(8) Studies on the Foresight and Prevention of Cerebrovascular Diseases—From the Examination on the Cardiovascular System of the Adults

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We conducted physical examinations on 1,114 residents over 40 years of age in Matsuyama-machi, Yamagata Prefecture, Tōhoku District to investigate the actual condition of cardiovascular system of normal adults including blood pressure, renal function, and so forth. We hereby describe the results of our prospective studies on their onsets, and also of our retrospective studies on their pre-attack indications, inducing factors, and the weather conditions at the time of their onsets to discuss the risk factors and the prevention of cerebral apoplexy.

In our follow-up studies on the 1,114 adults (478 men and 636 women) in good health, there had been recognized the cases of 57 cerebral infarction, 37 cerebral hemorrhage and 3 subarachnoidal hemorrhage within the period of ten years. Having reviewed the results of our prospective study on the risk factors of cerebral apoplexy, we found that the occurrence rate of both the cerebral hemorrhage and cerebral infarction was higher among those over 60 years old than those younger. Through the study on the blood pressure, both of the diseases were more frequently recognized among those whose blood pressure was higher than the others, and especially among those who had systolic pressure of over 200 mmHg and diastolic pressure of over 110 mmHg. The onsets of approximately a half of these apoplexy patients were within less than one year after their examinations.

There were higher incidences of both cerebral hemorrhage and cerebral infarction among those who had such complaints as headache, dizziness, stiff shoulder, tinnitus and numbness of extremities, those who revealed LVH and ST-T abnormalities on ECG, who had fundus indication above KWII group, whose renal plasma flow was under 350 ml/min., whose PSP was under 15% at 15 minutes, who were diagnosed to have nycturia, or who had drinking habits. The albuminuria and glycosuria were also responsible for the occurrence of cerebral infarction. However, the total rate of serum cholesterol, body weight and smoking amount were not related to the disease occurrence.

Next, we should like to report the results of our retrospective study on the inducing factors and motives of strokes. One hundred sixty (160) cases of cerebral hemorrhage and 223 cases of cerebral infarction were checked. Their occurrence frequency by months showed that cerebral hemorrhage was recognized more frequently during cold winter months and in March, September and October, and that cerebral infarction during early summer months and in March and September. The meteorological relations with the occurrence of cerebral hemorrhage were evident, particularly when the atmospheric pressure was lowered and when the humidity was lower than that of 3 hours before, and it was also evident for those with cerebral infarction when the atmos-

pheric pressure was higher and when the humidity was lower. Both cerebral hemorrhage and infarction are quite frequently occurred when the weather is fine, and less frequently in cloudy and rainy weather.

The daily checking of their blood pressure proved that it tended to lower as the temperature rose and to go up suddenly as they came outside where the temperature was lower than inside the room.

Looking up the onset hours of cerebral apoplexy, the hemorrhage attacks came more frequently in the morning when they started their daily activities and also in the evening. In contrast, cerebral infarction occurred more often during the period between the bedtime and rising, and it also did during the morning and evening hours. The 24-hour blood pressure change showed that it began to rise at around 8 a.m., remained rather high during the evening and night and until morning in most of the cases. There were very few cases whose blood pressure went down during sleep.

We investigated 236 cerebral hemorrhage and 276 infarction cases to study the patients' physical conditions at the attack of apoplexy. In about 80% of the cerebral hemorrhage cases, such daily activities as working, having meals, going to the bathroom, going out, taking a tub-bath, and having conversation were closely related to the onset. The onset of cerebral infarction came most frequently during sleep, and it was about 40% of the total cases; and about 48% during the time of various activities.

During the daily activities such as having meals, physical exercises, removing clothes before taking a bath, starting to have alcoholic drinks, and getting ready to go to the bathrooms, their blood pressure began to rise. After taking a tub-bath, drinking liquor, evacuation, and having a deep breath, it was recognized to lower, but to rise again when the liquor effect

disappeared.

Among the aged people, whose serum lipid rate was measured, we made a comparative study between those who were arrested by cerebral hemorrhage or cerebral infarction and those who were not arrested. However, we could not obtain any satisfactory results as to whether the onset occurred more often among those who were diagnosed to have hyperlipemia or not, although these two groups of patients were of the same age and in similar living condition.

The above investigation revealed that cerebral infarction as well as cerebral hemorrhage tended to occur more frequently among those who had hypertension and arteriosclerosis and also to occur when such meteorological condition or other inducing factors as causing their blood pressure to rise. Considering that hypertension is one of the main causes of arteriosclerosis, it is most important for the prevention of cerebral hemorrhage and infarction to give an appropriate medical care for hypertension and guidance for their daily activities.

In fact, in a geriatric home where our medical staff provides health care, the number of hypertension patients receiving medical treatment has been increasing each, while the occurring rate of cerebral hemorrhage and infarction has been remarkably decreasing.

These study results as mentioned above instruct us that the foresight of cerebral apoplexy can be made by conducting periodical examination of hypertension patients, particularly on arteriosclerotic indication and their complaints, and that their prevention by giving follow-up medical care to hypertension patients and guidance concerning their daily activities.

REFERENCE

- Atarashi, J, et al: The prodromal symptoms and the prevention of cerebral hemorrhage, *Jap J Clin Med*, 34: 105, 1976 (in Japanese)