

LONG-TERM CLINICAL OUTCOME FOLLOWING APPROPRIATE TREATMENT ACCORDING TO EMERGENCY MR IMAGING AND INTENSIVE REHABILITATION OVER THE THREE MONTHS FOR SYMPTOMATIC HYPERACUTE ISCHEMIC STROKE PATIENTS

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【Purpose】

To investigate effectiveness of appropriate treatment according to probable stroke subtypes by emergency MR imaging and intensive rehabilitation over three months for symptomatic hyperacute ischemic stroke patients

【Patients and Methods】

The study period was from 1 Oct 2006 to 30 Sep.2007.

Inclusive criteria of retrospective analysis were as follows;

- 1)patients who presented neurological symptoms of one or more of NIHSS score on admission,
- 2) patients who underwent emergency MR imaging for accurate diagnosis for ischemic and vascular lesions,
- 3)patients in whom appropriate treatment was started within 3 hours from stroke onset,
- 4)patients who underwent intensive rehabilitation over 3 months.

Patients' age, sex, treatment modality, NIHSS on admission, NIHSS on seven days, and mRS at 3 months were assessed.

The patients took DWI,T2WI,T2*WI,3D time-of-flight MR angiography (TR/TE/flip angle,28/6.9/20°),and PWI(rMMT,rCBV,rCBF)by emergency MRI(Signal Echo Speed 1.5T GE Yokogawa medical system, Tokyo, Japan).

Initial treatment was determined respectively based on emergency MRI.

Initial treatment options were recanalization therapy(intravenous rt-PA therapy and endovascular therapy) and conservative therapy(antiplatelet drug, anticoagulant drug,Neuroprotectant drug, and rehabilitation (1hour per day)).

If intensive rehabilitation after the treatment at the Emergency hospital was indicated, the patients were transferred to the hospitals specialized for rehabilitation. The hospitals provided the patients with maximal hours of 3 of rehabilitation per day until 6months from stroke onset by using National Health Insurance.

【Result】

Among 321 ischemic stroke patients admitted to our hospital within 72 hours from stroke onset during study period, 63patients were analyzed. NIHSS score on admission ranged from 1 to 34(Table1,Figure1).

Immediately after emergency MR imaging, all patients were treated appropriately. 11 patients (17.4%) underwent emergency recanalizing therapy (rt-PA or endovascular) for large vessels occlusion(Table2). Median NIHSS score was improved from 7 on admission to 3 at seven days (p<0.001) (Figure2). After intensive rehabilitation, 31patients (49.2%) had no disability at 3 months(0 or 1 of modified Rankin scale) and mortality at 3 months was 14.3 % (Figure4). Especially, median mRS of patients who transferred to rehabilitation hospital was improved from 5 to 3 (P=0.003,Wilcoxon signed rank test)(Figure5)

【Conclusion】

Early appropriate therapy immediately after emergency MR imaging improves neurological symptoms at seven days and subsequent intensive rehabilitation improves clinical outcome at three months.

Age years	73±11
Male n(%)	38(60.3)
NIHSS score	
Median	7
Minimum	1
Maximum	34
Medical History	
Stroke n(%)	7(11.1)
Diabetes n(%)	18(28.6)
Hypertension n(%)	38(60.8)
Hyperlipidemia n(%)	25(39.7)
Smoking in year before stroke n(%)	4(6.3)
Atrial fibrillation n(%)	34(54.0)
ischemic heart disease n(%)	11(17.5)
Congestive heart disease n (%)	5 (7.9)

Table 1.Basal characteristic of patient N=63

Recanalization therapy	11(17.4)
intravenous rt-PA	4
Endovascular therapy	7
Localized intra-arterial fibrinolysis	3
Clot Removal therapy	2
Percutaneous transluminal cerebral balloon angioplasty	2
Conservative therapy	52(82.6)

Table2. Initial treatment N(%)

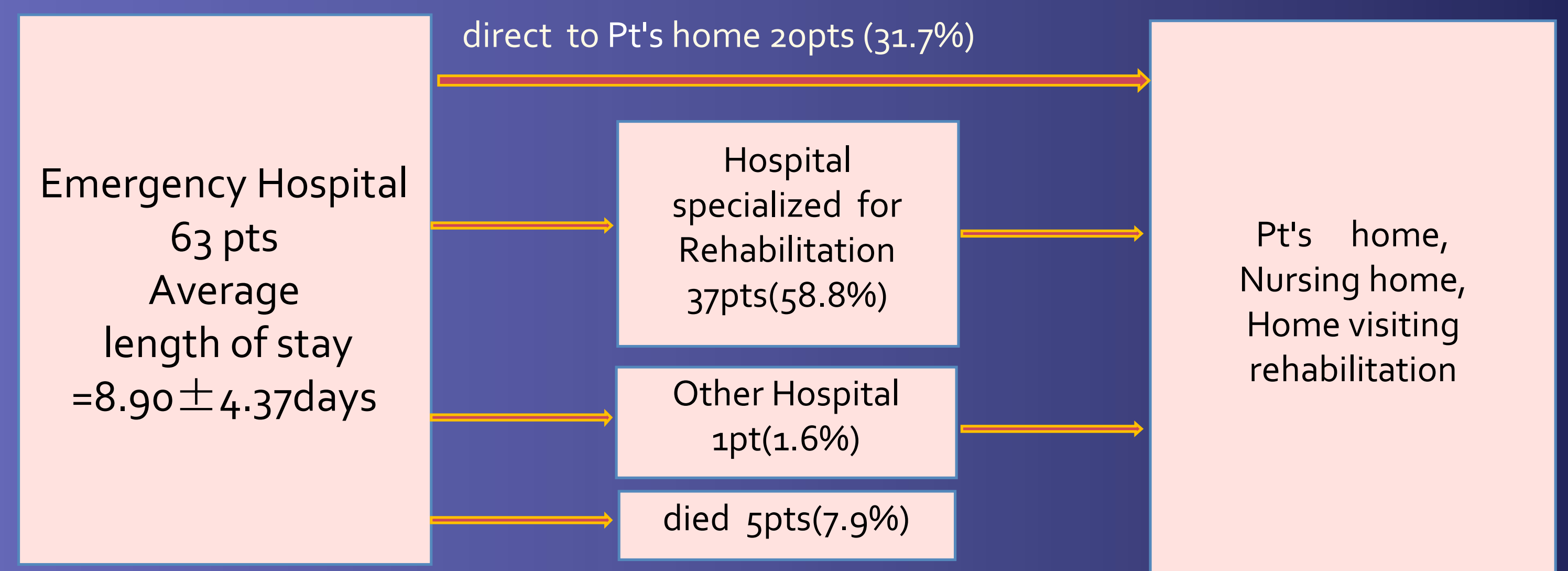


Figure3.Places after discharge from Emergency hospital

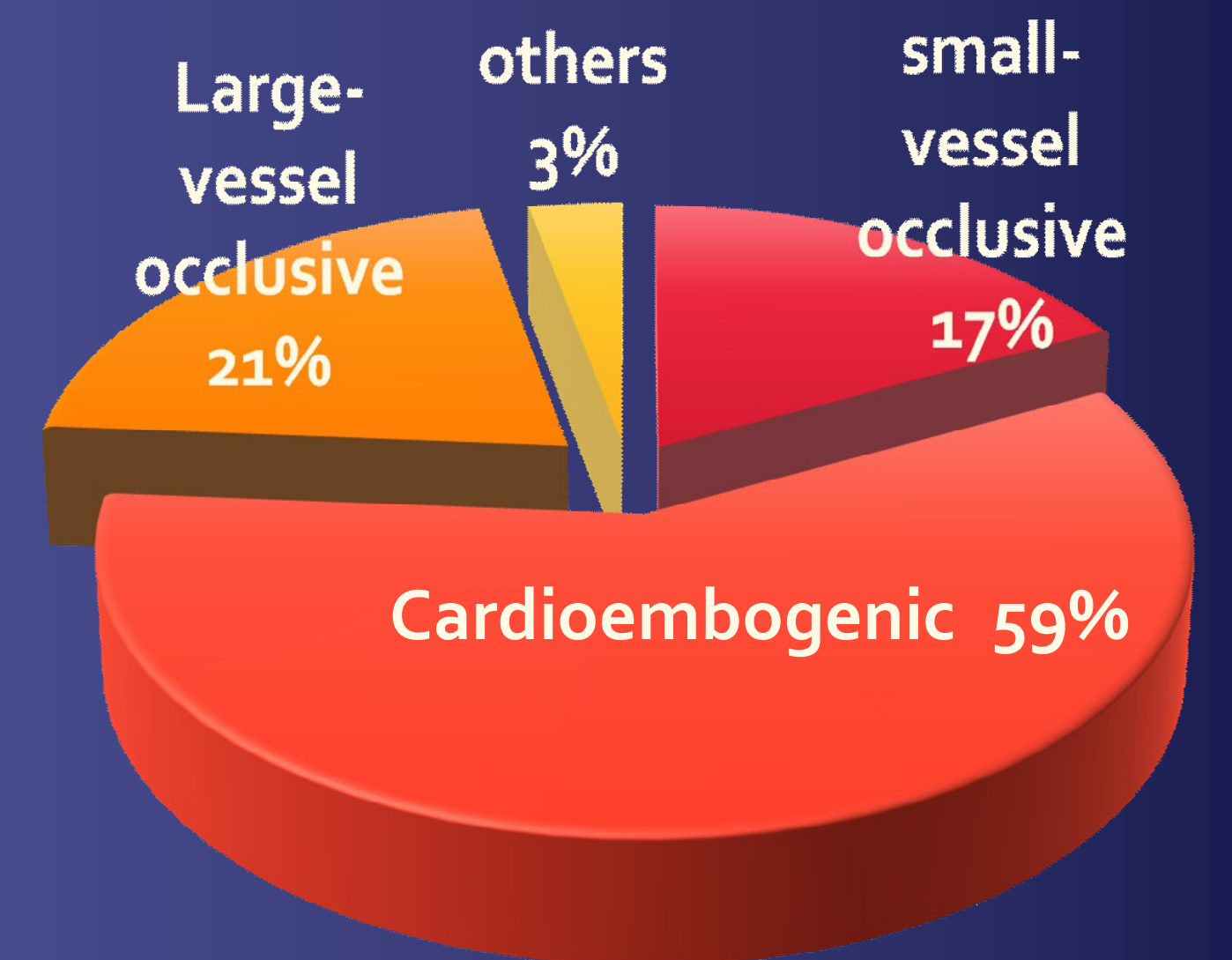


Figure 1.Stroke subtype

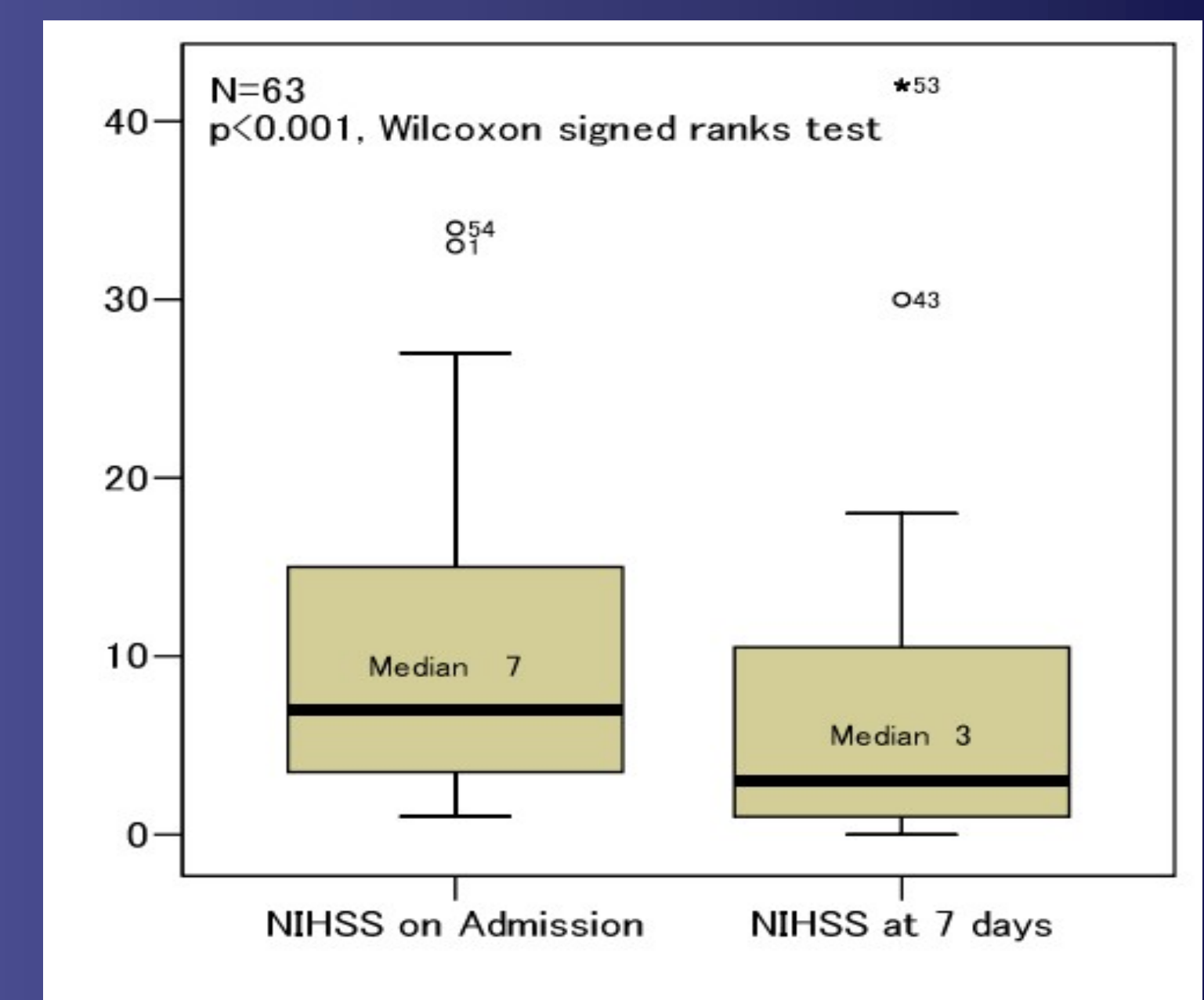


Figure2. Outcome (NIHSS score)at 7 days

	mRS 0-1	2-3	4-5	death
Admission	9(14%)	14 (22%)	40 (64%)	
Discharge	22 (35%)	15 (29%)	21 (33%)	5 (7%)
3 months	31 (49%)	8 (13%)	15 (24%)	9 (4%)

Figure4. Outcome (mRS) at 3 months N=63

	mRS 0-1	2-3	4-5	death
Admission to Emergency Hospital	2 (5%)	5 (14%)	30 (81%)	
Admission to Rehabilitation Hospital	4 (12%)	12 (32%)	21 (56%)	
3 months	12 (32%)	7 (18%)	14 (38%)	4 (12%)

Figure5. Outcome(mRS) at 3 months of patients who went to the Rehabilitation Hospital from Emergency Hospital N=37

	t-PA group (t-PA for acute ischemic stroke NEJM Dec 14,1995)	Control group (t-PA for acute ischemic stroke NEJM Dec 14,1995)	This study
No. of patients	168	165	63
Time to treatment after stroke onset	<3 hours	<3 hours	<3 hours
Diagnostic images	Head CT	Head CT	Head CT+MRI
Recanalization therapy	168(rt-PA i.v)	0(Conservative therapy only)	11(4rt-PA i.v)
Small-vessel occlusion	14%	9%	17%
Large-vessel occlusion	39%	45%	22%
Cardio-embolic	45%	44%	58%
Others	2%	3%	3%

Table 3. Comparison to the study of t-PA for acute ischemic stroke NEJM Dec 14,1995

	mRS 0-1	2-3	4-5	death
t-PA group	39%	21%	23%	17%
Control group	26%	25%	27%	21%
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Figure6. 3 months outcome(mRS) compared to the study of t-PA for acute ischemic stroke NEJM Dec 14,1995

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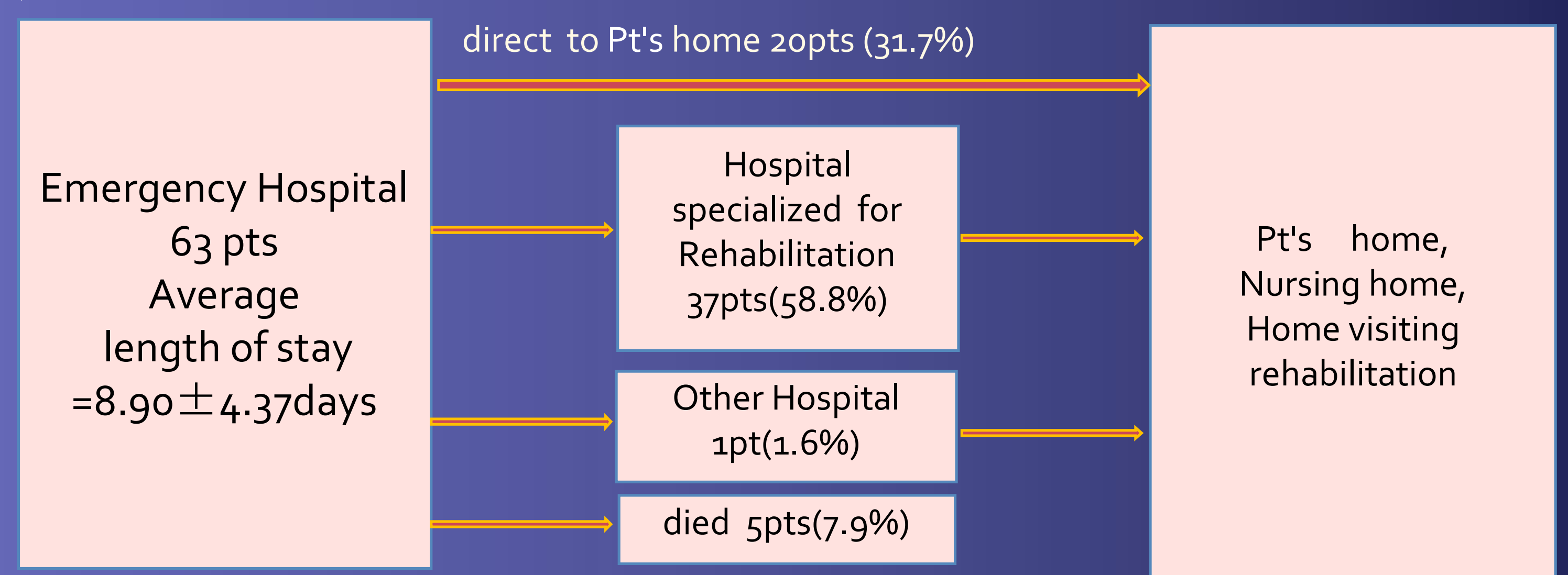


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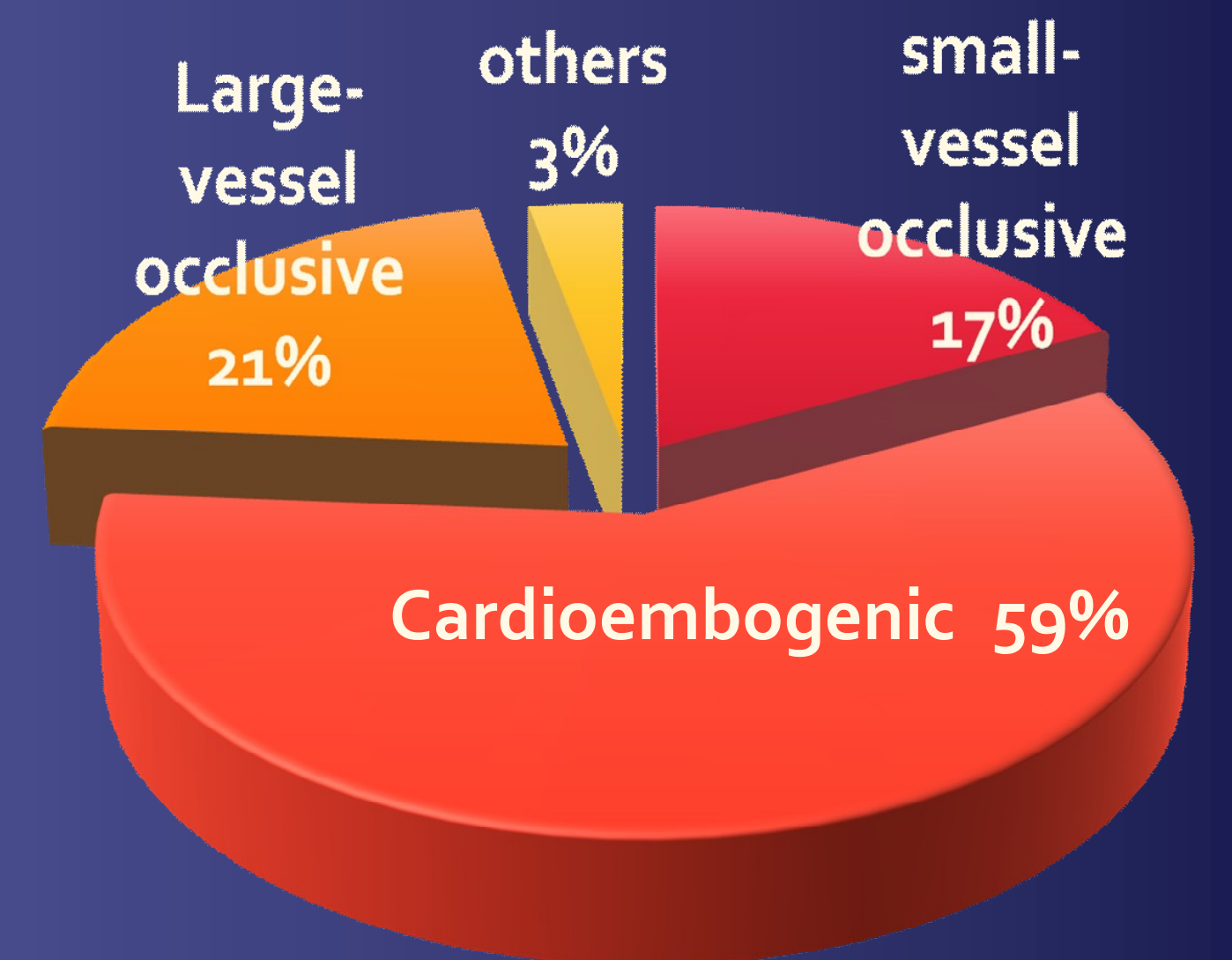


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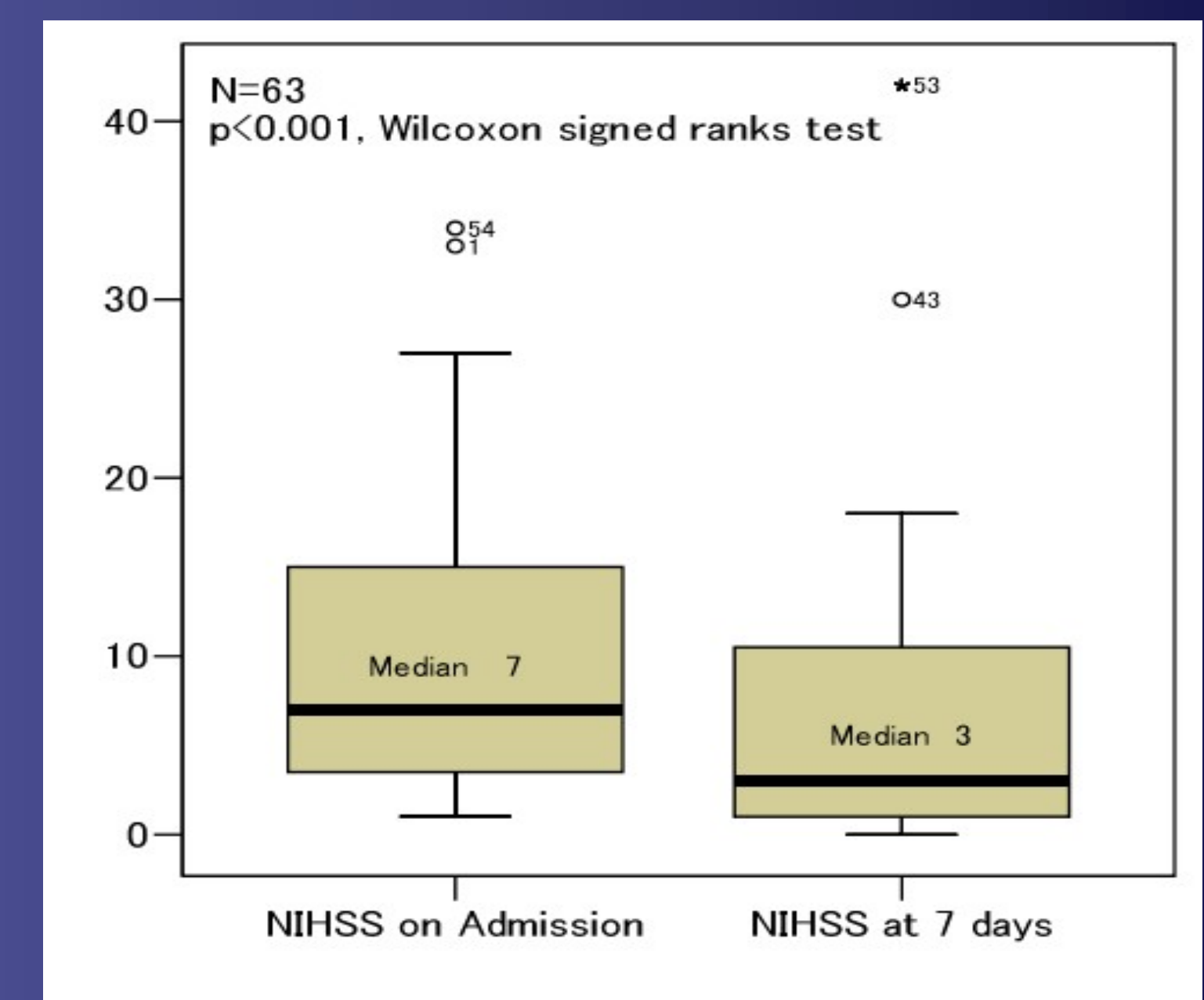


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