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(focal) 3)23)27), urokinase , 가 7)9)21), 6 11)16)31), 가 1)5)22)24)28)29), Pulsinelli 24) 5)22) 가 , Woo 28) 29) 가 가 Candelise 1) 가 가 가

재료 및 방법

1. 실험 동물, 실험군의 분류 및 재료

9 10 , 250 350g (Sp - rague - Dawley rats) 60 (,), 24 (), 50 () (glucose) 17) () 15 (sh - ort - acting) (Humulin R,) 15) 12) 1.7unit/kg , 50% 가 2g/kg 2 (a), 4 (b LeMay 18)) 6 (c) 5 18)25) 12)30) (Table 1). (insulin) 2, 3, 5 - triphenyltetrazolium chloride 가 , Mori 19) (TTC)(Sigma, U.S.A.) 6

Table 1. Summary of experimental protocols

Groups*	Feeding	Treatment	Duration of ischemia(No. of animal)		
			2 hours(a**)	4 hours(b**)	6 hours(c**)
(N=15)	Fed	None	5	5	5
(N=15)	Fasted	None	5	5	5
(N=15)	Fed	Insulin 50 minutes prior to ischemia	5	5	5
(N=15)	Fed	Glucose loading during ischemia	5	5	5

* : , allowed free access to food until ischemic insult ; , fasted for 24 hours prior to ischemic insult ; , fed but received intraperitoneal injection of 1.7unit/kg of insulin 50 minutes before the onset of ischemia ; , fed and received intraperitoneal injection of 2g/kg of 50% glucose during ischemia.

** : Subgroup.

2. 실험 방법

1. 동물
 pentobarbital 0.05mg/kg
 가
 가
 (Topcon OMS 80,
 Japan)
 3cm
 가
 10mm
 Sugita temporary clip(Mizuho,
 Japan)
 1mm
 가
 25 gauge
 PO₂, PCO₂, pH(CIBA Corning 280 Blood Gas System,
 U.S.A.)
 (Hewlett Packard 78354A, U.S.A.)
 PO₂, PCO₂, pH
 가
 (0.06 0.1cc)
 (Super Glucocard™, blood glucose test me-
 ter, Japan)
 2, 4, 6
 25 ± 1
 36.5
 Nagasawa Kogure²⁰⁾ Yip³⁰⁾

2cm
 가
 4 (4 - 0 ny -
 lon silk. Dafilon, U.S.A.)
 가 25mm
 5mm
 가
 가 18mm
 가 1mm
 가
 18mm 4 - 0
 16mm
 Sugita temporary clip(Mizuho, Japan)

2, 4, 6
 Sugita te -
 mporary clip
 3
 3. 뇌경색 크기 측정

14)23)
 3
 pentobarbital 0.05mg/kg
 가
 3mm 8
 37 2% TTC
 10%
 30
 Computer Image Analysis Sys -
 tem(IBAS 2000, Kontron, Germany)
 TTC

8
 8
 100

4. 통계처리

one - way ANOVA test

성 적

1. 심폐기능 측정치

가 가
 가
 가
 pH
 7.39 ± 0.01, 7.40 ± 0.02,

7.40 ± 0.02, 24 ± 13mg%, 265 ± 25mg%
 7.34 ± 0.02, 7.33 ± 0.03, 277 ± 13mg% 가
 7.35 ± 0.05, 150 ± 15mg%,
 7.34 ± 0.03, 7.38 ± 0.02, 227 ± 17mg%, 306 ± 19mg%
 , 7.37 ± 0.02, 362 ± 28mg%
 7.37 ± 0.03, 7.36 ± 0.02
 (acidosis) (Table 2).

가 가 가 2. 뇌혈류 차단 기간에 따른 각군간 전체 평균 뇌경색 부피
 의 비교
 2 a (sub -
 group)
 가 가 7.1 ± 0.3%,
 가 (p<0.05).
 24 94 ± 4 b 4.2 ± 0.63%,
 60mg%, 113 ± 13mg%, 107 ± 80mg% 3.6 ± 0.52%, 3.9 ± 0.42% 8.4 ± 0.
 110 ± 60mg% 41% , , (p<0.05),
 123 ± 12mg%, 150

Table 2. Mean arterial blood pressure, arterial blood gas analysis, body temperature and blood glucose levels in experimental animals

Group				
MABP(mmHg)*				
Pre-ischemia	100 ± 5	95 ± 5	96 ± 4	92 ± 4
Ischemia	115 ± 6	100 ± 8	95 ± 7	96 ± 4
Post-ischemia	90 ± 6	90 ± 5	90 ± 7	90 ± 5
Arterial pH*				
Pre-ischemia	7.39 ± 0.01	7.34 ± 0.02	7.34 ± 0.03	7.37 ± 0.02
Ischemia	7.40 ± 0.02	7.33 ± 0.03	7.38 ± 0.02	7.37 ± 0.03
Post-ischemia	7.40 ± 0.02	7.35 ± 0.05	7.38 ± 0.02	7.36 ± 0.02
Arterial PaCO ₂ (mmHg)*				
Pre-ischemia	47 ± 2	48 ± 2	48 ± 2	49 ± 1
Ischemia	40 ± 4	40 ± 3	42 ± 2	45 ± 3
Post-ischemia	43 ± 2	40 ± 3	42 ± 2	44 ± 4
Arterial PaO ₂ (mmHg)				
Pre-ischemia	85 ± 8	85 ± 5	86 ± 3	86 ± 3
Ischemia	95 ± 8	100 ± 5	93 ± 5	92 ± 4
Post-ischemia	88 ± 5	103 ± 8	96 ± 4	90 ± 5
Body temperature()				
Pre-ischemia	37.01 ± 0.06	36.9 ± 0.11	36.9 ± 0.07	36.9 ± 0.06
Ischemia	37.01 ± 0.09	37.0 ± 0.05	36.9 ± 0.10	37.0 ± 0.07
Post-ischemia	37.0 ± 0.05	36.9 ± 0.08	36.9 ± 0.09	37.1 ± 0.52
Blood glucose(mg/dl)*				
Pre-ischemia	113 ± 13	94 ± 60	107 ± 80	110 ± 60
Ischemia	265 ± 25	123 ± 12	150 ± 13	277 ± 13
Post-ischemia	306 ± 19	150 ± 15	227 ± 17	362 ± 28

Values are expressed as the mean ± standard deviation.

* : p<0.05 by one-way ANOVA test.

Abbreviation : MABP, mean arterial blood pressure.

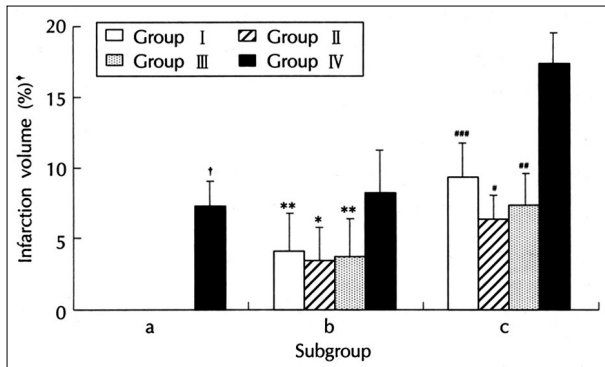


Fig. 1. Bar graph illustrating the comparison of the average percentage of the infarction volume among groups. a : 2 hours of infarction duration ; b : 4 hours of infarction duration ; c : 6 hours of infarction duration. † : more than Group I or Group II (p<0.05) ; * : less than Group I or Group II (p<0.05) ; ** : less than Group I or Group II (p<0.05) ; # : less than Group I or Group II (p<0.05) ; ## : less than Group I or Group II (p<0.05) ; ### : less than Group I or Group II (p<0.05).
 † : Sum of infarction volume (infarction size × thickness) of each slice of brain
 ‡ : Sum of total volume (total size × thickness) of each slice of brain × 100

(p<0.05).
 6.1 ± 0.22%, 7.3 ± 0.41%, 9.4 ± 0.52%, 17.2 ± 0.56%
 (p<0.05), (p<0.05), (p<0.05) (Fig. 1).

가 가 , 가 가 , 가 가 .

고 찰

Pulsinelli²³⁾ 20 , (mannitol) , 가 . Welsh²⁷⁾ 가 15 30

triphosphate : ATP (adenosine triphosphate), phosphocreatine (lactate) , Chopp³⁾ , pH , pH가 , pH가 , (permanent focal cerebral ischemia) , 7)9)21) , 11)16)31) , De Courten - Myers⁷⁾

Nedergaard Diemer²¹⁾ , 가

가 , 가 Kraft¹⁶⁾ 가

Zasslow³¹⁾ 50% , 가 ,

17)30) . Yip³⁰⁾

가

가

24 , .

24 , 45 , 50 1.7unit/Kg
Yip³⁰⁾

24 가 가

2 , 4 6

가 가

가 가

ATP

결 론

2가 가 가

(free radical) 가 60

가³⁾¹⁴⁾²⁷⁾,

⁸⁾¹³⁾. Hoffman¹⁴⁾

(gerbil) 5 10 24 , 50

pH, ATP, 1.7unit/kg

phosphocreatine lactate , 50% 2g/kg

pH가 , lactate , ATP 4 - 0

phosphocreatine

가 cl -

Duckrow⁸⁾ strept - ip

ozotocin

10 μm/ml 가 (regional) 가 7% TTC Comp -

uter Image Analysis System

2 , 4 6 24

LeMay¹⁸⁾ 가 가 , 가

가 가

가

Voll Auer²⁶⁾

(receptor)

(neurotransmitter)

- : 1998 5 15
- : 1998 10 19
- :

700 - 712 194

24 가 : 053) 250 - 7334, : 053) 250 - 7356

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