Supplementary Online Content

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eResults.

This supplementary material has been provided by the authors to give readers additional information about their work.

eResults

Qualitative comparisons of vascular territories on Tatu et al's atlas[1] and our atlas by visual inspection were combined with quantitative analyses based on the mean Certainty Index (CI) % data for various regions of interest to be designated as a vascular territory (eTable 2). Roman numerals are used for the section numbers of Tatu et al's maps,[1] whereas Arabic numerals are for those of the maps from the present study. Numbers that range from 13 to 24 were chosen to retain consistency with those in Tatu et al's atlas (XIII-XXIV for the supratentorial region of the brain; Figure 1). For abbreviations, see the annotations embedded in Figure 1.

Quantitative Analysis of Anterior Brain Areas: GFd, GFs, and A. Cing were involved mostly by anterior cerebral artery (ACA) infarcts, whereas GFm and caudate were involved mostly by middle cerebral artery (MCA) infarcts.

According to Tatu et al's topographic atlas[1] on arterial territories of the human brain, GFs belongs to the ACA territory, while GFm belongs to the MCA territory (sections XIII and XIV). However, the atlas also acknowledges that the MCA territory could possibly include GFs, and the ACA territory could possibly include GFm. In section XV, medial part of GFs belongs to the ACA territory, while GFm and the lateral part of GFs belong to the MCA territory. In addition, the ACA territory could also include the lateral part of GFs. In the sections XVI–XIX, GFd belongs to the ACA territory, while GFs and GFm belong to the MCA territory. However, the ACA territory could also possibly include GFs. In the sections XX–XXIV, GFd and GFs belong to the ACA territory, while GFm belong to the MCA territory. However, the ACA territory could also possibly include the GFm, and the MCA territory could also possibly include the lateral half of GFs.

Our study (Figure 3; eTable 2) showed that GFm in the sections 14~24 was mostly involved by MCA infarcts (mean regional CIs: 63.7~85.7%), and less frequently by ACA infarcts (0~20.1%). GFs was mostly involved by ACA infarcts (67.1~76.3%) in upper brain regions (sections 21–24). In lower brain regions (sections 14–18) however, GFs was frequently involved by MCA infarcts (13.5~41.1%) as well as ACA infarcts (1.5~5.4%).

GFd was involved exclusively by ACA infarcts (6.2~75.1% vs. 0% by MCA and posterior cerebral artery [PCA] infarcts) in the sections 19–24. GFd infarcts occurred infrequently in the lower brain regions (sections

14–18), which were involved by only ACA infarcts (7.5~26.6%).

As expected, GFi (sections 13–21) was involved nearly exclusively by MCA infarcts (84.7~92.8%). In addition, A. Cing (in the sections 17–20, particularly) was involved almost exclusively by ACA infarcts (83.8~90.2%) vs. MCA infarcts (0~0.1%) and PCA infarcts (0%).

The caudate in the sections 18 and 19 was involved predominantly by MCA infarcts (83.3% and 82.5%, respectively) vs. ACA infarcts (3.5% and 1.7%, respectively). In lower portions (sections 15 and 16), the contribution of ACA infarcts was relatively high (27.7% and 23.3%, respectively), but the contribution of MCA infarcts was still higher (44.4% and 58.8%, respectively).

Quantitative Analysis of Posterior Brain Areas: PCA infarct territory, located in lower and middle brain regions, was narrower than on currently published maps, and infarct territories in upper brain regions had a complex z-axis dependency.

Sections 13–15

According to Tatu et al.'s atlas,[1] GTi and posterior brain areas belong to the PCA territory (sections XIII–XV), whereas anterior brain areas belong to the MCA territory. Moreover, the PCA territory could possibly include GTs (section XV) and GTm as well as GOm (section XIV) and GOi (section XV). On the other hand, the MCA territory could possibly include GF (section XIII), GOm (section XIV), and GOi (section XV).

Our study (Figure 3, eTable 2) showed that GTs and GTm were involved predominantly by MCA infarcts (84.8~88.2% and 90.7~93.6%, respectively), and rarely by PCA infarcts (0~0.5% and 0.1~2.9%, respectively). In addition, MCA infarcts involved GTi more often (73.9~96.4%) than PCA infarcts (2.6~22.7%). In contrast, PCA infarcts involved FG (85.7~94.0%) and GL (91.0~95.3%), which were infrequently involved by MCA infarcts (4.2~14.3% and 0.3~2.9%, respectively).

GOi was involved more often by PCA infarcts vs. MCA infarcts in the sections 13 and 14 (54.8% and 52.4% vs. 41.6% and 43.9%), but not in the higher region (23.0% vs. 71.0% in the section 15). Moreover, in the

section 15, MCA infarcts involved GOm more often (64.0%) than PCA infarcts did (24.3%), unlike in the lower region (section 14): 33.4% and 36.7%, respectively.

The genuine PCA infarct territory was narrower than expected, being mostly restricted to the GL and Cal. As shown in Figure 4B (inter-territory line maps based on CI-differences), the MCA-PCA border line that formed between the red-colored MCA-dominant areas and blue-colored PCA-dominant areas extended anteriorly from the GOi (or GOm) area towards uncal areas, along the white matter region between the lateral and medial temporal areas.

Sections 16~19

According to Tatu et al.'s atlas,[1] GOm and the brain areas posterior to it belong to the PCA territory, whereas anterior brain areas belong to the MCA territory. Moreover, the PCA territory could possibly include GTm and GOm. On the other hand, the MCA territory could possibly include (even) Cu. In the sections XVIII, the ACA territory could possibly involve P. Cing and anterior part of Cu, with the ACA-PCA border formed between P. Cing and Cu.

Our study (Figure 3; eTable 2) showed that mostly MCA infarcts involved GTm and GOm (with their mean CIs ranging from 89.4 to 96.6% and from 71.8 to 82.3%, respectively), which PCA infarcts involved rarely (0~0.1% for GTm) or less frequently (6.4~15.9% for GOm). On the other hand, GOs was more often involved by PCA infarcts (53.6~89.4%) vs. MCA infarcts (10.6~31.4%). Moreover, PCA infarcts involved Cu (82.2~85.3%) and PrCu (71.4~99.0%) almost exclusively, compared with MCA infarcts (2.5~9.5% and 0~3.5%, respectively) and ACA infarcts (0% and 0~1.6%, respectively).

In section 17, P. Cing was involved exclusively by PCA infarcts (78.6%). In the sections 18 and 19, mostly PCA infarcts involved P. Cing (78.5% and 47.5%, respectively), however ACA infarcts could also involve P. Cing, although infrequent (6.2% and 10.6%, respectively). In contrast, as was noticed in the visual inspection study, A. Cing was exclusively involved by ACA infarcts (66.6~90.2%).

In the corpus callosum, the genu (sections 16–19) and body (sections 18 / 19) portions were involved almost exclusively by ACA infarcts (39.4~94.7% and 50.0 / 78.8%, respectively) vs. MCA infarcts (1.7~5.3%

and 0 / 0.4%) and PCA infarcts (0% and 1.2 / 0.1%, respectively). In the sections 17~19, the involvement of the splenium by PCA infarcts and ACA infarcts respectively showed decreasing (80.0%→74.5%→42.0%) and increasing (0%→5.2%→30.7%) trends. The decreasing vs. increasing trends continued in the sections 20 and 21 (see the below). MCA infarcts rarely involved the splenium (1.2~3.7%).

The genuine PCA territory was again narrower than expected, being mostly restricted to the Cal/Gos/Cu areas. The MCA-PCA border-line extended anteriorly from GOm or GOs (or SOS) areas to the posterior horn of the lateral ventricle (Figure 4B).

Sections 20–24

According to Tatu et al.'s atlas,[1] Cu and PrCu belong to the ACA territory, whereas the brain areas anterior to them belong to the MCA territory. However, the MCA and PCA territories could also possibly include Cu (section XX) and PrCu (sections XX–XXIV) as well as the posterior part of P. Cing (section XX) and GOm (sections XXI and XXII). In addition, the atlas shows that the ACA-PCA border (section XX) and ACA-PCA border (sections XXI and XXII) are laid in Cu. The ACA-MCA border lies in PrCu (section XXIII) or LPs (section XXIV).

Our study (Figure 3; eTable 2) showed that ACA infarcts rarely involved Cu (0.7~5.3%). Instead, Cu was more often involved by PCA infarcts and MCA infarcts, with the regional mean CIs showing respectively a decreasing (from 55.6% to 8.5%) vs. an increasing (from 8.6% to 26.1%) trend as section numbers increased from 20 to 23. In the sections 21–24, PrCu was involved mostly by ACA infarcts (42.5~54.8%), less frequently by MCA infarcts (3.4~8.9%), and at the least by PCA infarcts (0.2~4.0%). The PrCu involvement in the section 20 was mostly by PCA infarcts (39.5%) vs. ACA or MCA infarcts (14.8% and 9.0%, respectively).

GOm was involved almost exclusively by MCA infarcts (84.0~91.6%) vs. PCA infarcts (0~1.3%) and ACA infarcts (0~0.1%). In contrast, A. Cing (section 20) and M. Cing (sections 21–24) as well as P. Cing (in the section 21 particularly) were involved almost exclusively by ACA infarcts (59.8~86.3%) vs. MCA infarcts (0~1.9%) and PCA infarcts (0%).

The corpus callosum was involved predominantly by ACA infarcts: the genu (100%, section 20), body

(91.1~96.9%, sections 20~22), and splenium (66.3% and 94.2% in the sections 20 and 21, respectively). MCA infarcts infrequently involved the highest regions of the corpus callosum, including the body in the sections 21 and 22 (4.7% and 3.1%, respectively) and splenium in the section 21 (5.8%).

As expected, LPs (sections 22–24) and LPi (sections 20–24) were predominantly involved by MCA infarcts (63.8~87.7% and 79.7%~93.7%, respectively), less frequently by ACA infarcts (7.0~13.5% and 0~0.1%, respectively), and rarely by PCA infarcts (0~0.9% and 0%, respectively). Moreover, GOs (sections 20–23) and GOm (sections 20–22) were involved more often by MCA infarcts (57.5~68.0% and 84.0~91.6%, respectively) than by PCA infarcts (2.4~24.1% and 0~1.3%, respectively) and ACA infarcts (0.5~3.7% and 0~0.1%, respectively).

Figure 4B shows that the ACA-MCA border line extended posteriorly from GFm to the anterior horn of the lateral ventricle and anterolateral portion of PrCu, and the overlying centrum semiovale. There appeared to be ACA-MCA-PCA (triple) border 'points' in the lateral ends of the splenium and the overlying superoposterior brain regions (Figure 5A).

eReference

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eTable 1. Summary of Previous Vascular Topography Studies

	Subjects or Sources	Disease	Sample size	Age, years: mean ± SD (range)	Methods
Duret.[2]	Cadaver	NA	Unknown	Unknown	Sequential injection of colored gelatine
Heubner.[3]	Cadaver	NA	30	Unknown	Sequential injection of solution of Brucke's Berlin blue
Beevor[4]	Cadaver	NA	87	(7 months ~ 77 years)	Simultaneous injection of colored gelatine
Berman et al.[5]	Literature	NA	NA	NA	Drawing ACA territories on schematic illustrations of CT planes
Hayman et al.[6]	Literature	NA	NA	NA	Drawing PCA territories on schematic illustrations of CT planes
Berman et al.[7]	Literature	NA	NA	NA	Drawing MCA territories on schematic illustrations of CT planes
van der Zwan et al.[8]	Cadaver	No clinical evidence of neuropathology	25	52 ± 29.2 (15~100)	Simultaneous injection with different colored Araldite F mixtures
Hennerici et al.[9]	Patients	MCA infarction due to ICA steno-occlusion or atrial fibrillation	99	69 ± 10	Mapping of infarcts (using CT images)
Tatu et al.[10]	Literature (cadaver studies)	NA	NA	NA	Drawing based on vascular injection studies or microanatomic studies
Damasio.[11]	Literature	NA	NA	NA	Drawing ACA, MCA, and PCA territories on CT cut templates
Van Laar et al.[12]	Subjects	No brain MR abnormality or ICA steno-occlusion	115	58 ± 9	Flow mapping (using selective arterial spin labeling MR imaging)
Phan et al.[13]	Patients	MCA infarction due to MCA steno-occlusion	28	median 74 (26~87)	Mapping of infarcts (using T2-weighted MR images)
Kim et al.[14]	Patients	Stent replacement for MCA stenosis	29	54.6 ± 6.1	Mapping of flow territory (using SPECT images)
Tatu et al.[1]	Literature (cadaver studies)	NA	NA	NA	Drawing based on vascular injection studies or microanatomic studies

Abbreviations: SD, standard deviation; NA, not applicable; ACA, anterior cerebral artery; CT, computed tomography; PCA, posterior cerebral artery; MCA, middle cerebral artery; MR, magnetic resonance; SPECT, single photon emission computed tomography.

eTable 2. Mean Certainty Index (%) for Various Regions of Interest (ROIs) to be Designated as a Vascular Territory

Sl. No	Art.	Frontal					Temporal					Parietal	Occipital						Cingulate			Corpus Callosum			Cau.
		GFd	GFs	GFm	GFi	GTs	GTm	GTi	FG	Pr Cu	LPs	LPi	GOs	GOm	GOi	GL	Cal	Cu	P.	M.	A.	G.	B.	Spl.	
	ACA	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0						0.0	0.0	0.0								
13	MCA	0.0	10.9	18.1	86.4	84.8	90.7	73.9	4.2						41.6	2.9	0.2								
	PCA	0.0	0.0	0.0	0.0	0.5	2.9	22.7	**93.2**						54.8	**92.6**	**96.7**								
	ACA	14.6	4.4	0.0	0.0	0.0	0.0	0.0	0.0					0.0	0.0	0.0	0.0				26.4				0.0
14	MCA	0.0	13.5	65.0	**92.8**	88.0	**93.5**	80.6	5.9					33.4	43.9	0.3	0.9				0.0				29.3
	PCA	0.0	0.0	0.0	0.0	0.5	0.1	14.6	**94.0**					36.7	52.4	**91.0**	**91.7**				0.0				0.0
	ACA	16.9	2.9	0.0	0.0	0.0	0.0	0.0	0.0					0.0	0.0	0.0	0.0				52.9	54.2			27.7
15	MCA	0.0	41.1	74.3	86.8	88.2	**93.6**	96.4	14.3					64.0	71.0	1.0	4.9				0.0	14.0			44.4
	PCA	0.0	0.0	0.0	0.0	0.0	0.1	2.6	85.7					24.3	23.0	**95.3**	82.9				0.0	0.0			0.6
	ACA	7.5	3.7	0.0	0.0	0.0	0.0			0.0			0.0	0.0		0.0	0.0				66.6	39.4			23.3
16	MCA	0.1	19.7	76.5	**92.8**	**92.3**	**96.6**			0.0			10.6	73.8		0.1	2.2				0.0	4.4			58.8
	PCA	0.0	0.0	0.0	0.0	0.0	0.1			**99.0**			89.4	15.9		**91.1**	88.5				0.0	0.0			0.9
	ACA	9.0	1.5	0.0	0.0	0.0	0.0			0.0			0.0	0.0		0.0	0.0	0.0	0.0		86.5	56.3		0.0	14.2
17	MCA	0.0	32.3	80.6	**91.4**	89.7	89.4			0.0			10.8	71.8		0.0	2.3	9.5	0.0		0.0	3.8		1.2	66.5

	PCA	0.0	0.0	0.0	0.0	0.0	0.1			87.8			81.7	12.5		90.7	93.0	82.2	78.6		0.0	0.0		80.0	0.0
	ACA	26.6	5.4	0.4	0.0	0.0	0.0			0.6		0.0	0.0	0.0			0.0	0.0	6.2		90.2	93.5	50.0	5.2	3.5
18	MCA	0.0	20.7	85.7	92.3	92.1	92.4			0.0		89.1	24.6	73.4			0.8	2.7	0.0		0.0	1.7	0.0	1.4	83.3
	PCA	0.0	0.0	0.0	0.0	0.0	0.0			83.9		0.0	65.8	13.9			92.0	85.1	78.5		0.0	0.0	1.2	74.5	1.9
	ACA	56.2	23.1	1.2	0.0	0.0	0.0			1.6		0.0	0.0	0.0			0.0	0.0	10.6		84.9	94.7	78.8	30.7	1.7
19	MCA	0.0	10.1	76.7	88.4	90.6	91.7			3.5		90.6	31.4	82.3			0.0	2.5	0.0		0.0	5.3	0.4	3.7	82.5
	PCA	0.0	0.0	0.0	0.0	0.0	0.0			71.4		0.0	53.6	6.4			97.7	85.3	47.5		0.0	0.0	0.1	42.0	0.0
	ACA	69.4	48.7	20.1	2.2					14.8		0.0	0.5	0.0				0.7	42.8		83.8	100.0	91.1	66.3	
20	MCA	0.0	3.8	50.7	91.6					9.0		94.3	58.1	91.6				8.6	0.0		0.1	0.0	0.7	2.3	
	PCA	0.0	0.0	0.0	0.0					39.5		0.0	24.1	1.3				55.6	4.6		0.0	0.0	0.0	18.1	
	ACA	67.9	73.1	18.4	0.1					42.5		0.0	1.1	0.1				5.3	67.3	86.3			95.3	94.2	
21	MCA	0.0	5.8	63.7	84.7					8.6		92.4	63.6	85.1				18.0	0.0	0.0			4.7	5.8	
	PCA	0.0	0.0	0.0	0.0					4.0		0.0	14.4	0.0				24.9	0.0	0.0			0.0	0.0	
	ACA	75.1	70.6	11.9	0.0					54.8	13.5	0.0	3.7	0.0				4.6		78.9			96.9		
22	MCA	0.0	6.6	74.9	50.9					3.4	86.5	91.8	68.0	84.0				14.6		0.0			3.1		
	PCA	0.0	0.0	0.0	0.0					2.2	0.0	0.0	12.6	0.0				21.6		0.0			0.0		
	ACA	74.0	76.3	14.3						52.1	8.6	0.1	0.5					1.3		83.0					
23	MCA	0.0	8.3	75.5						4.9	87.7	93.7	57.5					26.1		0.0					

	PCA	0.0	0.0	0.0						1.3	0.9	0.0	2.4					8.5		0.0				
	ACA	64.6	67.1	12.1						54.4	7.0	0.0								59.8				
24	MCA	0.0	14.8	66.9						8.9	63.8	79.7								1.9				
	PCA	0.0	0.0	0.0						0.2	0.6	0.0								0.0				
	ACA	43.4	42.5	9.1	0.3	0.0	0.0	0.0	0.0	35.6	7.5	0.0	1.0	0.0	0.0	0.0	0.0	1.7	29.4	80.9	78.0	62.6	88.6	22.5	11.8
All	MCA	0.0	15.1	70.9	**90.3**	**90.2**	93.1	84.2	7.7	5.2	70.1	90.8	50.2	78.6	55.1	0.5	2.2	9.5	0.0	0.2	0.0	5.6	1.8	2.2	65.6
	PCA	0.0	0.0	0.0	0.0	0.1	0.1	11.9	**92.2**	25.5	0.7	0.0	30.1	9.1	40.2	**92.7**	**90.7**	56.0	34.0	0.0	0.0	0.0	0.1	56.4	0.6

GFd includes GFds and Gfdo; GFs also includes Gfso; GFm also includes GFmo; GTs also includes GTps; GTm also includes GTpm; GFi includes GFio, GFit, and GFio; LPi also includes GSM and GA. Values higher than 50 are colored, and values higher than 90 are in bold characters.

Abbreviations: Sl. no, slice nuber; Art, artery; P, posterior; M, middle; A, anterior; G, genu; B, body; Spl, splenium; Cau, caudate; ACA, anterior cerebral artery; MCA, middle cerebral artery; PCA, posterior cerebral artery. For other abbreviations, see the main text. For ROI and slice information, see Figure 1.

A ‘CI’ reflects the likelihood of a voxel being a member of a specific vascular territory, calculated as the ratio of frequency of infarction related to the relevant parent vessel divided by the sum of infarct frequencies for all vascular territories in that voxel.

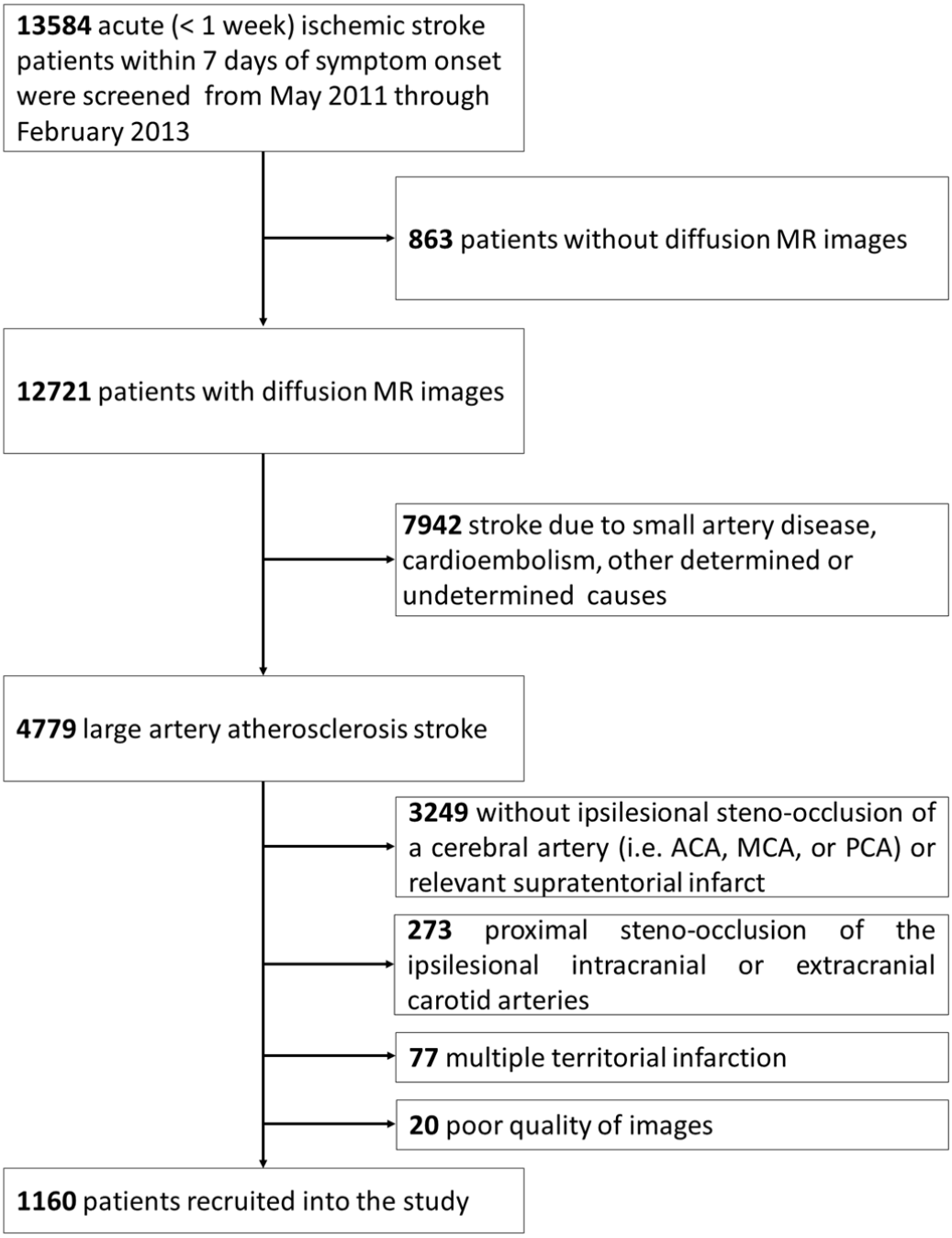
eTable 3. Volumes of the Anterior / Middle / Posterior Cerebral Artery (ACA, MCA, and PCA, Respectively) Territories (% per Supratenorial Brain Parenchyma)

CI Threshold	Slice No.	ACA	MCA	PCA	Overlap				Undetermined
					ACA_MCA	MCA-PCA	ACA-PCA	ACA-MCA-PCA	
25%	**13**	1.5	39.5	38.0	0.0	5.7	0.0	0.0	29.5
	14	2.4	51.9	36.3	0.2	7.9	0.0	0.0	18.3
	15	5.8	61.5	31.4	1.3	5.2	0.0	0.0	9.8
	16	5.8	64.0	27.3	1.5	4.1	0.0	0.0	9.7
	17	6.5	65.9	24.9	1.1	2.9	0.0	0.0	7.7
	18	8.8	66.6	23.4	0.3	3.5	0.6	0.0	6.5
	19	15.2	68.3	15.1	0.8	2.1	1.3	0.0	6.2
	20	25.6	65.9	7.6	3.0	1.3	0.6	0.0	7.5
	21	35.0	61.7	2.2	4.5	0.3	0.0	0.0	6.5
	22	37.3	58.3	1.6	4.4	0.2	0.0	0.0	9.1
	23	39.5	59.5	0.4	4.1	0.2	0.0	0.0	7.9
	24	39.0	54.8	0.1	3.9	0.0	0.0	0.0	10.5
	All	**16.9**	**60.0**	**18.8**	**1.9**	**3.0**	**0.2**	**0.0**	**10.9**
50%	**13**	1.5	37.0	34.8	0.0	0.0	0.0	0.0	29.5
	14	2.4	47.8	32.3	0.0	0.0	0.0	0.0	18.4
	15	5.2	58.0	28.9	0.0	0.0	0.0	0.0	9.9
	16	4.9	61.4	25.2	0.0	0.0	0.0	0.0	9.7
	17	5.9	63.9	23.5	0.0	0.0	0.0	0.0	7.7
	18	8.2	64.6	21.4	0.0	0.0	0.0	0.0	6.5
	19	14.2	66.8	13.4	0.0	0.0	0.0	0.0	6.3
	20	24.6	63.1	6.4	0.0	0.0	0.0	0.0	7.6
	21	33.2	58.7	2.0	0.0	0.0	0.0	0.0	6.6
	22	35.8	55.3	1.5	0.0	0.0	0.0	0.0	9.1
	23	38.2	56.6	0.4	0.0	0.0	0.0	0.0	7.9
	24	38.7	51.2	0.1	0.0	0.0	0.0	0.0	10.5

	All	**16.1**	**57.2**	**17.1**	**0.0**	**0.0**	**0.0**	**0.0**	**10.9**
90%	**13**	1.5	33.3	27.7	0.0	0.0	0.0	0.0	40.2
	14	2.2	41.7	24.2	0.0	0.0	0.0	0.0	32.8
	15	3.8	52.7	23.4	0.0	0.0	0.0	0.0	22.0
	16	3.7	57.4	21.4	0.0	0.0	0.0	0.0	18.7
	17	5.3	60.9	20.1	0.0	0.0	0.0	0.0	14.8
	18	7.5	61.3	17.7	0.0	0.0	0.0	0.0	14.3
	19	12.3	64.6	10.2	0.0	0.0	0.0	0.0	13.6
	20	20.1	61.2	5.3	0.0	0.0	0.0	0.0	15.1
	21	27.5	56.6	1.4	0.0	0.0	0.0	0.0	15.1
	22	29.2	53.7	1.3	0.0	0.0	0.0	0.0	17.6
	23	31.3	55.2	0.1	0.0	0.0	0.0	0.0	16.4
	24	30.6	50.8	0.0	0.0	0.0	0.0	0.0	19.0
	All	**13.3**	**54.1**	**13.8**	**0.0**	**0.0**	**0.0**	**0.0**	**20.2**

A territorial volume was calculated as 100 × territorial voxel count divided by total (or per slice) brain parenchymal voxel count, depending on three different certainty index (CI) thresholds for each voxel to be designated as a vascular territory. For slice information, see Figure 1.

Abbreviations: ACA, anterior cerebral artery; MCA, middle cerebral artery; PCA, posterior cerebral artery.



eFigure 1. Study flow chart

Among 12721 patients who underwent diffusion-weighted MR imaging (DW-MRI), we finally recruited 1160 patients who had supratentorial large artery atherosclerosis (LAA) infarction due to significant (> 50%) stenosis or occlusion of a single large cerebral artery. Stroke subtypes were determined by using a validated MRI-based algorithm[15] based on the Trial of Org 10172 in Acute Stroke Treatment (TOAST) criteria[16] into the following categories: LAA (n = 4779), small vessel occlusion (n = 2035), cardioembolism (n = 2812), other determined (n = 283), and undetermined stroke (n= 2812). MR angiography (n = 11604),

computed tomographic angiography (n = 4844), or conventional angiography (n = 1786) was used to detect significant arterial stenosis, which was defined as 50% or higher narrowing. Our patient population was defined by 1) significant stenosis or occlusion of a single large cerebral artery: ACA, MCA, or PCA, 2) no significant proximal stenosis or occlusion of the intracranial and extracranial carotid arteries (that might give rise to ACA vs. MCA ambiguity in the infarct attribution), and 3) relevant supratentorial infarct on DW-MR images (DWIs). Out of 4779 LAA patients screened, 1257 met criteria, and after excluding 77 patients with multiple territorial infarcts and 20 patients with images of poor quality, 1160 were finally recruited into the study. The DWIs of these 1160 patients showed large artery infarction in one of the MCA (n = 896), PCA (n = 193), or ACA (n = 71) territories. The vascular territory in which individual patients' infarcts were located was determined by the consensus of experienced neurologists in each participating center, followed by a review (by D.-E. Kim) using Tatu et al's atlas.[1]