

: FLAIR MR

CT

1

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: fluid - attenuated inversion recovery (FLAIR) MR

가

:

3

CT FLAIR MR

34

. 1

CT

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CT

6

, CT

MR

5

. CT

FLAIR MR

가

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CT

FLAIR MR

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가

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가

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가

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가

FLAIR MR

, CT

34

30

88%

가

17 (50%)

FLAIR MR

CT

15 (44%)

, 2

CT가

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,

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FLAIR MR

CT

.

MR

CT

CT가

,

T1

T2

MR

1999 7

2001 12

(1, 2).

3

CT FLAIR MR

fluid - attenuated inversion

34

가

recovery (FLAIR) MR

11

, 가

23

,

32

81

T2

57

.

MR

, CT

(3 - 5).

, CT

FLAIR MR

FLAIR MR

,

. 1

(6).

CT

FLAIR MR

,

3

4

가 22

CT

FLAIR MR

가

(65%)

가

,

3

가 3

가 6

(18%),

가 3

(9%),

3

가 2

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1

.

3

4

.

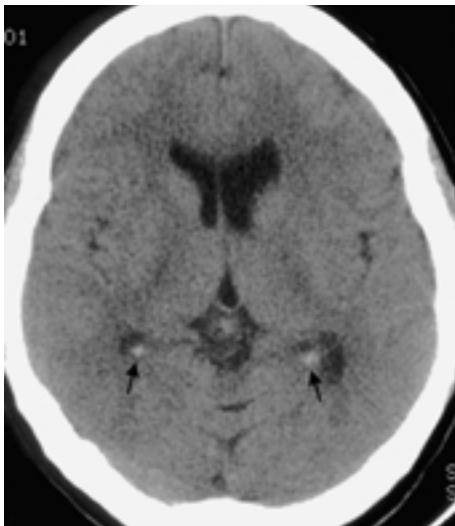
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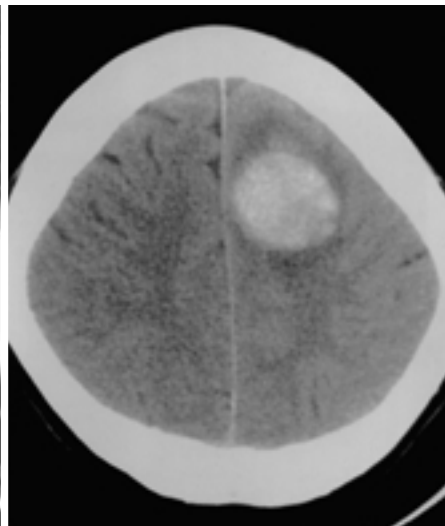
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가 . , , CT FLAIR MR , 15
(45%) FLAIR MR CT
(Fig. 1, 2), 17 (52%) , 1
CT .
가 , 가 .
가 , 가 .

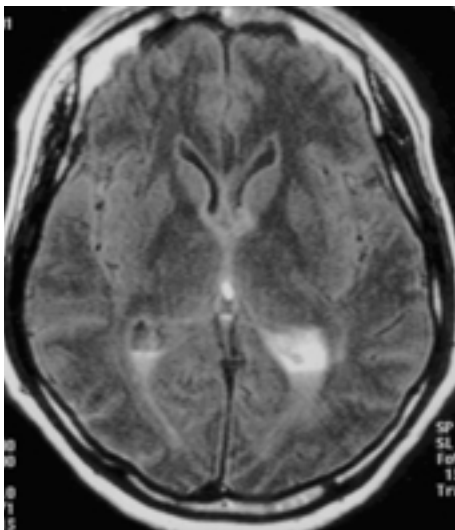
FLAIR MR (7).
100% , CT 30 CT가
88% , T1 T2 MR
17 (50%) FLAIR MR (1,
(Fig. 1, 2), 15 (44%) 2). FLAIR MR CT
CT , 2 CT가 FLAIR MR
(Fig. 3).
1 33 . CT 가 4
FLAIR MR , 2



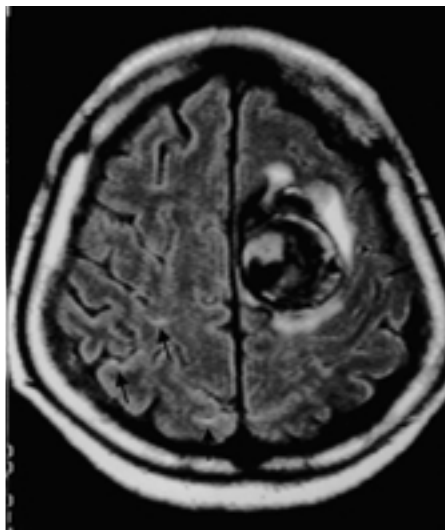
A



B



C



D

Fig. 2. A 43-year-old woman with acute intracerebral hematoma (ICH), intraventricular hemorrhage (IVH), and subarachnoid hemorrhage (SAH). Unenhanced CT scans and FLAIR MR images were obtained 2 and 6 hours after ictus, respectively.

A. CT scan of the basal ganglia level shows no definite IVH in both lateral and third ventricles. Choroid plexus calcifications (arrows) are seen at the trigon areas of both lateral ventricles.

B. In the level of the centrum semiovale, CT scan shows a hyperdense ICH in the left frontal lobe. There is no visible SAH.

C. FLAIR MR image shows hyperintense IVH in the dependent portions of both lateral and third ventricles, which was not shown on CT scan.

D. FLAIR MR image reveals an ICH of mixed intensity in the left frontal lobe and hyperintense SAH (arrows) in the cortical sulci of right cerebral hemisphere.

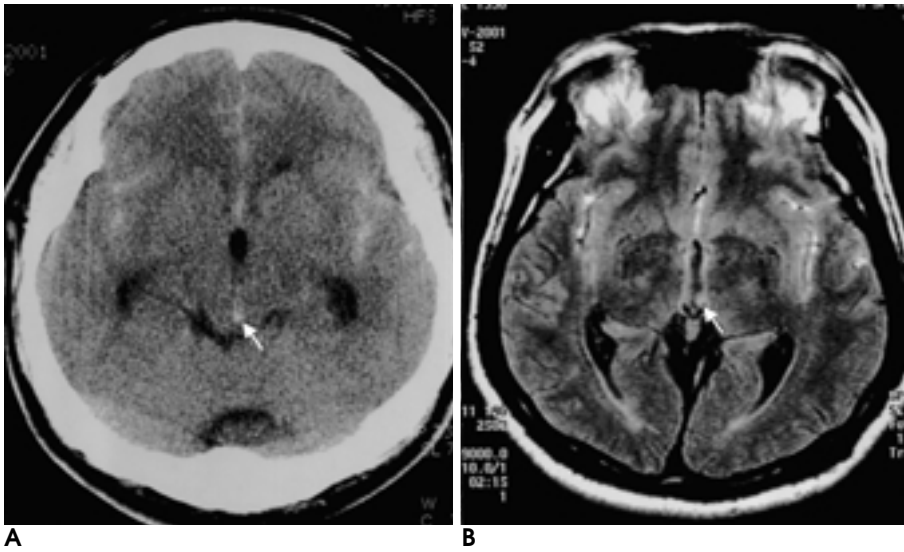


Fig. 3. A 45-year-old man with acute intraventricular hemorrhage (IVH) and subarachnoid hemorrhage (SAH). FLAIR MR images were obtained 11 hours after ictus and unenhanced CT scans were obtained 5.5 hours after CT.

A. CT scan shows hyperdense IVH (arrow) in the dependent portion of the third ventricle and hyperdense SAH in the frontal interhemispheric and both sylvian fissures.

B. FLAIR MR image shows hyperintense SAH in the frontal interhemispheric and both sylvian fissures. The conspicuity of third ventricular IVH (arrow) on FLAIR MR image is less clear than that on CT scan.

FLAIR MR CT , T2

CT , MR 가

MR 가

(8, 9). 6 가

MR T1 . CT

, T2

가 T2

MR , T2

MR 가

MR(T1 (1, 2, 10).

T2) FLAIR MR

T2 ,

MR (3, 11 - 13).

(4, 5).

T1 T2 Ogawa

(14) T1 , T2 ,

, Noguchi (4)

FLAIR

가

CT FLAIR MR CT

, FLAIR MR

(4, 5) CT FLAIR MR (cortical

FLAIR MR CT

MR CT

FLAIR MR CT

, Noguchi (15)

Woodcock (16)

가 17

Bakshi (6) CT

FLAIR MR

CT

FLAIR MR

CT MR

. CT

가 7 - 10 mm (partial vol -

MR 5 mm

ume effect)가 MR

가

FLAIR MR CT

가

CT , CT MR

1

5

CT
 FLAIR MR 가 . FLAIR MR CT
 2 1 가 MR
 가
 FLAIR MR
 (6).
 가
 가
 FLAIR MR
 ,
 가
 FLAIR MR
 CT

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5.

FLAIR MR : CT T1 MR .
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Detection of Acute Intraventricular Hemorrhage: Comparison of FLAIR MR Imaging with Unenhanced CT¹

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Purpose: To compare the usefulness of fluid-attenuated inversion recovery (FLAIR) MR imaging with that of unenhanced CT in the detection of acute intraventricular hemorrhage (IVH).

Materials and Methods: Thirty-four patients with acute IVH underwent FLAIR MR imaging and unenhanced CT within three days of the onset of symptoms. Except in one patient, all MR studies were performed after CT. The mean time intervals between CT and symptom onset and between CT and MR examinations were six and five hours, respectively. Two radiologists evaluated the detectability and conspicuity of acute IVH at FLAIR MR imaging and unenhanced CT. Positive imaging criteria in the detection of acute IVH were intraventricular hyperintensity at FLAIR MRI and hyperattenuation at CT.

Results: Acute IVH was detected in all patients at FLAIR MR imaging and in 30 (88%) of 34 patients at unenhanced CT. In 32 patients (94%), the conspicuity of IVH at FLAIR MR imaging was as good as or better than that at unenhanced CT.

Conclusion: FLAIR MR imaging was superior to unenhanced CT in the detection of acute IVH.

Index words : Brain, MR

Magnetic resonance (MR), intraventricular hemorrhage (IVH)

Magnetic resonance (MR), pulse sequences

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