68. Angiographic Consideration of Abnormal Vascular Network in the Cerebral Basal Region and Cerebral-Vascular Occlusive and/or Stenotic Diseases

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The angiographic characteristics of the “Chiri-chiri vessels”, abnormal vascular network in the cerebral basal region, and the mechanism of development of these abnormal vessels are discussed.

9 cases of “Chiri-chiri vessels” were examined serioangiographically. Of these 7 cases are female, age distribution is 1 yr. 8 m. to 38 yr., 8 cases have bilateral lesions and one case unilateral.

Characteristics of cerebral seriograms are as follows:
1) Development of abnormal vascular network in the cerebral basal region (we call these abnormal vessels “Chiri-chiri vessels”).
2) Occlusion and/or stenosis of arteries located not only at the so-called “fork portion”, but also at the distal portion of the anterior cerebral and middle cerebral arteries.
3) The middle cerebral is more affected than the anterior cerebral art.
4) Collaterals develop abundantly in the area of the anterior cerebral art., but as for the area of the middle cerebral art., there develop no collaterals, if ever very scanty.
5) Generally speaking, deep veins are visualized earlier than superficial veins.

To discuss the mechanism of the development of the “Chiri-chiri vessels”, we compared these cases, here reported, with several obstructive diseases of cerebral art. angiographically, and its results are as follows.
1) In the case of the arteriosclerotic occlusion of the proxysmal portion of the middle cerebral art., no “Chiri-chiri vessels” were seen.
2) In the case of bilat. tuberculous meningitis or suprasellar craniopharyngioma in which stenosis at the supraclinoidal portion of the internal carotid and proxysmal portion of the ant. and mid. cerebral arteries are visualized angiographically, there observed delayed filling into the ant. and mid. cerebral art., but no “Chiri-chiri vessels”.
3) In the case in which both occlusion of the proxysmal portion of the mid. cerebral and stenosis of the ant. cerebral art, unfortunately we could not experience these case, arterial back flow from the posterior cerebral art. is mentioned in the literatures.

In any way, there seems to develop no “Chiri-chiri vessels” in the cases in which occlusion and/or stenosis is located only at the “fork portion”. The reason
is, we think, that the leptomeningial arterial anastomosis plays the major role and there is no need of developing any “Chiri-chiri vessels”.

From above mentioned findings, the “Chiri-chiri vessels” develop only when there is no effective collaterals to the area fo the mid. cereb. art. from the ant. and post. cereb. art. in which occlusion and stenosis affect the total course of the mid. cereb. and it’s branches, and when these pathological process extend as far as the distal portion of the post. cereb. which angiographically looked patent but there exist stenosis or occlusion, as we had reported on an autopsied case in this congress, ’66.

And these “Chiri-chiri vessels” develop as collaterals to feed the area of the mid. cerebral art. Their original vessels would be the perforating arteries in the cerebral basal region which now dilated extremely to appear as “Chiri-chiri vessels”.

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<th>Ant.</th>
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<th>P</th>
<th>Vessels</th>
<th>Anastomoses</th>
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B: Brainstem
RM: Rete mirabile
LMAA: Leptomeningial arterial anastomosis
S: Superficial vein
D: Deep vein

69. Some Trials of Surgical Treatment of the Disease showing Abnormal Vascular Network at the Base of the Brain

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We have postulated since 1963 that this disease is an acquired one which shows an abnormal vascular net work at the base of brain as a collateral pathways following stenosis or occlusion at the carotid fork.

In the 25th annual meeting of the Japan Neurosurgical Society, we also re-