CTA   DSA   [1]

.   .   .

:   CT
    (CT angiography, CTA)   (Digital Subtraction
Angiography, DSA)   .
          :   DSA   19   23
                                . CTA   (Multislice) CT
SSD(Shaded Surface Display)   ,
  , MPR(Multiplanar Reformatting)   .
                            4   ,   ,
                    ,   DSA
          .
    : 23   0- 12 mm   20 , 12- 24 mm   3   ,
                      11 ,   9 ,
                            3   .   9   6   DSA
          CTA   ,
                    3   CTA   .
        11   8   ,
                    3   DSA   CTA
            .   , 23   14
                                                                          , 6
                                                                              .
                        9   7
                                                                                    . 2
                            ,   .
          :   DSA   CTA   ,
    DSA   CTA

          .

          2- 8%   CTA)   . CTA   DSA
    (1),   ,   ,
                    ,   .
    DSA(Digital Subtraction Angiography,   DSA)   DSA
                        .   CTA
                        CTA(CT angiography,   , CTA
                                                                            .

,

.

3 ,

19 DSA CTA

. 33 83 (

55) 7 12 .

DSA Angiostar(Siemens, Erlangen,

Germany) ,

,

(oblique view), (transorbital view)

. CTA Asteion(Toshiba, Tokyo,

Japan)

100 ml Omnipaque

(Nycomed, Oslo, Norway) 3 ml/sec

, 25 real preparation

. 120 kV,

200 mA , 0.75 sec/ rot,

1.5 mm/rot, 0.5 mm, helical pitch 3

, pitch 5 .

,

115 HU SSD(Shaded Surface

Display) 3 , (opaci-

ty) HU

, (clipping and cut-

ting image) MPR(Multiplanar Reformatting)

.

27 , 20 . 3

, 6

,

. CTA

, ,

,

DSA CTA

.

(12 mm), (12- 24 mm),

(25 mm) CTA DSA

, (4 mm), (4 mm),

(neck size/aneurysmal diameter 1)

.

4 , ,

,

.

2

CTA DSA , ,

, 4

19 16 1 , 2

2 , 1 3 . DSA

CTA . 12

, 3 , 4 ,

3 , 1 .

20 , 3 ,

.

11 , 9 ,

3

(Table 1).

DSA CTA ,

11 3 CTA

, 8 CTA DSA

, 9 6

CTA .

3 CTA

DSA (Table 2).

9 6

, 3 .

3 DSA CTA ,

3 CTA DSA ,

3 CTA

(Table 3).

Table 1. Classification of Examined Cases of Aneurysms.

Size of pouch / Size of neck	Small neck aneurysm	Wide neck aneurysm	Relatively wide neck aneurysm
Small aneurysm	11	6	3
Large aneurysm		3	

Table 2. Comparison between DSA and CTA in the Evaluation of the Neck of Aneurysms.

	DSA > CTA	DSA = CTA	DSA < CTA
Small neck 11cases		8	3
Wide neck 9cases		3	6
Relatively wide neck 3cases		3	

DSA: digital subtraction angiography
CTA: CT angiography
DSA > CTA: DSA considered superior to CTA
DSA = CTA: DSA considered eqivalent to CTA
DSA < CTA: CTA considered superior to DSA

23   14

, 6

.   ,

9   7

(Table 4).

23   7   DSA

,   5   ,

3   2

.   2

. CTA

. DSA   2

CTA

.

DSA

Table 3. Comparison between DSA and CTA in the Evaluation of the Wide Neck Aneurysms.

Wide neck aneurysm	DSA > CTA	DSA = CTA	DSA < CTA
Small aneurysm			
6 cases		3	3
Large aneurysm			
3 cases			3

DSA: digital subtraction angiography
CTA: CT angiography
DSA > CTA: DSA considered superior to CTA
DSA = CTA: DSA considered eqivalent to CTA
DSA < CTA: CTA considered superior to DSA

Table 4. The Better View(s) in the Evaluation for the Neck of Aneurysms in CTA.

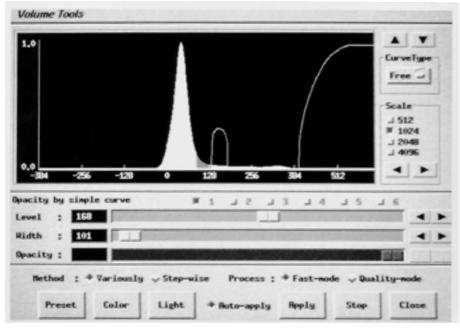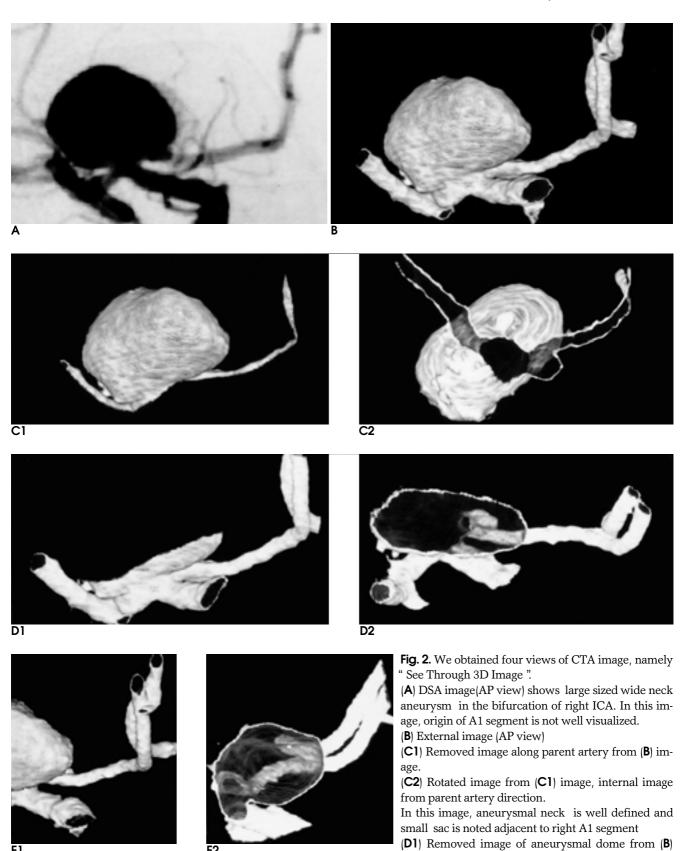| Case	External image	Internal image from parent a. direction	Internal image from aneurysmal dome direction	Aneurysmal cutting image
1- 1				
1- 2*				
2				
3				
4				
5- 1*				
5- 2*				
5- 3				
6				
7*				
8				
9*				
10- 1				
10- 2				
11				
12				
13*				
14				
15*				
16				
17				
18*				
19*				

*; wide neck aneurysm

Fig. 1. Opacity graph in the translucent contrast subtracted image, namely" See Through 3D Image".
vertical plane (X); Opacity
horizontal plane (Y); H.U.

Fig. 2. We obtained four views of CTA image, namely "See Through 3D Image".

(**A**) DSA image (AP view) shows large sized wide neck aneurysm in the bifurcation of right ICA. In this image, origin of A1 segment is not well visualized.

(**B**) External image (AP view)

(**C1**) Removed image along parent artery from (**B**) image.

(**C2**) Rotated image from (**C1**) image, internal image from parent artery direction.

In this image, aneurysmal neck is well defined and small sac is noted adjacent to right A1 segment

(**D1**) Removed image of aneurysmal dome from (**B**) image.

(**D2**) Rotated image from (**D1**) image, internal image from aneurysmal dome direction.

In this image, a part of A1 segment is a portion of aneurysmal neck.

(**E1**) Removed image of aneurysmal orthogonal plane from (**B**) image.

(**E2**) Rotated image from (**E1**) image, aneurysmal cutting image.

, CTA MRA(MR angiography)

, 3

(1, 2, 3).

DSA

CTA   , CTA

DSA   (4). CTA

DSA

(2).

(Multislice) CT

, Rubin (5)   CT   ,   CTA

.   CT   CT   ,   ,

,   ,   (effective section thick-
ness)   ,

,   ,   ,

.

CTA   3 mm

,   CTA

.

2D- DSA   C- arm
MIP SSD   3D   3D- DSA

,

, GDC

(6). 3D- DSA

.

CT   3
SSD   MIP(Maximum Intensity Projection)

. SSD

(pixel)   (zero)   ,
Hounsfield units(H.U)   .
SSD

. SSD

H.U

.

, H.U

,

.   H.U   100H.U

.

H.U(90- 120 H.U)

" See Through 3D Image"   (7) (Fig.
1).   3D

.   3D

clipping(,
), cutting(
)

MPR

. Toshihide(1)   CTA

,

,
SSD   ,   ,

. Toshihide(1)
Shigeki(8)   CTA   ,

.
Fly- through   CTA   (virtual
endoscopy)

,   ,

.   CT

(9). Toshihide(1)   Shigeki(8)

,

,   SSD

.   DSA

7   , 9   CTA

,

,

.

CTA DSA

,   DSA

CTA

,

.

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　　　　　　　CT　　　　　　　　．　　　　　　　1996; 35:285-291

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Comparison of CT Angiography and Digital Subtraction Angiography in the Evaluation of Intracranial Aneurysmal Neck[1]

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Purpose: To compare the usefulness of three-dimensional multislice CT angiography(CTA) and digital subtraction angiography (DSA) in the evaluation of intracranial aneurysmal neck.

Materials and Methods: Nineteen patients with intracranial aneurysm (23 cases) underwent DSA and subsequent CTA. Using a multislice CT scanner and the SSD(shaded surface display) technique, clipping, cutting and the MPR technique, three-dimensional images were obtained. These were (a) external, (b) internal, from the direction of the parent artery, (c) internal, from the direction of the aneurysmal dome, and (d) an aneurysmal cutting image. The CTA findings were retrospectively compared with the DSA images.

Results: Twenty aneurysms were small and three were large. In eleven cases aneurysm neck was small, in nine it was wide, and in three it was relatively wide. For aneurysnal neck evaluation, CTA was superior to DSA in six of nine wide-neck aneurysms and all three large-sized wide-neck aneurysms. In small neck aneurysms 8 of 11 cases and in relatively wide neck all 3 cases showed similarly good images by both modalities. Of the 23 cases demonstrated by four different images, 14 cases showed the best image in internal image from parent artery direction and 6 cases showed similarly good image in both aneurysmal cutting image and internal image from parent artery direction. In the evaluation of wide neck aneurysms, 7 of 9 cases showed the best image at internal image from parent artery direction, compared with other three different images. In two cases of aneurysms, calcification was visible in the aneurysmal wall, so it was difficult to evaluate the aneurysmal neck.

Conclusion: CTA was superior to DSA in the evaluating the intracranial aneurysmal neck. CTA maybe an additional available modality to evaluate the aneurysmal neck which is difficult to detect by the DSA. And the information of intracranial aneurysmal neck through CTA will be of value in surgical and endovascular treatment.

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

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