Intra-arterial Thrombectomy Nursing Care For Acute Ischemic Stroke In Taiwan

Ching-Wei Lin* ¹, Hui-Chi Huang ¹, Jui-Yao Tsai ¹, Shu-Yuan Ho ¹, Ying Liang ¹ ¹ Department of Nursing, Taipei Veterans General Hospital, Taipei, Taiwan

Background

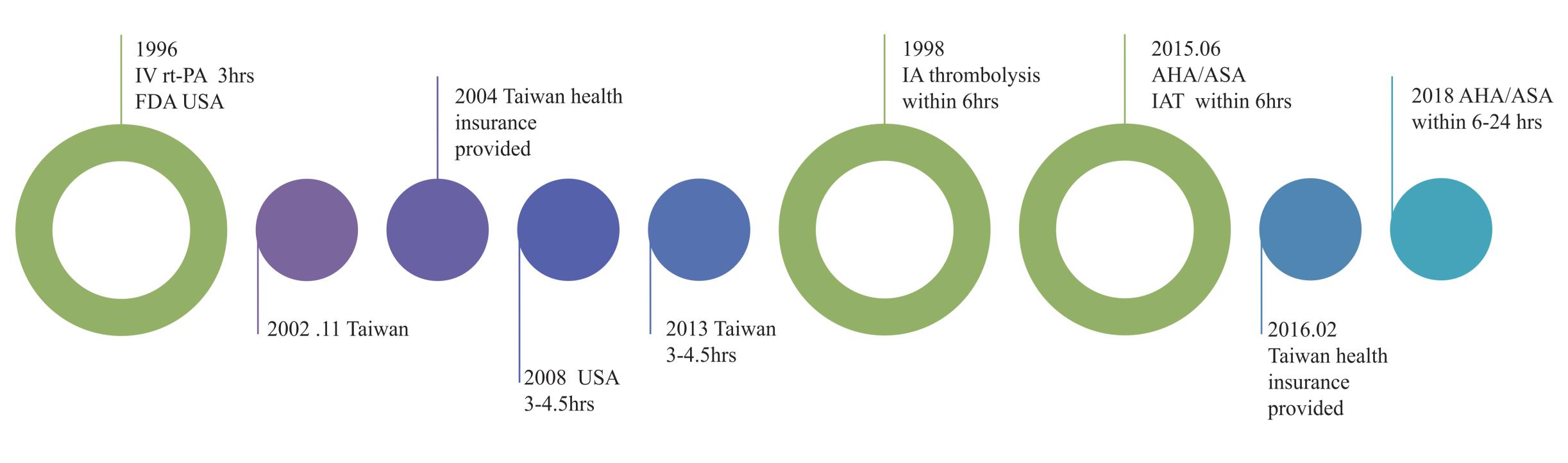


Figure 1. Development of treatment for AIS

AIS=Acute Ischemic Stroke. IV-rtPA= Intravenous recombinant tissue plasminogen activator. IAT= Intra-arterial thrombectomy.

Rapid assessment in the emergency department

Hyperacute care



•FAST

•History of symptoms and onset time?

Past medical history

 Onset within 20 hours Stroke code

•ABC assessment – treat if necessary

•NIHSS score & Baseline neurological

•Observations:V/S \ GCS \ Glucose

•On IV *2 & draw blood : CBC, PT, aPTT, Biochemistry

(liver, kidney function), electrolytes,

Brain imaging

•EKG Take BW

Stabilization

Oxygen: should be provided to maintain oxygen saturation >94%

Blood pressure:

—Hypotension and hypovolemia should be corrected to maintain systemic perfusion levels to support organ function ■SBP lowered to < 185 mm Hg and DBP < 110 mm Hg prior to alteplase

If EVT planned and no alteplase administered it is reasonable to maintain ≤185/110 mm Hg

BT: >38°C should be identified and treated, and antipyretic medications

Blood glucose: 140 to 180 mg/dL, Treat if < 60 mg/dl

Patients cared for before, during and after the procedure

IV Administration of Alteplase

Establish patient weight and calculate dose: Infuse 0.9 mg/kg(maximum dose 90mg) over 60 min, with 10% of the dose given as a bolus over

■ Admit the patient to an intensive care or stroke unit for monitoring

■ Monitor side-effects/complications: Allergic rash, Bronchospasm, Severe Hypotension, Anaphylactic reaction ■Bleeding/ICH (including bruises, gingival oozing)

Post IV Thrombolysis Management

Frequent neuro assessment

Avoid all treatments/procedures with associated risk of bleeding

■ If patient appears to be a emergent large vessel occlusions (ELVOs) and going for IAT

IA thrombectomy

Neurovascular assessment

Puncture -right and left dorsalis pedis, posterior tibial

Blood pressure maintain

Post procedure - Immediate postprocedure neuro exam, NIHSS, Groin site assessment

Stroke care units/Acute Care

■ Neurological assessment: NIHSS Prior and post procedure 2 & 24hrs or get worse,

Continue focused Neuro assessments : GCS, MP, Pupil q2h

Vital Signs(BP) : Blood Pressure control

■Hemodynamic: Give NS/500 cc keep IV route, EKG monitor for Cardiac Arrhythmias, Record I/O

Airway : Weaning of ventilator

Focused iv rtPA protocol assessments

Check BP 15 min for 2 hours→30 min for 6 hours→1 hr for 16 hours,NPO for 24 hours

Absolute bed in 24 hours

Repeat Brain imaging at 24 hours before antiplatelet therapy

■Pay attention to the tendency of bleeding, Avoid invasive treatment

Focused post IAT assessment

■BP/Bridging: same IV rtPA,IAT→15 min for 2 hours→30 min for 2 hours → 1 hr for 20 hours

■ Groin Site Management: Head of the bed may be raised to 30 degrees, Sandbag pressurized puncture site 2~3 hours, Assess puncture site 30 minutely for 4 hours than hourly until ambulation, Absolute bed in 6 hours, Avoid flexing or hyperextending the affected extremity for 12 to 24

hours ,Transparent dressing, Extremity sensation, color, pulses, edema, temperature, and movement. ■ Distal Pulses: Pulses palpable and comparable to opposite leg, No change in pulses from pre procedure, Peripheral Pulses first 24~48 hours ■ After 24 hours F/U Brain CT, Brain MRI

► Femoral Access: Complications May occur within first 24~48 hours post sheath removal

■ Monitor site for Bruising, groin hematoma/excessive bleeding, Retroperitoneal Bleed, Pseudo-aneurysm or arteriovenous fistula, Infection

Complication avoidance and management

- Groin Site Assessment: Red/purple skin discoloration, Visible swelling, Bulging mass, Hardening around site, Significant tenderness in the inguinal area, Pain with movement or rest in groin
- Management: Monitor q15min assessments Vitals, Mark the area, Active bleeding-hold direct pressure at least 20 min right above puncture Anticipate intervention if severe
- Pseudoaneurysm
- Assessment : Pulsatile bruit and groin site pain and swelling
- : Establish hemostasis, Reestablish arterial flow, Vascular repair, Initiate blood transfusion, Thrombin injection, Direct surgical repair of symptomatic pseudoaneurysms, Watchful waiting (if stable)
- Retroperitoneal Bleed
- Identify or suspect: Abdominal distention, Hypotension/tachycardia, Moderate to severe back pain with Ipsilateral flank pain, Ecchymosis (late), Decrease in hemoglobin and hematocrit are late signs
- Diagnostic : CT scan or Ultrasoundof Abd/Pelvis
- •Management: Hydration, Prolong bedrest, Stop anticoag/antiplt, Sever: blood transfusion or surgical intervention

Contrast-induced nephropathy

- Monitor Kidney Function: Hydration/give intravenous infusion Charged
- Adjustment of electrolyte imbalance: Creatinine typically normalizes by 7 to 10 days.
- Monitor for Fluid Overload/CHF: Watch for fluid overload especially in patients with cardiac co-morbidities
- Stop the use of nephrotoxic drugs: High dose N-Acetylcysteine (NAC)

Cerebral Re-perfusion Syndrome

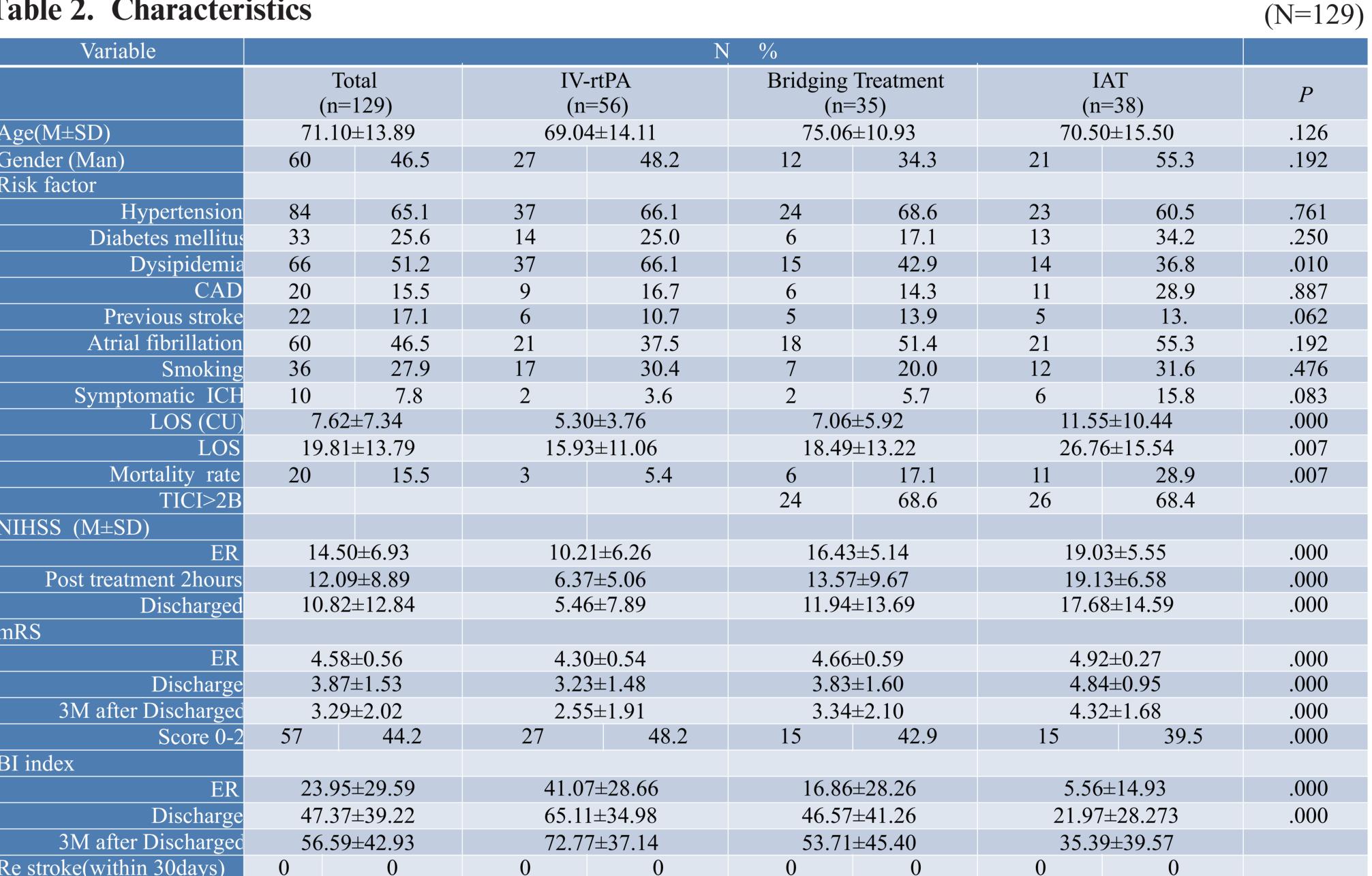
- Triad of symptoms: Ipsilateral headache, Contralateral neurological deficits, Seizures
- Management: Blood pressure control is the most important factor in preventing reperfusion syndrome, Early identification and control of hy pertension, Emergent head CT, Neurosurgery consultations

Bridging treatment: Combined IV-rtPA and IAT

Table 1. Performance Measures In Acute Ischemia Stroke In Taipei Veterans General Hospital

2017	2018
5.62%	4.44%
100%	94.67%
100%	100%
92.86%	65.2%
0%	4.35%
4.27%	5.49%
2.74%	3.79%
	5.62% 100% 100% 92.86% 0% 4.27%

Table 2. Characteristics



TICI=Thrombolysis in Cerebral Infarction, TICI Scale: Grade 0= no perfusion, Grade 1 = penetration with minimal perfusion, Grade 2 = partial perfusion, Grade 2A = only partial filling (less than two-thirds) of the entire vascular territory is visualized,Grade 2B = complete filling of all of the expected vascular territory is visualized but the filling is slower than normal, Grade 3 = complete perfusion

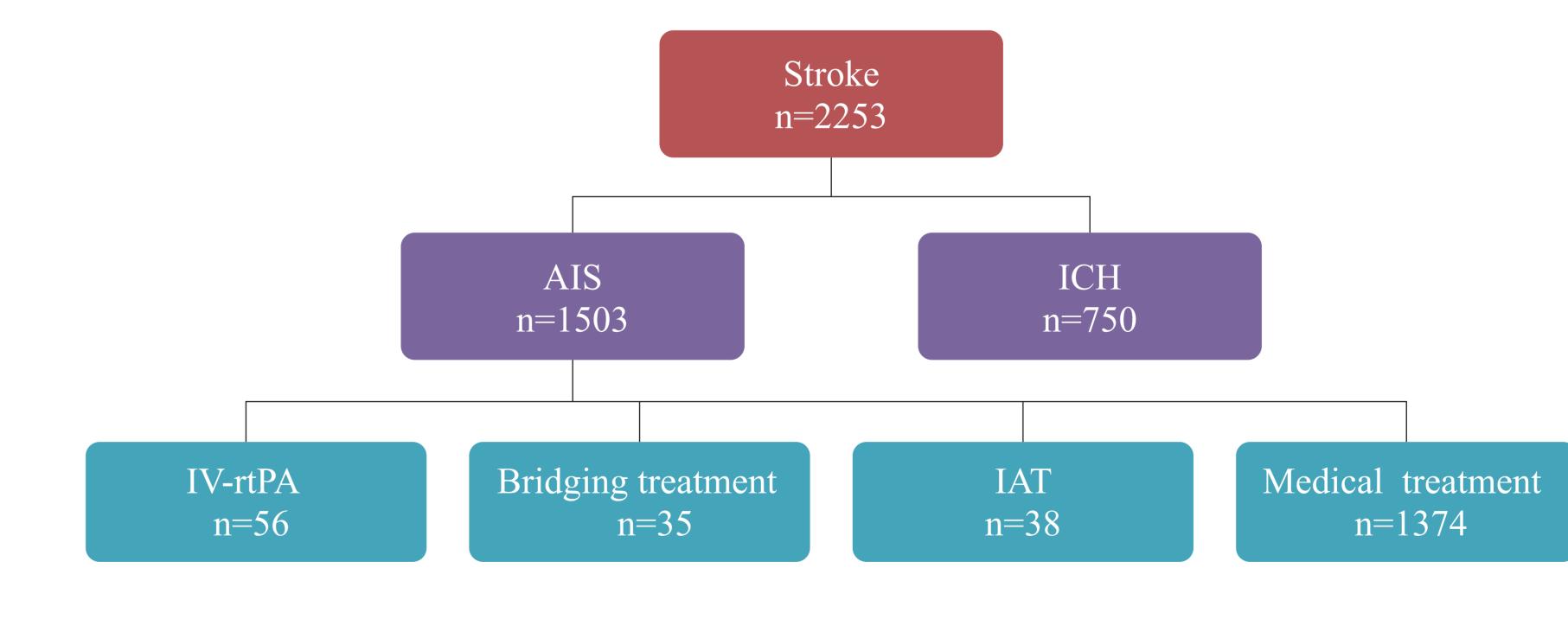


Figure 3. Treatment algorithm for patient with AIS between 2017 to 2018 were screened

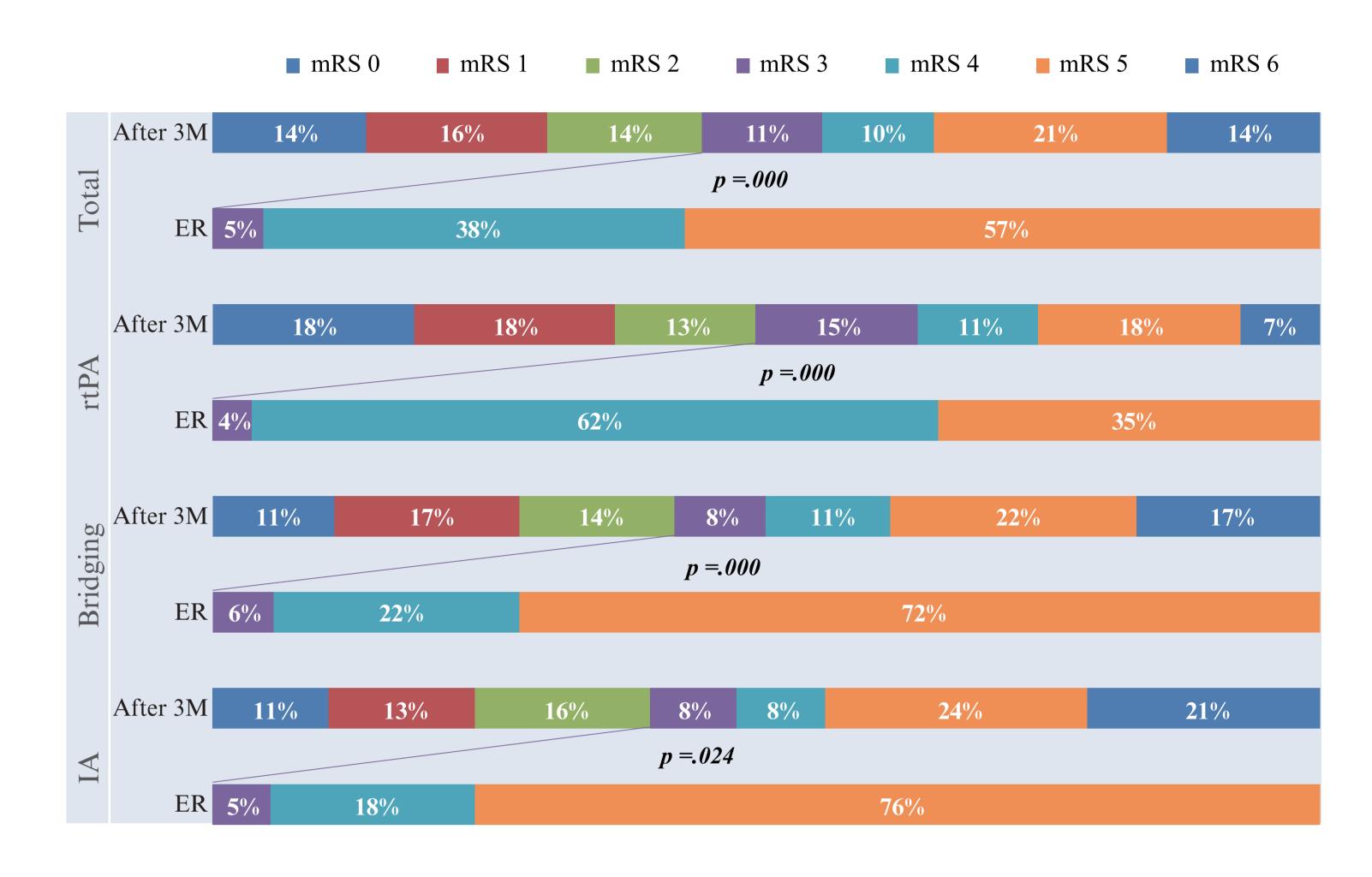


Figure 4. Functional recovery at 3-months after stroke using mRS score Modified Rankin score (Rankin, 1957) is a measure of disability (a score of 0 = no symptoms, 1 = no significant disability despite symptoms, 2 = slight disability, 3 = moderate disabilityability, 4 = moderately severe disability, 5 = severe disability, 6 = dead)

Results

We retrogradely retrieved patients' data from Stroke Registry of a Northern medical center. Patients admitted between 2017 and 2018 were screened. The current study recruited 129 patients(Figure 3). Demographics of patients are presented in Table 2. The results showed that baseline characteristics were similar. At 3-months after stroke, 44.2% of patients had better functional recovery (Fig.4). Our results showed that about half of the stroke patients improved their functional status at 3-months after stroke.

Conclusions

Intravenous recombinant tissue plasminogen activator (IV-rtPA) remains the only approved systemic reperfusion therapy suitable for most patients presenting timely with acute ischemic stroke.

In recent years, intra-arterial thrombectomy(mechanical thrombectomy) has emerged, and the results of randomized control trials have also proved its efficacy. This article provides an overview of thrombectomy, the management of patients with an acute ischemic stroke eligible for this procedure and the implications for nursing practice in Taipei Veterans General Hospital (Taiwan).

A new treatment has started to redefine acute stroke care in countries all over the world

Early treatment is critical to rescue potentially salvageable tissue. Safe, rapid and effective arterial recanalization to restore blood flow and improve a functional outcome remains the primary goal of hyperacute ischemic stroke management. Post-thrombectomy management of theemergent large vessel occlusions patient is complex. Vital aspects of patient care that require monitoring and treatment include optimization of reperfusion, post-reperfusion hemorrhage, cerebral edema, access site complications, and rehabilitation efforts. Careful attention to these aspects is vital to outcome optimization.

Nurses must keep up with the times and be active. Take the initiative to learn new guidelines, update concepts in real time, challenge higher standards, and dynamically masterstrokes. New progress in diagnosis and treatment, providing evidence-based support for nursing decision-making and implementation of ischemic stroke. Reducing the complications and length of stays of stroke patients, and improving the quality of life of stroke patients. Reduce family and social burdens.

