

CT

1

: CT

가

: CT

가

18

,

Somatom Plus 4

CT

SSD 3

:

18 12 (66.7%)

가

11 (61.1%)

15 (83.3%)

10 (55.6%)

CT

18 17 (94.4%)

: CT

CT (CT angiography)

3

가

(1,3).

가

가

(conventional angiography)

가

1996 1

1998 12

가

(parent artery of anterior  
(1-6).

CT

cerebral artery)

CT

18

가

27 69

50.3

8

,

10

가

CT

10

CT

4

1

3

(1-6).

3

2

CT

CT

12

가

11

12

-24

CT

Velthuis

Anderson

4

2

3

가

1

가

Somatom

Plus 4

CT

(Siemens, Erlangen, Germany)

(2,3).

120Kv, 240mA,

(field of view) 100-

110mm,

(collimation) 2mm,

2mm(

1:1),

(matrix number) 512×512

18

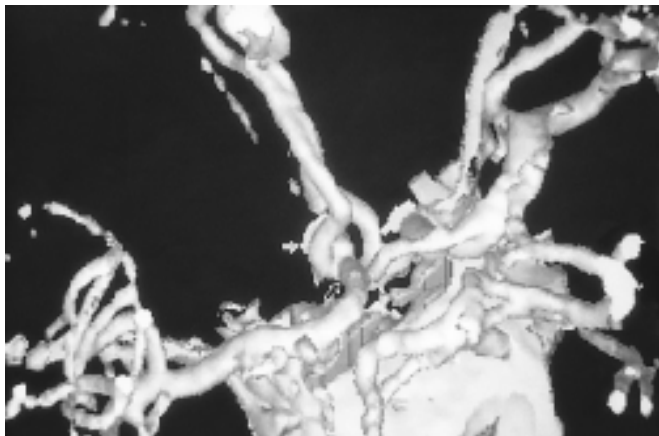
(intravenous route)

io-

1999 3 8

1999 5 4

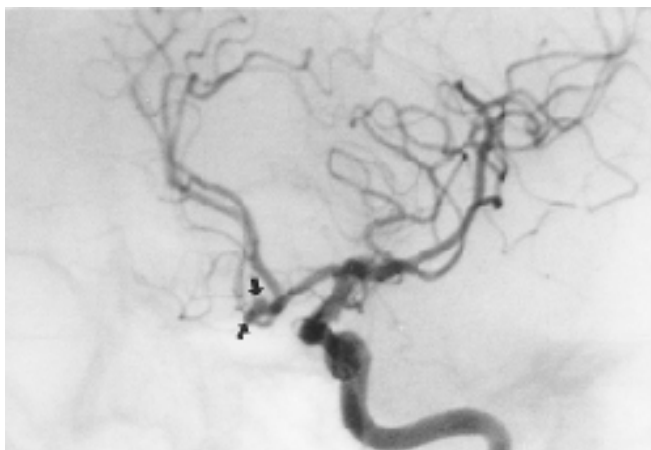
promide(UltravistR370; Schering, Berlin, Germany) 100ml  
 3ml/sec  
 15 25 (O-M  
 line) , 20  
 40 mm 1mm 40  
 10mm  
 . 1  
 가  
 40  
 (cine mode) 3 8  
 (Magicview, Siemens, Erlangen,  
 Germany) CT  
 . 3 (shad-  
 ed-surface display) 150HU  
 CT 가  
 1) , 2) , 3)  
 , 4) , 5)  
 : CT  
 (long diameter) 가  
 , , , , ,  
 1.5mm , 40%  
 가 (hypoplasia)  
 (agenesis) (7).  
 CT 가  
 , 가  
 , 가  
 가  
 (Fig. 1).  
 (GE medical  
 system)  
 (submentovertical view)  
 가



A



B



C

Fig. 1. 52-year-old woman with an acute subarachnoid hemorrhage.

A, B. Oblique superior (A) and frontal (B) views of shaded-surface display CT angiogram show a lobulated aneurysm of the anterior communicating artery (solid arrow). The parent artery was predicted as left-sided because precommunicating (A1) segment of the left anterior cerebral artery is larger than the right one, neck of the aneurysm is located at the junction of the left A1 segment and anterior communicating artery (open arrow), and it is directed to the right anteriorly (arrowhead).

C. Frontal oblique DSA image of the left internal carotid artery confirms the presence of the aneurysm (arrows) and the left-sided parent artery.

14 ,  
 4 . CT  
 CT 가 12  
 18  
 2  
 11  
 CT 3mm 1 , 3-5mm 가 40% 6 5  
 5 , 6-10mm가 11 , 11-15mm가 1 6 ,  
 1 , 11 . 12 10  
 3 , 9 (Fig 2. 3). 1 6.6mm  
 (sac) 가 ,  
 11 (61%) 3 , 8 ,  
 16 , 40% 6  
 (33.3%) , 5 (27.8%),  
 5 (27.8%) . 5  
 (27.8%) , 3 , 2 , 5 CT  
 (27.8%) , 17 가 CT 3  
 (94.4%) , 8 (47.1%) 3가 , 7 (motion artifact) , 가  
 (41.2%) 2가 , 2 (11.8%) 1 가 (sedation) 가  
 가 (Table 1). 2가 CT (1-6).  
 7 4 (slice)  
 , 2 , 1 , 3  
 . 17가 2 , ,

Table 1. Characteristics of Anterior Communicating Artery Aneurysms on CT Angiography

Patient	Agesex	CT angiography						DSA	Brain CT
		Size(mm)	Shape	Larger A1*	Direction <sup>†</sup>	Neck <sup>‡</sup>	Parent a <sup>§</sup>		
1	55m	6	Lobulated	R	L ant-sup	R	R	R	Normal
2	52f	6	Round	L (R, hypo)	R lat	L	L	L	Normal
3	66m	6	Lobulated	L	R ant-sup	L	L	L	SAH
4	44m	4.5	Round	L	Sup	L	L	L	SAH
5	46m	4	Round	R=L	R ant-sup	L	L	L	SAH, ICH
6	50f	10	Lobulated	L (R, agen)	R sup	NA	L	L	SAH
7	43m	2.5	Round	R	R sup	L	L	L	SAH
8	34m	6.7	Lobulated	L (R, agen)	R sup	L	L	L	SAH, ICH
9	41f	4.2	Round	L (R, hypo)	Sup	L	L	L	SAH, ICH
10	53f	6.6	Ovoid	R=L	Sup	NA	-	L	ICH
11	60f	6.7	Lobulated	L (R, agen)	Ant-sup	L	L	L	SAH, ICH
12	52f	6.2	Lobulated	L	R Ant	L	L	L	SAH
13	47f	7.5	Lobulated	R	L lat-sup	NA	R	R	SAH
14	27m	4	Lobulated	R (L, hypo)	L ant-sup	R	R	R	SAH
15	63f	3	Round	R (L, hypo)	Sup	R	R	R	IVH
16	67f	7	Lobulated	L (R, hypo)	R sup-post	NA	L	L	SAH
17	69f	13	Lobulated	L (R, agen)	Ant-sup	NA	L	L	SAH
18	36m	9	Lobulated	L (R, agen)	Ant-sup	NA	L	L	SAH

\*: A1; precommunicating segment of anterior cerebral artery, hypo; hypoplasia, agen; agenesis

† : Direction of aneurysm projection

‡ : Neck location on anterior communicating artery, NA; not applicable

§ : Parent artery side of anterior cerebral artery on CT angiography and DSA.

Note. R; right, L; left, ant; anterior, post; posterior, sup; superior, lat; lateral, SAH; subarachnoid hemorrhage, IVH; intraventricular hematoma, ICH; intracerebral hematoma.

: CT

CT (false-negative reading)

CT

가 가

17

15

3-5

5-10

CT

(2, 3).

(large focus) (spatial resolution) (2).

가 가

200mA

CT

5mm

가 (2, 5, 6).

(1-6, 8, 9). 3 (shaded-surface display) (maximum intensity projection), (multiplanar reformation) (threshold) (voxel) (9).

CT 77-97%, 50-100% (3-6, 10-12). CT 1) 3)

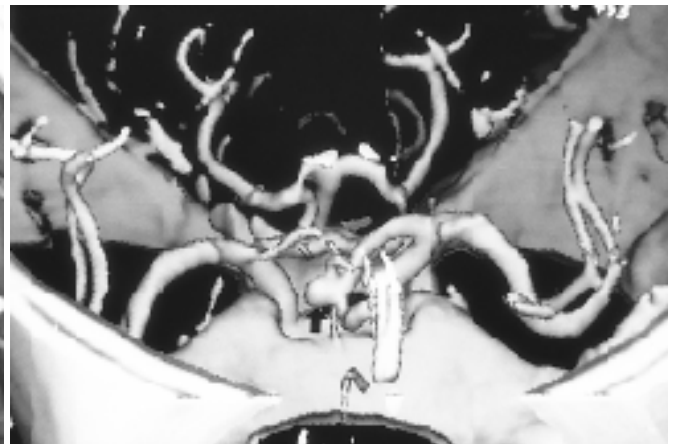
CT 2) 100% Velthuis 가 가 가

(2). 94.4% (17/18) 가

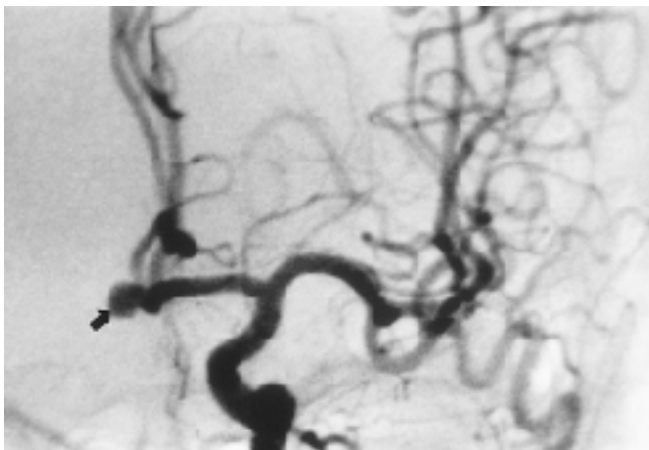
CT DSA 83% (72/87) , 74% (64/87) (2).



A



B



C

Fig. 2. 52-year-old woman with an anterior communicating aneurysm.

A, B. Superior (A) and oblique frontal (B) views of shaded-surface display CT angiogram show a round aneurysm of the anterior communicating artery (solid arrow). The parent artery was predicted as left-sided because of the hypoplastic right A1 segment (open arrow).

C. Frontal oblique DSA image of the left internal carotid artery confirms the presence of the aneurysm and the left-sided parent artery.

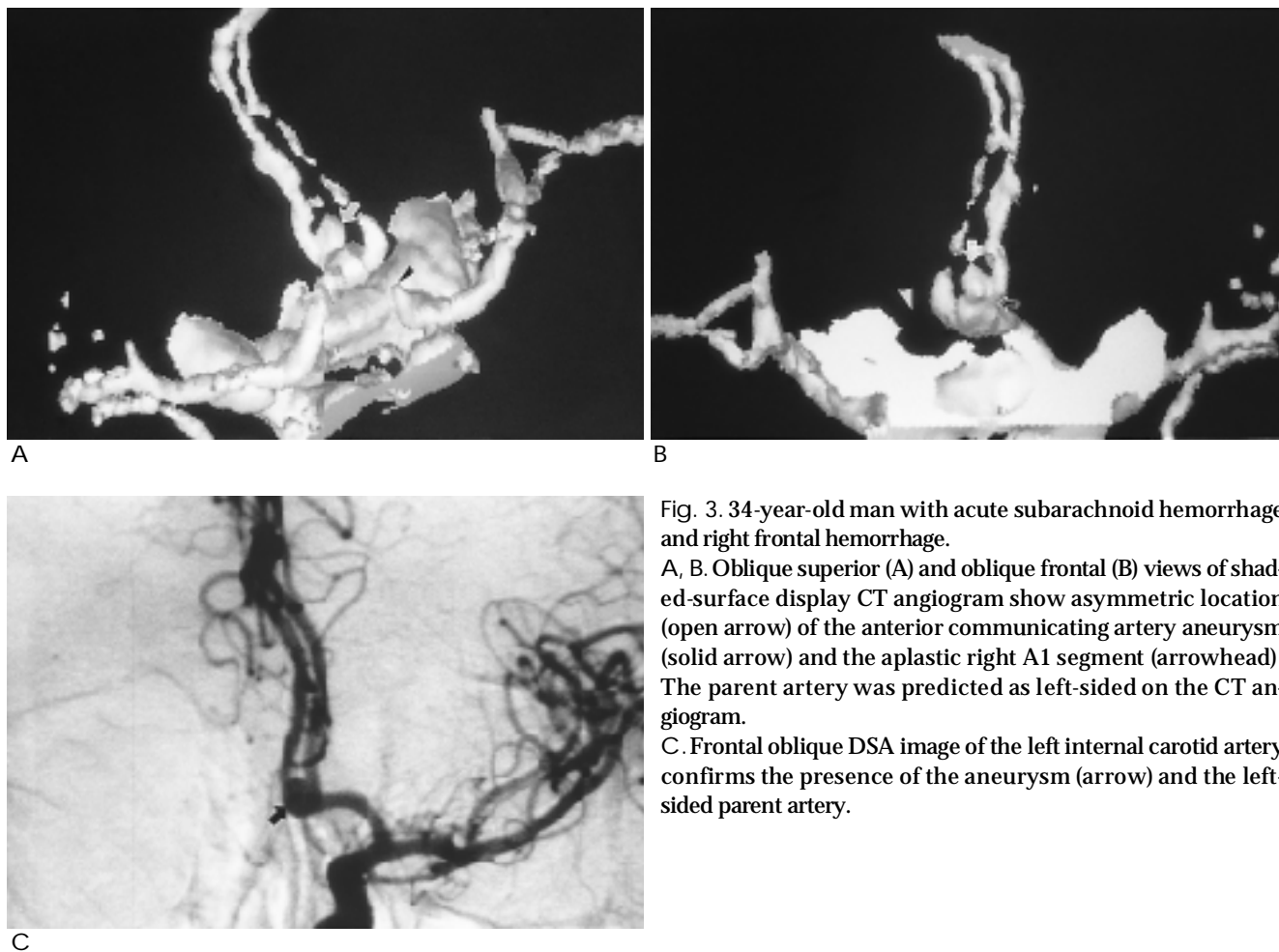


Fig. 3. 34-year-old man with acute subarachnoid hemorrhage and right frontal hemorrhage.  
A, B. Oblique superior (A) and oblique frontal (B) views of shaded-surface display CT angiogram show asymmetric location (open arrow) of the anterior communicating artery aneurysm (solid arrow) and the aplastic right A1 segment (arrowhead). The parent artery was predicted as left-sided on the CT angiogram.  
C. Frontal oblique DSA image of the left internal carotid artery confirms the presence of the aneurysm (arrow) and the left-sided parent artery.

CT	15 (93.8%)	12	11	94.4% (17/18)
	가			
CT				
(13). CT	3가			50%
	Velthuis			0.9-
100 % (29/29)	4.0 mm ( , 2.6mm)			
, 29	18 (62 %)		1.5mm	40%
, 4			7%-10%	(7).
가	(2).	Anderson		A1
7			28%	
			(7, 14).	
가		A1	85%	
가	(6/6),	가	가	(7, 15).
	(4/4)			16
		4	15	
	(3).			
18	16		10 (55.6%)	
		가		

CT

가

CT

CT

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: CT

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## **Prediction of Parent Artery of Anterior Communicating Artery Aneurysm on CT Angiography<sup>1</sup>**

Jin Young Chung, M.D., Tae Il Han, M.D., Dae Hong Kim, M.D., Hyun-young Han, M.D.,  
Hyun Jung Kim, M.D., Mun Kab Song, M.D.

<sup>1</sup>*Department of Diagnostic Radiology, Eulji Medical College Hospital*

**Purpose :** To determine whether CT angiography can predict the parent artery of an anterior communicating aneurysm on the basis of characteristics of the aneurysm and precommunicating anterior cerebral artery.

**Materials and Methods :** Eighteen patients with anterior communicating aneurysm were studied prospectively using CT angiography and conventional angiography. The parent artery of an aneurysm was predicted by evaluating aneurysm neck location, direction of aneurysm projection, and size of the precommunicating anterior cerebral artery, as seen on CT angiography. A somatom Plus-4 spiral CT scanner was used and shaded-surface display three-dimensional images were constructed.

**Results :** Aneurysm neck was located near the parent artery in 12 cases(66.7%), and aneurysm projection was against the parent artery in 11 cases(61.1%). The parent artery of the anterior cerebral artery was larger in 15 cases(83.3%), including ten cases of hypoplasia or agenesis of the contralateral anterior cerebral artery. In 17 of 18 aneurysms(94.4%) the parent artery seen on DSA was correctly predicted by CT angiography.

**Conclusion :** The parent artery of an anterior communicating aneurysm can be predicted by evaluating aneurysm neck location, direction of aneurysm projection, and precommunicating anterior cerebral artery, as seen on CT angiography.

**Index words :** Computed tomography(CT), angiography  
Aneurysm, cerebral

Address reprint requests to : Jin Young Chung, M.D., Department of Diagnostic Radiology, Eulji Medical College Hospital

#24-14 Mokdong, Jungku, Taejon 301-726, Korea.

Tel. 82-42-259-1394 Fax. 82-42-259-1125 E-mail. jychung@emc.eulji.ac.kr