

cases to Group 4.

When these cases were classified by criteria of cerebral arteriosclerosis, the patient belonging to cerebral arteriosclerosis were found 0 out of 20 cases in Group 1, 5 out of 15 cases in Group 2, 5 out of 12 cases in Group 3, and 26 out of 36 cases in Group 4. It is concluded that the syndrome derived from cerebral arteriosclerosis can be more clearly differentiated from postconcussion syndrome in the patient complicated with cerebral arteriosclerosis by cerebral angiogram, except for cases of few percent.

116. Effect of Vasodilator upon the Caliber of the Cerebral Artery

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For the purpose of quantitative estimation in the pathological features of the intracranial arteries, measurement of the caliber of the arteries was carried out at the constant points on each artery on the film of carotid arteriogram. In order to eliminate error caused by injection pressure of the contrast medium, the ratio between the measured values on the proximal and distal parts of each artery was calculated. The other factor effecting on the measured values is considered to be the timing of exposure. Careful statistical examination of the calibers on each arterial phase of carotid arteriogram lead to a conclusion that the error due to the exposure time is negligible, as far as the film is selected so as to confine that fully contrasted from the proximal part of the internal carotid to the peripheral arterioles is offered to use.

Measurements were made on the 500 films which showed neither the abnormality in position and running way of the arteries nor the arteriosclerotic picture, selected from about 3,000 carotid arteriograms carried out in our clinic for the period of the last 5 years. Changes in the arterial caliber ratio on the series of headache, epilepsy and head injury have been reported at the 7th Annual Meeting of the Japan Neurological Society in July 1966. In this report, the effect of vasodilator upon the arterial caliber ratio is described.

The distribution of the caliber ratios of each intracranial artery on 38 cases under application of vasodilator are demonstrated in Fig. 1 expressed as histograms. In these figures, the caliber ratio is increased in the ratios C_2/C_7 , A_1/A_3 , M_{4P}/M_{4C} and M_{5P}/M_{5C} , three of the latter indicated the marked dilatation in the periphery of the anterior and middle cerebral arteries.

In thirteen of those 38 vasodilator cases, carotid arteriography was performed

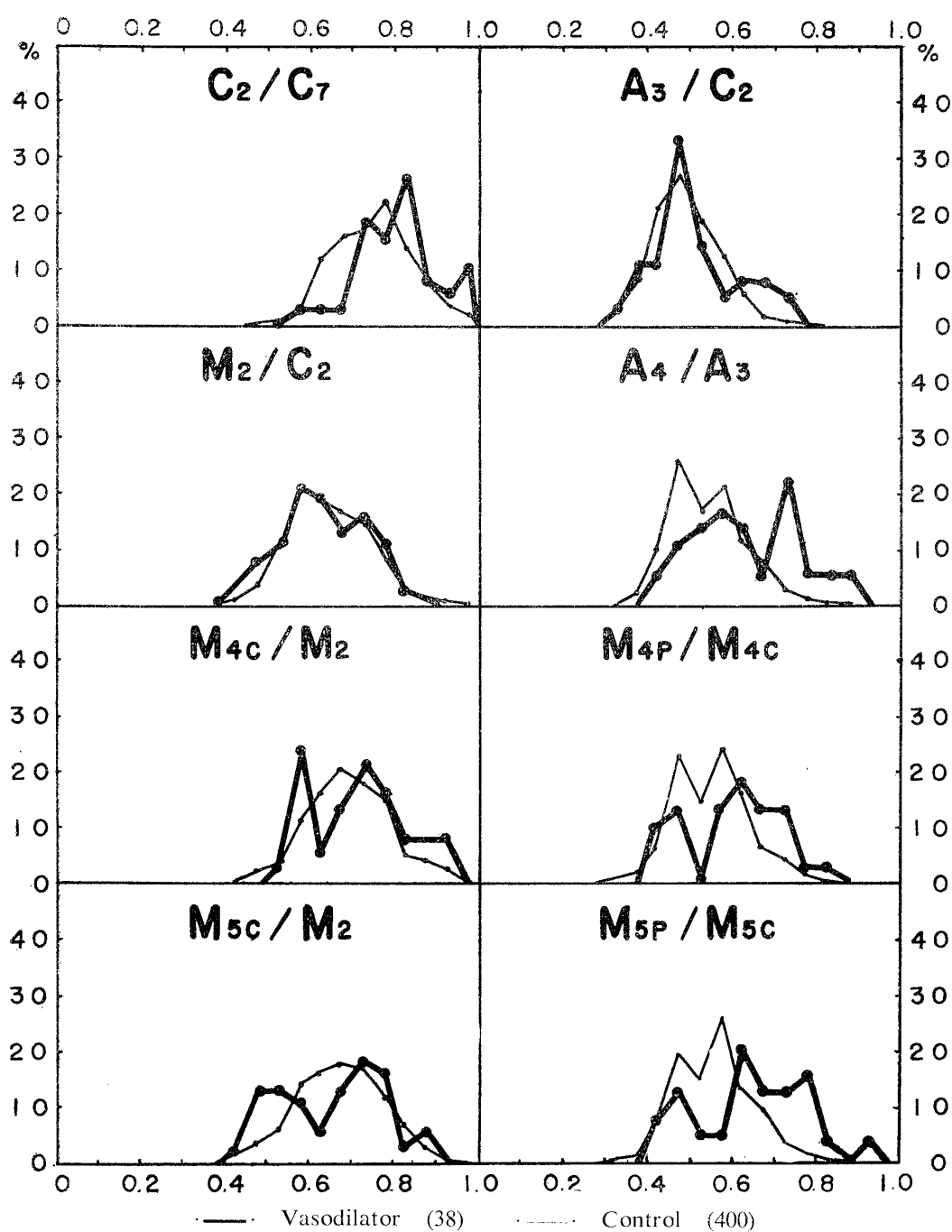


Fig. 1. Arterial caliber ratio

on the same side before and after the application of vasodilator (5 Kallikreins, 5 Vasculats and 3 Papaverine hydrochlorides) and the caliber ratios in each artery were compared on each two films. Fig. 2 showed the increase in arterial caliber ratio in the postvasodilator arteriograms, particularly in the ratios of peripheral arteries. No difference was recognized among the cases used different preparations.

Animal experiments were carried out in order to confirm the dilatation at the most periphery of intracranial artery under application of vasodilator. Temporal skull of rabbits weighing approximately 2 Kg. were trephined and a glass coverage was devised on the pia mater in order to avoid exposure edema of the cortex. Slender cortical artery was under observation and measured its caliber by means of magnification photography. The effect of three different drugs i.e. Kallikrein, Vasculat and Isoxsuprine was examined by intramuscular injection. Upper part

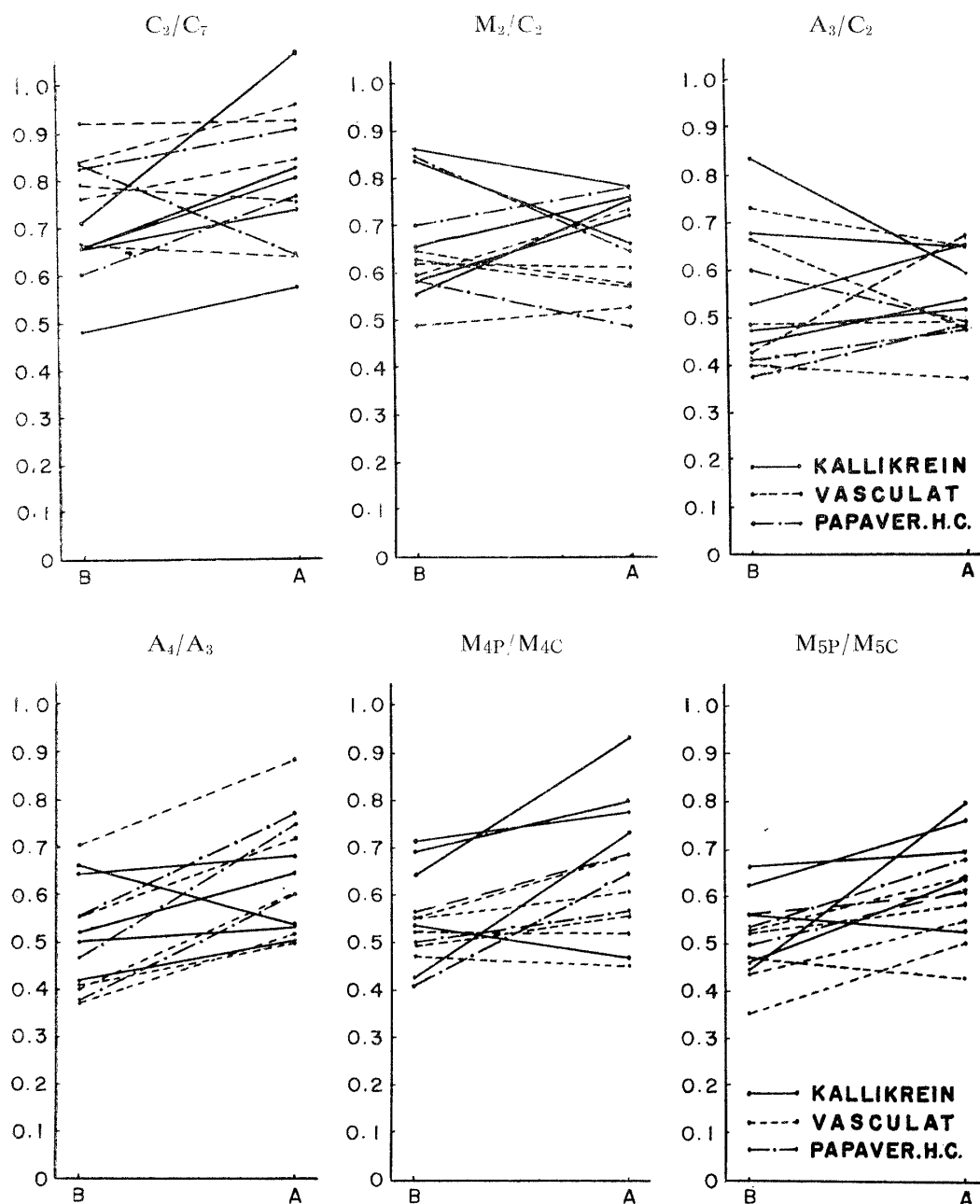


Fig. 2. Before and after vasodilator

of Fig. 3 showed the acute effect of vasodilator on the caliber of the cortical artery. The peak of vasodilatation is obtained at about an hour after the injection. Consistent effect of Vasculat and Isoxsuprine is observed throughout a period of 3 hours, while that of Kallikrein is not so evident. The lower part of Fig. 3 showed the chronic effect of vasodilator under daily application of each drug. The caliber of the cortical artery was measured at 3, 7, 10 and 14 days after the beginning of the application of each drug. The effect of Vasculat and Isox-

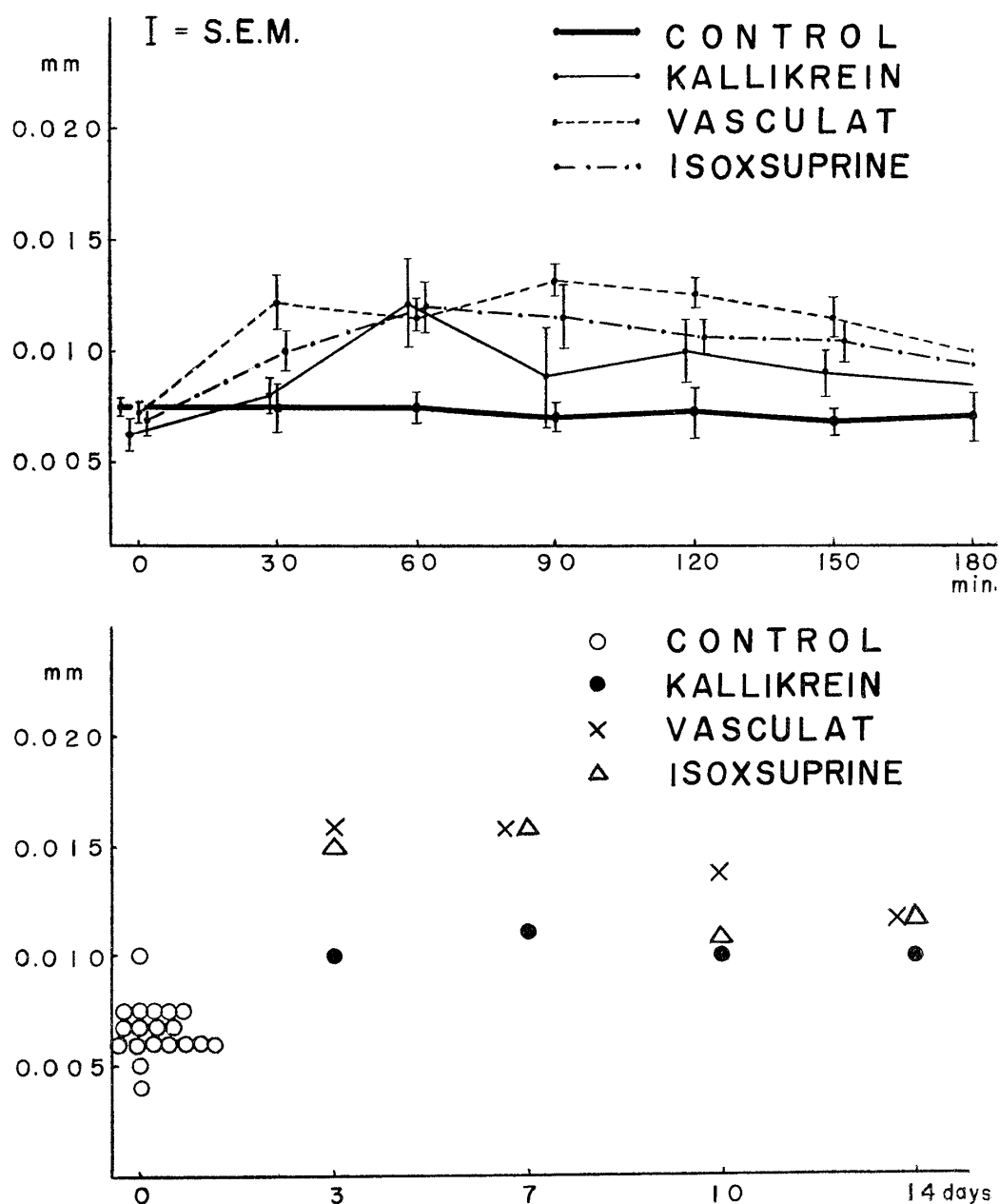


Fig. 3. Effect of vasodilator on the caliber of cortical artery

suprine was remarkable at the stage of 3 and 7 days, while that of Kallikrein was less conspicuous than the others.

Mean arterial blood pressure and $p\text{CO}_2$ of arterial blood were measured along the course of acute experiments. Both of them showed the tendency to little bit fall under the effect of vasodilator in comparison with the control level. Consequently, vasodilatation caused by the vasodilator is considered to be due to neither the accumulation of CO_2 nor the elevation of systemic blood pressure.

117. Studium über den Verlauf der A. cerebri anterior und der V. cerebri interna

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Die cerebral Angiographie nimmt einen wichtigen Platz bei den neurochirurgischen Untersuchungen ein. Ihre Analyse ist jedoch hauptsächlich vom subjektiven Standpunkt, gegründet auf Erfahrung und Wissen des Arztes abhängig. Um eine mathematische Basis zu schaffen, das objektive Ablesen der verschiedenen Verlaufsformen der cerebrovasculares zu ermöglichen, habe ich 60 Fälle näher untersucht und gemessen. Von 356 Serienangiogrammen, die in den letzten 3 Jahren hier durch geführt wurden diese 60 Fälle bestimmte angiographische Normen.

Bei den Objekten meiner Messungen handelt es sich nur um die A. cerebri anterior und die V. cerebri interna. Bei den Messungen wählte ich 3 feste Punkte, nämlich den infra-orbitalen Punkt (O), den Processus clinoideus anterior (S) und Bregma (B), die auf den Röntgenaufnahmen deutlich lokalisiert werden konnten, und nahm die Linie zwischen den Punkten O und S also die Grundlinie. Darauf fällte ich zwei Senkrechte zur Basis durch die Punkte B und S, nannte diese Punkte P1 und P4, fällte zwei zusätzliche Senkrechte, P2 und P3, zur Basis, die das Feld zwischen P1 und P4 in 3 gleiche Teile teilen. Dann zog ich eine Tangente zum Knie der A. cerebri anterior durch den Punkt S und nannte sie Linie A. Ich erhielt die Proportionen der Distanzen auf den verlängerten Linien zwischen, ihren Kreuzungspunkten mit der Basis und der A. cerebri anterior zu denen mit dem Schädel und stellte sie in Index P1-P4 und Index A dar.

In der Deutung der V. cerebri interna sind ihre Winkel von Wichtigkeit, indem man zwei Tangenten zum grossen Bogen der V. cerebri interna zieht, eine von ihrem Anfangspunkt, nämlich dem Vereinigungspunkt der V. septi pellucidi und der V. thalamo-striata, und die andere vom Punkt S und man den Grad des Winkels (R) misst, den beide bilden.