

Editorial Comment

Differences in Medical Expenditure According to Drug Prices

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The national medical expenditure in Japan for 2004 exceeded 31 trillion yen, accounting for 8.55% of the Gross National Income (*I*). The expenditure for the care of cardiovascular disease amounted to 5.3 trillion yen (about 17% of the total medical expenditure) in the same year, far surpassing the expenditure for the care of malignant neoplasm (2.4 trillion yen) (*I*). An important risk factor of cardiovascular disease is hypertension. Failure or success in effective treatment of hypertension has a large impact on subsequent expenditure for cardiovascular disease care, and on the total medical expenditure. Thus, cost-effective treatment of hypertension is quite important. The ALLHAT study, conducted in the United States recommended the use of thiazide-type diuretics as drugs of first choice (*2*). Thiazide-type diuretics cost much less than the other hypotensors.

The paper written by Sakamaki *et al.* (*3*), published in this journal, compares the effects of amlodipine (a calcium channel blocker) with those of enalapril (an angiotensin-converting enzyme inhibitor) through analyzing the cost of treatment with these two drugs in a 100,000-population imaginary cohort from the viewpoint of medical economics in Japan and the United States. These investigators applied the incidences of stroke and myocardial infarction yielded from epidemiological surveys conducted in each country to estimation of the cost of treatment with each of the two drugs as well as estimation of the cost of inpatient care after onset of cardiovascular disease. They compared the expenditure for treatment between the amlodipine therapy group and the enalapril therapy group in Japan and the United States. The analysis revealed that the cost of treatment in Japan was 11.2 billion

yen lower in the amlodipine therapy group than in the enalapril therapy group, while the cost in the United States was 5.7 billion yen lower in the enalapril therapy group than in the amlodipine therapy group. Similar results were also obtained when the drug prices in 2000 or those in 2004 were employed. It is noteworthy that the discrepancy in the results between Japan and USA was attributable to the reversed relationship in the prices of these two drugs between the two countries. The price of amlodipine (5 mg) in 2004 was 159 yen in USA but 87.5 yen in Japan, while the price of enalapril maleate (10 mg) in the same year was 107 yen in USA but 188.6 yen in Japan. Thus, the price of the calcium channel blocker in USA was about twice that in Japan. The study conducted by these investigators indicates that the prices of antihypertensive drugs can greatly affect the medical expenditure in individual countries.

According to the recently published review paper by Staessen *et al.*, the effect in preventing cardiovascular disease arising from hypertension is more closely dependent on the extent of blood pressure reduction achieved than on the type of the drug used (*4*). If so, what is essential from the viewpoint of cost-effective medical care is how to reduce blood pressure using low-cost drugs for the purpose of preventing the onset of cardiovascular disease. Nakamura *et al.* (*5*) calculated the cost of treatment for hypertensive patients on the basis of the data from a 10-year prospective cohort study of individuals covered by the Public Health Insurance in Shiga Prefecture. They reported that the total expenditure for the care of hypertension (Stages 1 and 2) accounted for 23.7% of the total medical expenditure in this cohort. On the other

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hand, the percentage of the total Japanese medical costs in 2004 occupied by the expenditure for cardiovascular disease care was 16.8% (1). The difference in the share of cardiovascular care expenditure among the total medical expenditure between Shiga Prefecture and nationwide seems to be attributable to differences in the year surveyed, age-wise distribution of population and some other factors. Thus, this difference seems to reflect the current status in this prefecture.

According to the 19-year follow-up survey data (NIPPON DATA80), the death rate from cardiovascular disease rose as the blood pressure level became higher in all of the age groups, ranging from the young group to the elderly (over 75 years) group (6). This finding emphasizes the importance of preventing elevation in blood pressure. If the findings from NIPPON DATA80, the review by Staessen *et al.* (4) and the present study are taken together, how to treat hypertension effectively with low-cost drugs is essential from the medico-economic aspects.

Also in Japan, the specificity of the effects of many antihypertensive drugs on individual diseases or conditions has been studied (7–10). In addition to this kind of study, evaluation from medico-economic aspects is important in devising a strategy for the prevention of cardiovascular disease (3, 5, 7). The paper by Sakamaki *et al.* (3) is valuable since it suggests that the great difference in drug price between Japan and USA can greatly affect national medical expenditures. We hope that their paper triggers active discussion over drug prices.

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