

1

:

6

48

National Institutes of Health Stroke Scale(NIHSS) score

가

Mori

3

Modified Rankin scale(MRS)

0 - 3

4 - 6

:

NIHSS score
28 (58.3%)

16.9

,

24

13.5

16

48

20 (41.7%)

48 22 (45.8%)

, 26 (54.2%)

32 13 (40.6%)

16 13 (81.2%)

8

(16.7%)

48 20 (41.7%)

, 10

10 5 (50%)

:

가

가

,

.

3

30%

17%

6.4%

(1).

streptokinase, urokinase, recombinant

(5).

tissue plasminogen activator(rt - PA)

(1 - 3), streptokinase

가

가

Abciximab

(4).

3

The National Institute of Neurological Disorders and
Stroke(NINDS) rt - PA stroke study group

1994 10 2000 12 , 2 50% , 3 50% , 4 , 0-2 , 3, 4 , 6 가 24 NIHSS score 가 13 National Institutes of Health Stroke Scale(NIHSS)score (6, 7), NIHSS score가 4 3 Modified Rankin scale , 4-6 , 3 9 , 3 , 5 6 , 5 13 , 24 43 , 5 Seldinger 4 Fr. (Headhunter, Mallinkrodt, St.Louis, U.S.A.) NIHSS score, 3 , Spearman correlation test , p 0.05 (0.014 0.016 inch wire guide) , Fastracker(Boston Scientific, Boston, U.S.A.) Microferret (Cook, Bjaeverskov, Denmark) 5,000 IU score 9 25 16.9 NIHSS score 40,000 IU (bolus) 가 15 가 12 , 15 가 36 , 32 , 16 100,000 IU 200,000 IU가 (33.3%) 28 (58.3%), 350,000 IU 1500,000 IU 4 (8.4%) , Mori 3,4 () 1000 48 28 (58.3%) ml 3,000 IU 300 ml , 22 , 6

Table 1. Influential Factors and Outcome of Local Intraarterial Thrombolysis

Factors	NIHSS		Occlusion site		Recanalization grade		Symptomatic hemorrhage	
	< 15	15	ICA	MCA	High(>50%)	Low(<50%)	Yes	No
Outcome (MRS)*								
Good (0 - 3)	6	16	3	19	19	3	1	21
Poor (4 - 6)	6	20	13	13	9	17	9	17
p-value	>0.05		<0.01		<0.01		<0.01	

* Modified Rankin scale

(Fig. 1, 2), Mori 2 () NIHSS score 15 15
 20 (41.7%) , 6 16 , 6
 10 , 10 . 20 NIHSS score
 16 (Table 1).
 , 24 32 19 (59.4%)
 4 가 20 (41.7%) , 16 3 (18.8%)
 10 (,) , 13 (40.6%)
 3 Modified Rankin scale 0-3 48
 22 (45.8%) , 4-6 26
 (54.2%) (p<0.01)(Table 1).

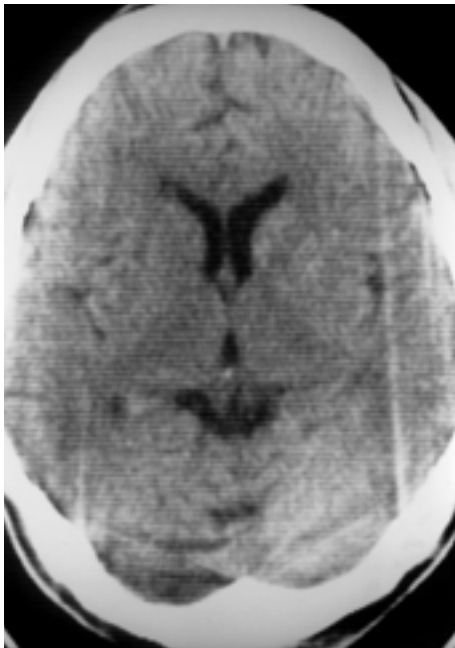


Fig. 1. A 60-year-old male with sudden left hemiparesis and dysarthria NIHSS score at admission is 17 .

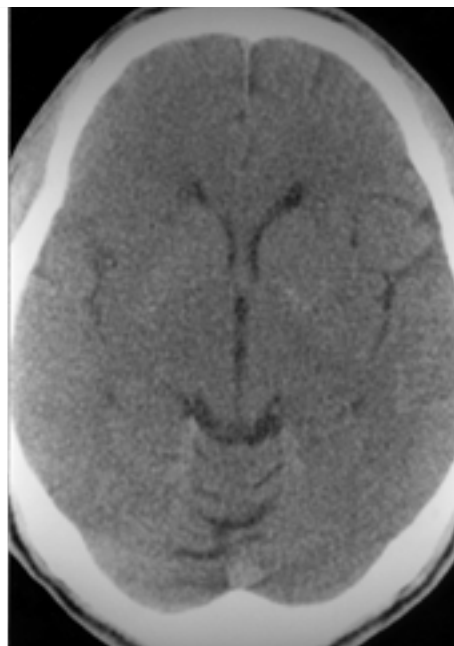
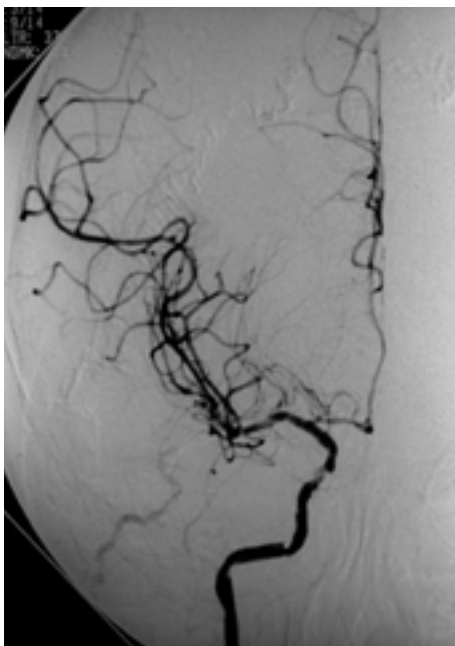
After 3 months, the patient shows good outcome (MRS score 0)

A. Initial CT scan shows no hemorrhage and infarction.

B. Lateral view of right common carotid angiogram shows nearly total occlusion of right internal carotid artery.

C. Posterior-anterior view of left internal carotid angiogram after post-urokinase therapy (total 600,000IU) shows good visualization of distal ICA.

D. CT scans after thrombolytic therapy reveals no hemorrhage.



:
 (67.8%), 20 3 (15%) 28 19 8 (16.7%)
 , 9 (32.2%), 17 (85%) 24 NIHSS score 0 25 13.5
 ($p<0.01$)(Table 1). 가
 ($p<0.01$) (Table 1). 10 5 가
 (50%) 3 3

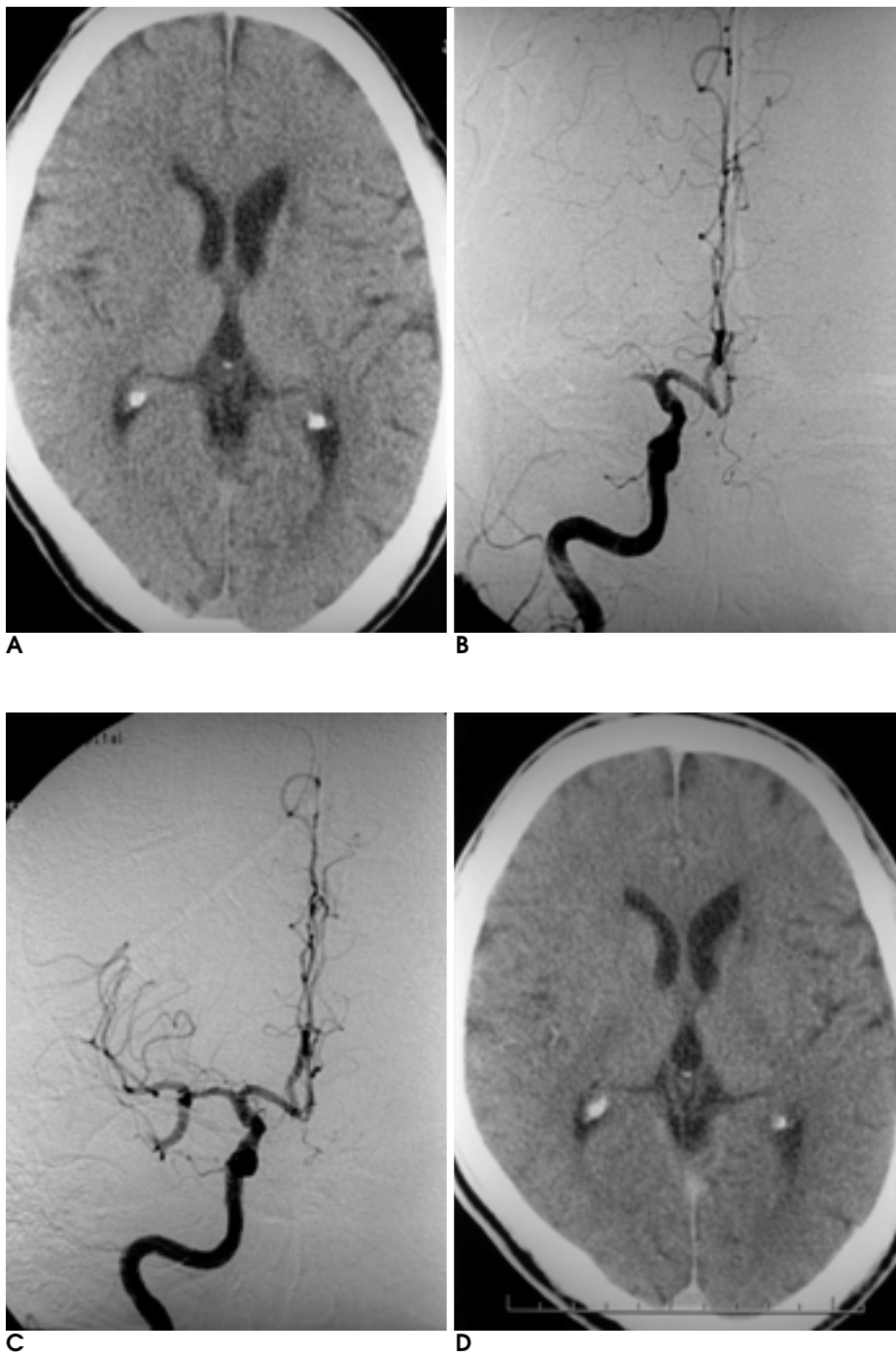


Fig. 2. A 66-year-old male with sudden left hemiparesis NIHSS score at admission is 9. After 3 months, the patient shows good outcome (MRS score 0)
A. Initial CT scan shows no acute hemorrhage and infarction. Focal, chronic lacunar infarction is noted in left basal ganglia.
B. Right internal carotid angiogram shows total occlusion of middle cerebral artery.
C. Angiogram after post-urokinase therapy(total 100,000IU) shows good recanalization.
D. CT scans after thrombolytic therapy reveals no hemorrhage.

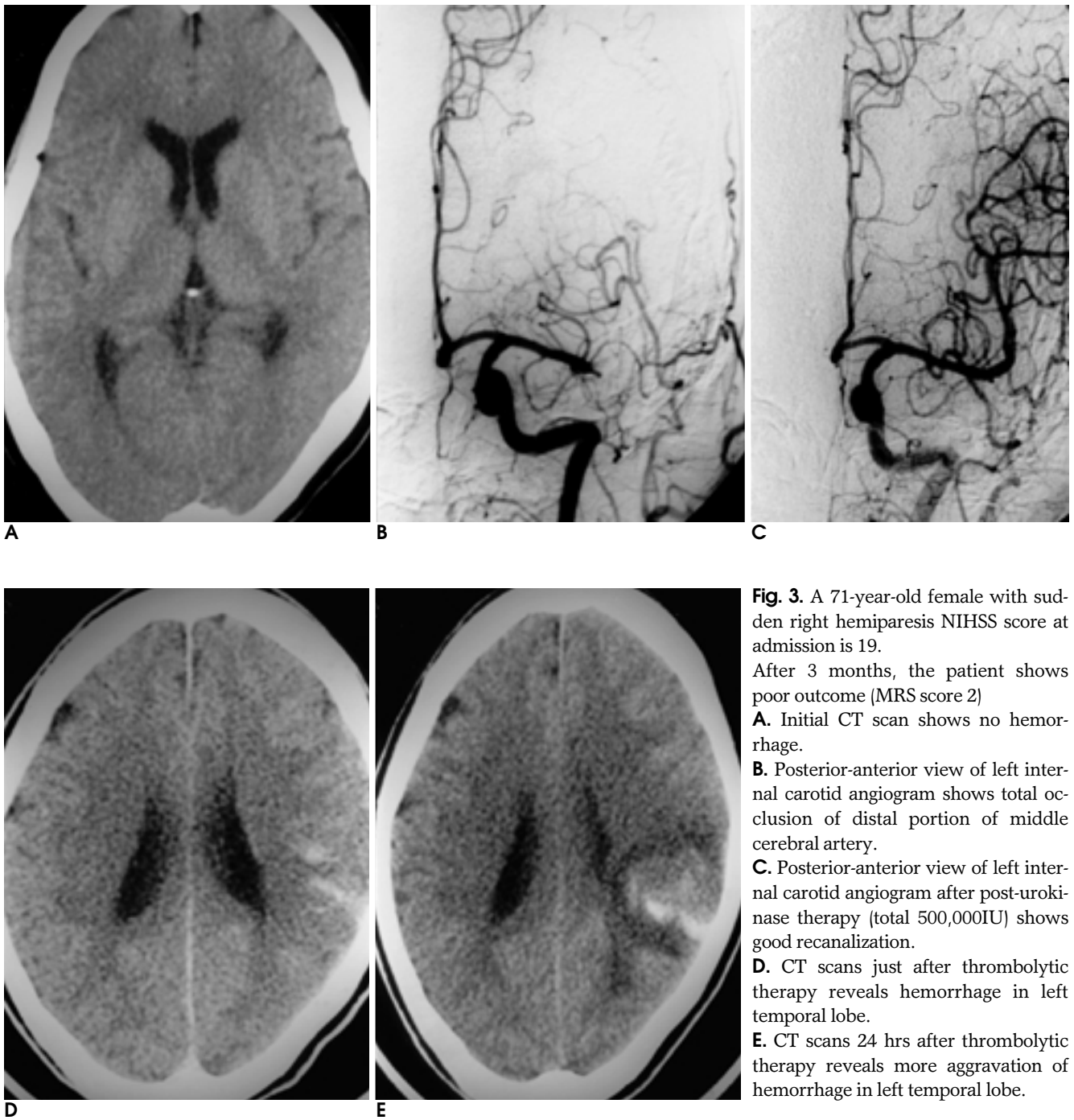


Fig. 3. A 71-year-old female with sudden right hemiparesis NIHSS score at admission is 19.

After 3 months, the patient shows poor outcome (MRS score 2)

A. Initial CT scan shows no hemorrhage.

B. Posterior-anterior view of left internal carotid angiogram shows total occlusion of distal portion of middle cerebral artery.

C. Posterior-anterior view of left internal carotid angiogram after post-urokinase therapy (total 500,000IU) shows good recanalization.

D. CT scans just after thrombolytic therapy reveals hemorrhage in left temporal lobe.

E. CT scans 24 hrs after thrombolytic therapy reveals more aggravation of hemorrhage in left temporal lobe.

(1). , NINDS rt-PA stroke study group

50% 3
125 48%
rt-PA 125 170
4%

Muir (11)

NIHSS score

. NIHSS score

(10).

13

(6, 7).

43

NIHSS

6

가

(2),

score가 20

20

가

가

NIHSS score

:
 (12). 24 NIHSS score 7~4
 (12, 13), penum -
 bra
 NIHSS score 15
 , 15 15
 가
 (16).
 가 가
 (21, 22).
 (2, 14, 16). Jahan (17)
 가 (5, 12 - 15). Sasaki (5)
 44
 (M1)
 (basilar artery) 69%
 78%
 , 20%
 60%
 , 20%
 Huang - Hellinger (15) 16
 5 (31%)
 (100%)
 . Jansen (16) 32
 17 (53%)
 (clot)
 , 32 , 16
 19 (59.3%),
 6 (37.5%)
 가
 Jahan (17) TPA (TIMI)
 (18),
 9 7
 1500,000IU Mori
 5 , 3
 , 4
 23 17 (74%)
 28 19 (68%)
 ,
 17% 56% (2, 16,
 19, 20). (hemorrhagic infarc -

tion) (parenchymal hematoma)
 (3),
 (clot)
 가 가 가
 (21, 22).
 (2, 14, 16). Jahan (17)
 ,
 24
 20 (41.7%)
 , 10
 10 5 (50%)
 가

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Influential Factors of Clinical Outcome of Local Intra-Arterial Thrombolysis using Urokinase in Patients with Hyperacute Ischemic Stroke¹

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Purpose: To evaluate the clinical outcome and other relevant factors in cases where local intra-arterial thrombolysis (LIT) is used for the treatment of hyperacute ischemic stroke.

Materials and Methods: Forty-eight hyperacute ischemic stroke patients were treated by LIT, using urokinase, within six hours of ictus, and for evaluation of their neurological status, the National Institutes of Health Stroke Scale (NIHSS) score was used. Angiographic recanalization was classified according to Mori recanalization grades. Three months after LIT, the outcome was assessed by clinical examination using the modified Rankin scale (good outcome: RS=0 - 3; poor outcome: RS=4 - 6). In all patients, the findings of pre- and post-LIT CT, and angiography, as well as neurological status and hemorrhagic complications, were also analysed.

Results: Thirty-three patients had occlusions of the middle cerebral artery (MCA), and 15, of the internal carotid artery (ICA). The NIHSS score averaged 16.9 at the onset of therapy and 13.5 at 24 hours later. Successful recanalization (Mori grade 3,4) was achieved in 28 (58.3%) of 48 patients, but in 20 (41.7%) the attempt failed. Twenty-two (45.8%) of the 48 patients had a good outcome, but in (54.2%) the outcome was poor. Thirteen (40.6%) of 32 patients with MCA occlusions and 13 (81.2%) of 16 with ICA occlusions had a poor outcome. Eight patients (16.7%) died. Overall, hemorrhages occurred in 20 (41.7%) of 48 patients, with symptomatic hemorrhage in ten. Five (50%) of these ten died.

Conclusion: LIT using urokinase for hyperacute ischemic stroke is feasible; patients with MCA occlusions had better outcomes than those with ICA occlusions. Hemorrhagic complications of LIT were frequent, and in cases of symptomatic hemorrhage a fatal outcome may be expected.

Index words : Brain, ischemia
Brain, blood flow
Thrombolysis
Urokinase

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