter favorably, saying that it was useful in understanding more about the management of hypertension (95.3%) and in improving communication with their doctors (75.6%). When asked whether they had persisted with antihypertensive therapy, only 108 patients (3.9%) reported that they had failed to continue and gave reasons for their non-persistence. Among the reasons given, 41 (38%) selected “reduction of blood pressure,” 39 (36%) were “too busy to see a physician,” and 10 (9%) were “weary of taking medicine.”

Discussion

Our main finding from the physician questionnaire was that the rate of persistence with antihypertensive therapy at 1 year in the intervention group was about 90%, and similar to that in the control group.

Several studies have reported a lack of persistence with

Table 1. Antihypertensive Drugs Used and Persistence with Therapy

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>$N$</td>
<td>Persistent, $N$ (%)</td>
<td>$N$</td>
<td>Persistent, $N$ (%)</td>
</tr>
<tr>
<td>Calcium antagonist</td>
<td>4,234 3,940 (93.1)</td>
<td>512 467 (91.2)</td>
<td>4,746 4,407 (92.9)</td>
</tr>
<tr>
<td>ACE inhibitor</td>
<td>1,335 1,260 (94.4)</td>
<td>160 147 (91.9)</td>
<td>1,495 1,407 (94.1)</td>
</tr>
<tr>
<td>Angiotensin II antagonist</td>
<td>614 588 (95.8)</td>
<td>96 91 (94.8)</td>
<td>710 679 (95.6)</td>
</tr>
<tr>
<td>$\beta$-Blocker</td>
<td>545 503 (92.3)</td>
<td>64 61 (95.3)</td>
<td>609 564 (92.6)</td>
</tr>
<tr>
<td>$\alpha$-Blocker</td>
<td>281 270 (96.1)</td>
<td>27 24 (88.9)</td>
<td>308 294 (95.5)</td>
</tr>
<tr>
<td>Diuretic</td>
<td>192 182 (94.8)</td>
<td>24 21 (87.5)</td>
<td>216 203 (94.0)</td>
</tr>
<tr>
<td>All others</td>
<td>79 67 (84.8)</td>
<td>9 9 (100)</td>
<td>88 76 (86.4)</td>
</tr>
</tbody>
</table>

$N$: number. ACE, angiotensin converting enzyme.
antihypertensive therapy. Caro et al. (3) reported that 78% of patients with newly diagnosed hypertension had persisted with antihypertensive therapy at the end of 1 year, compared with 97% of patients with established hypertension, and indicated that barriers to persistence occur early in the course of treatment. Conlin et al. (4) assessed persistence over a 4-year period after the start of drug therapy and found a rapid decline in persistence from 0 to 12 months followed by a slow continuous decline from 12 to 48 months. Depending on the class of drugs, 75.2% to 78.8% of the patients persisted with therapy from 12 to 48 months. In another of our studies, we reported a rate of persistence with antihypertensive therapy in patients with established hypertension of 89.5% at the end of 1 year in the outpatient clinic (5). Since some important information was not available in the present study, we were unable to differentiate the patients with newly diagnosed hypertension from those with established hypertension.

Jones et al. (6) evaluated the incidence of persistence after newly prescribed courses of antihypertensive drugs, i.e., diuretics, β-blockers, calcium antagonists, and ACE inhibitors, within a 6-month observation period. Their study showed that the percentage of patients discontinuing therapy on the four classes of drugs was at least 50% regardless of which drug was prescribed. Bloom (7) assessed the influence of choice of initial therapy from five classes of antihypertensive drugs on the percentage who continued the prescribed treatment for 1 year and found that the percentage of patients who continued initial angiotensin II antagonist therapy was higher than the percentages who continued treatment with diuretics, β-blockers, calcium antagonists, or ACE inhibitors (64% vs. 38%, 43%, 50%, and 58%, respectively). Caro et al. (8) reported that persistence with therapy differed according to the class of the initial drug: 80% for diuretics, 85% for β-blockers, 86% for calcium antagonists, and 89% for ACE inhibitors. Since the patients in the present study were treated with more than one drug, it was impossible to identify any relationship between prescribed classes of drugs and persistence with therapy.

It is interesting that only 3.9% of the patients in the present study reported non-persistence with antihypertensive therapy on the patient questionnaire, a lower rate than reported on the physician questionnaire. Since the response rate to the patient questionnaire was 28.2%, it is impossible to completely rule out the possibility of bias. The most frequently cited reason for non-persistence in the present study was “reduction of blood pressure” and the patients’ hasty conclusion that their hypertension had been cured despite the newsletter’s repeatedly emphasizing the importance of persistence with drug therapy to control blood pressure.

We have no clear explanation for the similar rate of persistence with antihypertensive therapy at 1 year in the intervention group and the control group. One possibility is that the 1-year observation period was too short to detect the effect of an educational effort aimed at patients, and another possibility is that lack of health education is not an important factor in persistence with therapy by hypertension patients in Japan, because health information from a variety of sources is so readily available.

Our study had a number of limitations that should be mentioned. The most important limitation was our reliance on the response to the questionnaire distributed to the primary care physicians and patients to obtain information on persistence with therapy; we relied on questionnaires because access to health-care databases managed by the health insurance system in Japan is limited. However, other studies have repeatedly shown that calcium antagonists are the most frequently selected initial drugs for treating hypertension in Japan, with ACE inhibitors being second (9–11), and our findings in the present study are consistent with the prescription patterns. Another limitation was the relatively small number of patients in the control group.

In conclusion, the present survey, which included more than 5,000 hypertension patients treated with antihypertensive drugs, revealed that about 90% of them persisted with therapy for 1 year. Although most of them evaluated the newsletter favorably, the newsletter appeared to have no effect on their persistence with therapy. Since a longer-term study might have shown an effect of education, an additional study that includes a follow-up questionnaire on persistence with therapy is needed to clarify this issue.

Acknowledgements

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References

7. Bloom RS: Continuation of initial antihypertensive medica-

