Ambulatory Blood Pressure Measurement in a Patient with Pheochromocytoma by Means of Finger Volume-Oscillometric Device

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Ambulatory intra-arterial recordings of blood pressure have demonstrated paroxysmal attacks of hypertension in patients with pheochromocytoma (Littler and Honour 1974). Recently a new device of blood pressure monitoring, equipped with a micro-processor (ME Commercial Corp., BP-100 system, Tokyo) was made available to us. It uses a finger volume-oscillometric technique and is able to perform a long-term ambulatory monitoring of indirect arterial pressure at desired intervals. In the present study we attached this device to a patient with pheochromocytoma to detect crises of hypertension and its duration. Theoretical basis of the method and details of device were shown elsewhere (Yamakoshi et al. 1982, 1985).

A 47-year-old man complained of paroxysmal throbbing headache, finger tremor, sweating and palpitation. These symptoms have appeared once or twice a week ever since. He visited several physicians but hypertension was not pointed out. He visited Tohoku University Hospital in January, 1985. Blood pressure was within the normal range. No ventricular hypertrophy was shown in chest radiogram or electrocardiogram; fundi were normal; glucose tolerance test revealed diabetic pattern; abdominal echography and computed tomography revealed a round and cystic lesion (45×46 mm) just inside the right kidney. The device was used repeatedly in the patient. The first examination did not detect paroxysmal hypertension. Fig. 1 shows the result of the 2nd study in which the device was operated every 5 min. The patient was asked to push the marker button when he felt the symptoms. As shown in the figure, crises of hypertension were coincident with the patient's marking (heart mark on the top of the panel). Biochemical studies showed that his plasma norepinephrine and epinephrine were very high. These findings led to the
A right adrenalectomy was performed on April 9, 1985. After removal of the tumor, paroxysmal hypertension, together with the symptoms disappeared.

In the present case, symptoms possibly due to pheochromocytoma were observed for several years, though hypertension was not pointed out by any physicians. A continuous monitoring has to be repeated in such a case since it is not always possible to detect crises of hypertension in one monitoring for 24 hr. It is clear that frequent repetition of the direct intra-arterial blood pressure measurement is not practical. Indirect automatic blood pressure devices available at present are too heavy and noisy, and intermittent inflation of arm cuff causes pain disturbing physical activity and sleep of patient. The device used in the present study can be applied repeatedly without causing harm. A rapid change in blood pressure is also detectable using this device since measurement intervals can be selected from one to ten min.

In conclusion, the fully automatic device for measuring ambulatory blood pressure based on finger volume-oscillometric method is valuable for diagnosing paroxysmal hypertension in patient with pheochromocytoma.

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References