

World Journal of *Clinical Cases*

World J Clin Cases 2022 October 6; 10(28): 9970-10390



Contents

Thrice Monthly Volume 10 Number 28 October 6, 2022

REVIEW

- 9970 COVID-19 and the heart

Xanthopoulos A, Bourazana A, Giamouzis G, Skoularigki E, Dimos A, Zagouras A, Papamichalis M, Leventis I, Magouliotis DE, Triposkiadis F, Skoularigis J

- 9985 Role of short chain fatty acids in gut health and possible therapeutic approaches in inflammatory bowel diseases

Caetano MAF, Castelucci P

MINIREVIEWS

- 10004 Review of the pharmacological effects of astragaloside IV and its autophagic mechanism in association with inflammation

Yang Y, Hong M, Lian WW, Chen Z

ORIGINAL ARTICLE

Clinical and Translational Research

- 10017 Effects of targeted-edited oncogenic insulin-like growth factor-1 receptor with specific-sgRNA on biological behaviors of HepG2 cells

Yao M, Cai Y, Wu ZJ, Zhou P, Sai WL, Wang DF, Wang L, Yao DF

Retrospective Study

- 10031 Analysis of the successful clinical treatment of 140 patients with parathyroid adenoma: A retrospective study

Peng ZX, Qin Y, Bai J, Yin JS, Wei BJ

- 10042 Efficacy of digital breast tomosynthesis combined with magnetic resonance imaging in the diagnosis of early breast cancer

Ren Y, Zhang J, Zhang JD, Xu JZ

- 10053 Prevention and management of adverse events following COVID-19 vaccination using traditional Korean medicine: An online survey of public health doctors

Kang B, Chu H, Youn BY, Leem J

- 10066 Clinical outcomes of targeted therapies in elderly patients aged
- ≥ 80
- years with metastatic colorectal cancer

Jang HR, Lee HY, Song SY, Lim KH

- 10077 Endovascular treatment vs drug therapy alone in patients with mild ischemic stroke and large infarct cores

Kou WH, Wang XQ, Yang JS, Qiao N, Nie XH, Yu AM, Song AX, Xue Q

Clinical Trials Study

- 10085** One hundred and ninety-two weeks treatment of entecavir maleate for Chinese chronic hepatitis B predominantly genotyped B or C

Xu JH, Wang S, Zhang DZ, Yu YY, Si CW, Zeng Z, Xu ZN, Li J, Mao Q, Tang H, Sheng JF, Chen XY, Ning Q, Shi GF, Xie Q, Zhang XQ, Dai J

Observational Study

- 10097** Dementia-related contact experience, attitudes, and the level of knowledge in medical vocational college students

Liu DM, Yan L, Wang L, Lin HH, Jiang XY

SYSTEMATIC REVIEWS

- 10109** Link between COVID-19 vaccines and myocardial infarction

Zafar U, Zafar H, Ahmed MS, Khattak M

CASE REPORT

- 10120** Successful treatment of disseminated nocardiosis diagnosed by metagenomic next-generation sequencing: A case report and review of literature

Li T, Chen YX, Lin JJ, Lin WX, Zhang WZ, Dong HM, Cai SX, Meng Y

- 10130** Multiple primary malignancies - hepatocellular carcinoma combined with splenic lymphoma: A case report

Wu FZ, Chen XX, Chen WY, Wu QH, Mao JT, Zhao ZW

- 10136** Metastatic multifocal melanoma of multiple organ systems: A case report

Maksimaityte V, Reivytyte R, Milaknyte G, Mickys U, Razanskiene G, Stundys D, Kazenaite E, Valantinas J, Stundiene I

- 10146** Cavernous hemangioma of the ileum in a young man: A case report and review of literature

Yao L, Li LW, Yu B, Meng XD, Liu SQ, Xie LH, Wei RF, Liang J, Ruan HQ, Zou J, Huang JA

- 10155** Successful management of a breastfeeding mother with severe eczema of the nipple beginning from puberty: A case report

Li R, Zhang LX, Tian C, Ma LK, Li Y

- 10162** Short benign ileocolonic anastomotic strictures - management with bi-flanged metal stents: Six case reports and review of literature

Kasapidis P, Mavrogenis G, Mandrekas D, Bazerbachi F

- 10172** Simultaneous bilateral floating knee: A case report

Wu CM, Liao HE, Lan SJ

- 10180** Chemotherapy, transarterial chemoembolization, and nephrectomy combined treated one giant renal cell carcinoma (T3aN1M1) associated with Xp11.2/TFE3: A case report

Wang P, Zhang X, Shao SH, Wu F, Du FZ, Zhang JF, Zuo ZW, Jiang R

- 10186** Tislelizumab-related enteritis successfully treated with adalimumab: A case report

Chen N, Qian MJ, Zhang RH, Gao QQ, He CC, Yao YK, Zhou JY, Zhou H

- 10193** Treatment of refractory/relapsed extranodal NK/T cell lymphoma with decitabine plus anti-PD-1: A case report
Li LJ, Zhang JY
- 10201** Clinical analysis of pipeline dredging agent poisoning: A case report
Li YQ, Yu GC, Shi LK, Zhao LW, Wen ZX, Kan BT, Jian XD
- 10208** Follicular lymphoma with cardiac involvement in a 90-year-old patient: A case report
Sun YX, Wang J, Zhu JH, Yuan W, Wu L
- 10214** Twin reversed arterial perfusion sequence-a rare and dangerous complication form of monochorionic twins: A case report
Anh ND, Thu Ha NT, Sim NT, Toan NK, Thuong PTH, Duc NM
- 10220** Potential otogenic complications caused by cholesteatoma of the contralateral ear in patients with otogenic abscess secondary to middle ear cholesteatoma of one ear: A case report
Zhang L, Niu X, Zhang K, He T, Sun Y
- 10227** Myeloid sarcoma with ulnar nerve entrapment: A case report
Li DP, Liu CZ, Jeremy M, Li X, Wang JC, Nath Varma S, Gai TT, Tian WQ, Zou Q, Wei YM, Wang HY, Long CJ, Zhou Y
- 10236** Alpha-fetoprotein-producing hepatoid adenocarcinoma of the lung responsive to sorafenib after multiline treatment: A case report
Xu SZ, Zhang XC, Jiang Q, Chen M, He MY, Shen P
- 10244** Acute mesenteric ischemia due to percutaneous coronary intervention: A case report
Ding P, Zhou Y, Long KL, Zhang S, Gao PY
- 10252** Persistent diarrhea with petechial rash - unusual pattern of light chain amyloidosis deposition on skin and gastrointestinal biopsies: A case report
Bilton SE, Shah N, Dougherty D, Simpson S, Holliday A, Sahebjam F, Grider DJ
- 10260** Solitary splenic tuberculosis: A case report
Guo HW, Liu XQ, Cheng YL
- 10266** Coronary artery aneurysms caused by Kawasaki disease in an adult: A case report and literature review
He Y, Ji H, Xie JC, Zhou L
- 10273** Double filtration plasmapheresis for pregnancy with hyperlipidemia in glycogen storage disease type Ia: A case report
Wang J, Zhao Y, Chang P, Liu B, Yao R
- 10279** Treatment of primary tracheal schwannoma with endoscopic resection: A case report
Shen YS, Tian XD, Pan Y, Li H
- 10286** Concrescence of maxillary second molar and impacted third molar: A case report
Su J, Shao LM, Wang LC, He LJ, Pu YL, Li YB, Zhang WY

- 10293** Rare leptin in non-alcoholic fatty liver cirrhosis: A case report
Nong YB, Huang HN, Huang JJ, Du YQ, Song WX, Mao DW, Zhong YX, Zhu RH, Xiao XY, Zhong RX
- 10301** One-stage resection of four genotypes of bilateral multiple primary lung adenocarcinoma: A case report
Zhang DY, Liu J, Zhang Y, Ye JY, Hu S, Zhang WX, Yu DL, Wei YP
- 10310** Ectopic pregnancy and failed oocyte retrieval during *in vitro* fertilization stimulation: Two case reports
Zhou WJ, Xu BF, Niu ZH
- 10317** Malignant peritoneal mesothelioma with massive ascites as the first symptom: A case report
Huang X, Hong Y, Xie SY, Liao HL, Huang HM, Liu JH, Long WJ
- 10326** Subperiosteal orbital hematoma concomitant with abscess in a patient with sinusitis: A case report
Hu XH, Zhang C, Dong YK, Cong TC
- 10332** Postpartum posterior reversible encephalopathy syndrome secondary to preeclampsia and cerebrospinal fluid leakage: A case report and literature review
Wang Y, Zhang Q
- 10339** Sudden extramedullary and extranodal Philadelphia-positive anaplastic large-cell lymphoma transformation during imatinib treatment for CML: A case report
Wu Q, Kang Y, Xu J, Ye WC, Li ZJ, He WF, Song Y, Wang QM, Tang AP, Zhou T
- 10346** Relationship of familial cytochrome P450 4V2 gene mutation with liver cirrhosis: A case report and review of the literature
Jiang JL, Qian JF, Xiao DH, Liu X, Zhu F, Wang J, Xing ZX, Xu DL, Xue Y, He YH
- 10358** COVID-19-associated disseminated mucormycosis: An autopsy case report
Kyuno D, Kubo T, Tsujiwaki M, Sugita S, Hosaka M, Ito H, Harada K, Takasawa A, Kubota Y, Takasawa K, Ono Y, Magara K, Narimatsu E, Hasegawa T, Osanai M
- 10366** Thalidomide combined with endoscopy in the treatment of Cronkhite-Canada syndrome: A case report
Rong JM, Shi ML, Niu JK, Luo J, Miao YL
- 10375** Thoracolumbar surgery for degenerative spine diseases complicated with tethered cord syndrome: A case report
Wang YT, Mu GZ, Sun HL

LETTER TO THE EDITOR

- 10384** Are pregnancy-associated hypertensive disorders so sweet?
Thomopoulos C, Ilias I
- 10387** Tumor invasion front in oral squamous cell carcinoma
Cuevas-González JC, Cuevas-González MV, Espinosa-Cristobal LF, Donohue Cornejo A

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WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

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RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: *Xu Guo*; Production Department Director: *Xiang Li*; Editorial Office Director: *Jin-Lei Wang*.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Bao-Gan Peng, Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati, Ja Hyeon Ku

EDITORIAL BOARD MEMBERS

<https://www.wjnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

October 6, 2022

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INSTRUCTIONS TO AUTHORS

<https://www.wjnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



Retrospective Study

Endovascular treatment vs drug therapy alone in patients with mild ischemic stroke and large infarct cores

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Specialty type: Neurosciences

Provenance and peer review:

Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0
Grade B (Very good): B
Grade C (Good): C
Grade D (Fair): 0
Grade E (Poor): 0

P-Reviewer: Alzahrani AA, Saudi Arabia; Lee KH, South Korea

Received: June 12, 2022

Peer-review started: June 12, 2022

First decision: July 14, 2022

Revised: August 2, 2022

Accepted: August 22, 2022

Article in press: August 22, 2022

Published online: October 6, 2022



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Abstract

BACKGROUND

Treatment decision making is strictly associated with the outcomes in patients with ischemic stroke who show a large core infarct. Medical care alone may result in suboptimal treatment efficacy, and endovascular treatment may be accompanied by safety issues. Whether endovascular treatment is superior to medical care is not well investigated in the clinical studies.

AIM

To investigate the efficacy of endovascular treatment and drug therapy alone in mild ischemic stroke patients with large infarct cores.

METHODS

Fifty patients with mild ischemic stroke and 50 patients with acute ischemic stroke caused by anterior large vessel occlusion were selected at the First Affiliated Hospital of Hebei North University between January 2021 and December 2021. Patients were divided into an endovascular therapy group and a drug therapy group according to different treatment methods. In the endovascular therapy group, there were 28 patients with minor stroke and 22 patients with large infarct cores. The drug therapy group had 22 patients with minor stroke and 28 patients with large infarct cores. The National Institutes of Health Stroke Scale (NIHSS) scores were collected and compared between the two groups immediately after the operation and 24 h and 7 d after the operation. The modified Rankin scale (mRS) and/or activity of daily living were assessed at hospital discharge.

RESULTS

There was no significant difference in NIHSS scores between the two groups before the operation ($P > 0.05$). NIHSS scores were lower in the endovascular therapy group than in the drug therapy group at 24 h and 7 d after the operation and at hospital discharge (all $P < 0.05$). The incidence of early neurologic deteri-

oration was significantly lower in the endovascular therapy group than in the drug therapy group ($P < 0.05$). At hospital discharge, the mRS score was lower in the endovascular treatment group than in the drug therapy group, and the activity of daily living score was better in the endovascular treatment group than in the drug therapy group (all $P < 0.05$). During a follow-up of 3 mo, 17 patients (34.0%) had good prognosis (mRS ≤ 2), 33 patients (66.0%) had poor prognosis (mRS > 2), and 11 patients (22.0%) died. In the medical treatment group, 16 patients (mRS ≤ 2) had good prognosis (32.0%), 34 patients (mRS > 2) had poor prognosis (68.0%), and 14 patients (28.0%) died. There was no significant difference in prognosis and mortality between the two groups ($P > 0.05$).

CONCLUSION

Endovascular therapy can improve NIHSS score and mRS score in patients with mild ischemic stroke and large infarct cores. It is suitable for clinical application.

Key Words: Ischemic stroke; Large infarct cores; Endovascular therapy; Drug therapy; Efficacy

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Core Tip: Fast and correct first aid can save lives and avoid disabilities in patients with acute ischemic stroke. The limited therapeutic time window and relative contraindications confine medical care for the treatment of acute ischemic stroke. Endovascular therapy ranks among the major therapies from an important alternative for medical therapy in the treatment of acute ischemic stroke. The present study compared the clinical efficacy and safety of these two treatment approaches in patients with acute ischemic stroke. It found that the two approaches achieved comparable results in favorable prognosis. However, endovascular therapy can effectively improve neurological function compared with medical therapy.

Citation: Kou WH, Wang XQ, Yang JS, Qiao N, Nie XH, Yu AM, Song AX, Xue Q. Endovascular treatment vs drug therapy alone in patients with mild ischemic stroke and large infarct cores. *World J Clin Cases* 2022; 10(28): 10077-10084

URL: <https://www.wjgnet.com/2307-8960/full/v10/i28/10077.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v10.i28.10077>

INTRODUCTION

A mild stroke is a sudden development of mild focal neurologic deficit caused by some type of vascular disorder. A mild stroke may last for just a few minutes or up to 24 h. The neurologic deficit is usually caused as a result of ischemic infarct on imaging tests, and it usually had clinical manifestations[1-3]. A mild stroke is usually defined as National Institute of Health Stroke Scale (NIHSS) score ≤ 5 or the modified Rankin scale (mRS) score ≤ 3 [4-6].

Recent evidence on whether endovascular therapy (EVT) should be recommended to patients with large artery occlusive disease are lacking. Moreover, there was substantial heterogeneity among studies of EVT in patients with mild stroke, and EVT is not well-studied in clinical research in China[7-9]. Although patients with acute ischemic stroke (AIS) caused by anterior large vessel occlusion (LVO) often prefer EVT, which can increase recanalization rates and improve the clinical outcomes[10], controversy still remains regarding whether AIS-LVO patients need EVT[11,12].

Previous studies believed that infarct core volume is closely associated with clinical outcomes[13]. Small core volume is associated with good clinical outcomes, although the favorable prognosis rate may be low in AIS-LVO patients with large infarct cores who received drug therapy alone[14]. The present study aimed to discuss the efficacy of EVT in patients with AIS-LVO and large infarct cores. The efficacy of EVT was compared with medical treatment between patients with mild ischemic stroke and patients with AIS-LVO to provide clinicians with clinical guidance on the selection of appropriate therapy.

MATERIALS AND METHODS

Participants

Fifty patients with mild ischemic stroke and 50 patients with large infarct cores were enrolled at the First Affiliated Hospital of Hebei North University between January 2021 and December 2021. Based on

different therapies they received, they were categorized into an EVT group and a drug therapy group. In the EVT group, 28 patients had mild stroke and 22 patients had large infarct cores including 31 males and 19 females aged 35 to 57 (51.23 ± 7.45) years. In the drug therapy group, 22 had mild stroke and 28 patients had large infarct cores including 30 males and 20 females aged 36 to 58 (53.17 ± 8.93) years. The general information was comparable between the two groups.

Diagnostic standard was NIHSS score ≤ 5 or mRS score ≤ 3 measured independently by two experienced clinical neurologists for mild stroke and infarct core volume ≥ 70 mL on computed tomography perfusion imaging for large infarct cores[15,16].

Inclusion criteria were adult patients (> 18 years) with acute anterior circulation ischemic stroke, which lasted < 8 h on diagnostic imaging involving internal carotid artery, M1 and M2 segments of middle cerebral artery, and anterior cerebral artery[17,18]. Patients and their family members were informed about the treatment and signed the informed consent form.

Patients who were confirmed with intracranial hemorrhage by computed tomography and magnetic resonance imaging, patients who were previously confirmed with arteriovenous malformation or arteriovenous aneurysm or space-occupying lesions on diagnostic imaging, and patients who were patients lost to follow-up were excluded from the study.

Methods

A random number table was used to assign these patients to an EVT group and a medical treatment group. They were followed up for 3 mo. In the EVT group, patients were operated under local anesthesia and intravenous anesthesia, and general anesthesia was performed if the patients were restless. Patients lied on their back, and 8F arterial sheaths were used for puncture of the right-sided femoral artery. Imaging examination was performed to identify occlusion sites. 8F MPA1 guiding catheter was placed into the distal carotid arteries. 5F-125 Naven intermediate conductor was delivered to the distal internal carotid arteries along the guiding catheter. A Rebar-18 microcatheter was introduced into the distal thrombus *via* an 0.014" guide wire. Microvascular imaging was performed to identify whether the distal occluded vessel was obstructed and where the specific occlusion sites were distributed[19,20]. Solitaire AB stent was placed thorough the microcatheter and held on for 5 min until a complete release of stent was observed. Then stents and microcatheters were withdrawn, and a 50 mL syringe was used to draw blood. Care should be taken when performing the operation to avoid shedding of the thrombus from the stents and at last leading to distal vascular occlusion. After thrombectomy, contrast examination was performed to investigate revascularization. If the thrombolysis in cerebral infarction scale score was $< 2b$, thrombectomy could be repeated 3 times until the thrombolysis in cerebral infarction scale score was $\geq 2b$ or equal to 3. For the medical treatment group, conventional agents for cerebral infarction were administrated including alteplase (Boehringer Ingelheim Pharma GmbH & Co. KG, S20160055) and tirofiban (Huadong Medicine, H20060265).

Assessment measures included: (1) NIHSS scores at different times points before the operation, at 24 h and 7 after the operation, and before the discharge; (2) Short-term prognosis within 48 h after the operation on computed tomography scan of the brain for hemorrhage and vascular condition and cranial magnetic resonance imaging for deterioration of neurological function such as vascular reocclusion, tissue edema, and hematencephalon[21]; and (3) Long-term recovery efficiency of modified mRS score and/or activity of daily living score.

Statistical analysis

SPSS 26.0 software was used for data analysis. Quantitative variables were reported with number and percentage, and qualitative variables were presented as mean \pm SD, if it showed normal distribution. $P < 0.05$ represented there was a significant difference.

RESULTS

In terms of the NIHSS score, no significant difference was observed between the two groups before the operation ($P > 0.05$). At 24 h and 7 d after the operation and before hospital discharge, the NIHSS score was lower in the EVT group than in the medical treatment group ($P < 0.05$, Table 1).

After comparison of the incidence of short-term deterioration of neurological function, it was found that repeated occlusion occurred in 3 patients, tissue edema occurred in 1 patient, and no one had cerebral hemorrhage with the overall incidence of 8.0% in the EVT group. In the medical treatment group, recurrent occlusion occurred in 5 patients, tissue edema occurred in 3 patients, and cerebral hemorrhage in 1 patient with the overall incidence of 18.0%. The incidence of short-term deterioration of neurological function was lower in the EVT group than in the medical treatment group ($P < 0.05$, Table 2).

At discharge, the mRS score was lower in the EVT group than in the medical treatment group, and the activity of daily living score was better in the EVT group than in the medical treatment group. The differences between the two groups were significant ($P < 0.05$, Table 3).

Table 1 National Institutes of Health Stroke Scale score compared between the two at different time points (mean \pm SD)

Groups	<i>n</i>	Before the operation	24 h after the operation	7 d after the operation	Before discharge
Endovascular treatment group	50	16.43 \pm 6.34	12.23 \pm 5.63	10.35 \pm 4.01	6.83 \pm 1.23
Medical treatment group	50	17.09 \pm 5.98	14.11 \pm 6.03	12.38 \pm 5.22	8.23 \pm 2.09
<i>t</i> value		1.023	4.522	7.093	13.12
<i>P</i> value		0.276	0.042	0.024	0.001

Table 2 Incidence of early deterioration of neurological function, *n* (%)

Groups	<i>n</i>	Repeated vascular occlusion	Tissue edema	Cerebral hemorrhage	Overall incidence
Endovascular treatment	50	3 (6.0)	1 (2.0)	0 (0.0)	4 (8.0)
Medical treatment group	50	5 (10.0)	3 (6.0)	1 (2.0)	9 (18.0)
χ^2 value					9.234
<i>P</i> value					0.001

Table 3 Comparison of the modified Rankin scale and activity of daily living scores between the two groups (mean \pm SD)

Groups	<i>n</i>	mRS score	ADL score
Endovascular treatment	50	4.11 \pm 0.24	59.93 \pm 15.73
Medical treatment group	50	5.09 \pm 0.83	46.71 \pm 16.22
<i>t</i> value		6.172	5.522
<i>P</i> value		0.031	0.035

mRS: Modified Rankin scale; ADL: Activity of daily living.

For the long-term treatment efficacy, 17 (34.0%) patients achieved good prognosis (mRS \leq 2), 33 (66.0%) patients had poor prognosis (mRS $>$ 2), and 11 patients (22.0%) died in the EVT group. In the medical treatment group, 16 (32.0%) achieved good prognosis (mRS \leq 2), 34 (68.0%) patients had poor prognosis (mRS $>$ 2), and 14 (28.0%) patients died. There was no significant difference in the good prognosis and mortality between the two groups ($P < 0.05$).

DISCUSSION

The morbidity rate for AIS with mild symptoms is high. Mild ischemic stroke complicated with macrovascular diseases or stenosis and occlusion is not uncommon in the clinical practice. The risk for short-term neurological function is higher and the prognosis is poorer in these population than in patients without macrovascular diseases[22]. It has been proven that EVT can effectively help occluded vessels stay open. However, surgery-related hemorrhage, postoperative death, and incidence of complications are high, and it should not be ignored when surgical treatment is selected[23,24]. In particular, there is no consistent conclusion on EVT performed in patients with AIS with mild symptoms complicated with macrovascular diseases, which makes clinical decision making more difficult[25,26]. Chinese guidelines for treatment of AIS 2018 recommend that antiplatelet agents should be used in eligible patients after assessing benefits and risks within 24 h after intravenous thrombolysis using alteplase. The present study analyzed the treatment efficacy of EVT and medical treatment alone in patients with mild ischemic stroke and large infarct cores.

In clinical practice, some clinicians thought AIS with mild symptoms may lead to good outcomes, and they tended to use conservative treatment to prevent the possible risks and complications associated with intravenous thrombolysis and arterial thrombectomy. However, previous studies found that inpatient relapse was high in AIS with mild symptoms, which may be attributed to the elevated disability rate and mortality caused by the early neglect of active treatment[27-29].

Results of the study revealed that NIHSS scores were lower in the EVT group than in the medical treatment group. At discharge, the mRS score was lower in the EVT group than in the medical treatment group. Furthermore, activity of daily living score was better in the EVT group than in the medical

treatment group (all $P < 0.05$). This suggested that EVT showed obvious efficacy for the treatment of mild ischemic stroke and large infarct cores with improvements in neurological function.

Meanwhile, there was no significant difference in good prognosis and mortality between the two groups after a follow-up of 3 mo ($P > 0.05$). However, it is possible that the vascular condition was poor in the EVT group compared with the medical treatment group, which may cause selection bias. A sufficiently large sample size is necessary for further research to avoid bias and to reflect that patients with good vascular condition can achieve ideal treatment efficacy on medical treatment.

CONCLUSION

EVT is effective in the treatment of mild ischemic stroke and large infarct cores. It provides great benefits and promotes rehabilitation in this population.

ARTICLE HIGHLIGHTS

Research background

Endovascular therapy and medical therapy are two major approaches for the treatment of acute ischemic stroke with large vessel occlusion. Comparison of the clinical efficacy and safety of the two approaches is needed.

Research motivation

This study provided evidence for clinicians to better help them make an appropriate treatment decision in the treatment of acute ischemic stroke with large vessel occlusion.

Research objectives

This study aimed to compare the efficacy and safety of endovascular treatment with medical therapy alone in patients with acute ischemic stroke who show a large core infarct.

Research methods

Fifty patients with mild ischemic stroke and 50 patients with large core and occlusion ischemic stroke were enrolled in the study. They were categorized into an endovascular treatment group (28 patients with mild stroke and 22 patients with large infarct cores) and a medical treatment group (22 patients with mild stroke and 28 patients with large infarct cores). Patients in the endovascular treatment group underwent an interventional thrombectomy, and patients in the medical treatment group were treated with alteplase or tirofiban. The National Institutes of Health Stroke Scale scores and short- and long-term prognosis were analyzed in the two groups.

Research results

Significant differences were found in the National Institutes of Health Stroke Scale scores, early deterioration of neurological function, the modified Rankin scale, and the activity of daily living scores between the two groups. However, no significant difference was found in favorable prognosis and mortality between the two groups.

Research conclusions

Patients receiving endovascular treatment had a higher chance of achieving good neurological function compared with those receiving medical therapy.

Research perspectives

This study revealed that neurological function was effectively improved in patients with acute ischemic stroke after endovascular treatment. Endovascular technology evolves at a rapid pace. Future studies should take these new devices and techniques into consideration when investigating endovascular treatment in patients with acute ischemic stroke.

FOOTNOTES

Author contributions: Kou WH, Wang XQ, Yang JS, Qiao N, Nie XH, Yu AM, Song AX, and Xue Q designed the research study; Kou WH, Wang XQ, and Yang JS performed the research; and all authors have read and approved the final manuscript.

Supported by Scientific Research Fund of Hebei Health Commission 2022, No. 20220591.

Institutional review board statement: The study was reviewed and approved by the First Affiliated Hospital of Hebei North University Institutional Review Board.

Informed consent statement: All study participants, or their legal guardian, provided informed written consent prior to study enrollment.

Conflict-of-interest statement: The authors declare no conflict of interest.

Data sharing statement: No additional data are available.

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Country/Territory of origin: China

ORCID number: Ai-Xia Song 0000-0003-3311-6061.

S-Editor: Wang JL

L-Editor: Filipodia

P-Editor: Wang JL

REFERENCES

- 1 **Stroke Prevention and Control Project Committee;** National Health Commission, Neurointerventional Group, Neurosurgery Branch, Chinese Medical Association; Interventional Group, Radiology Branch, Chinese Medical Association. [Chinese experts consensus on the treatment of acute ischemic stroke caused by anterior large vessel occlusion (2019 revision)]. *Zhonghua Shenjing Waike Zazhi* 2019; **35**: 868-879 [DOI: [10.3760/cma.j.issn.1001-2346.2019.09.002](https://doi.org/10.3760/cma.j.issn.1001-2346.2019.09.002)]
- 2 **Zhu QF,** Su Q, Chen LZ. [Research progress of time window and tissue window on mechanical thrombectomy to acute ischemic stroke]. *Zhongguo Zonghe Linchuang* 2020; **36**: 572-576 [DOI: [10.3760/cma.j.cn121361-20191023-00030](https://doi.org/10.3760/cma.j.cn121361-20191023-00030)]
- 3 **Stroke Prevention and Control Project Committee;** National Health Commission, Neurointerventional Group, Neurosurgery Branch, Chinese Medical Association; Interventional Group, Radiology Branch, Chinese Medical Association. [Chinese experts consensus on the treatment of acute ischemic stroke caused by anterior large vessel occlusion (2017)]. *Zhonghua Shenjing Waike Zazhi* 2017; **33**: 869-877 [DOI: [10.3760/cma.j.issn.1001-2346.2017.09.002](https://doi.org/10.3760/cma.j.issn.1001-2346.2017.09.002)]
- 4 **Bousslama M,** Barreira CM, Haussen DC, Rodrigues GM, Pisani L, Frankel MR, Nogueira RG. Endovascular reperfusion outcomes in patients with a stroke and low ASPECTS is highly dependent on baseline infarct volumes. *J Neurointerv Surg* 2022; **14**: 117-121 [PMID: [33722970](https://pubmed.ncbi.nlm.nih.gov/33722970/)] DOI: [10.1136/neurintsurg-2020-017184](https://doi.org/10.1136/neurintsurg-2020-017184)
- 5 **Liu J,** He F, Wang XJ, Wang ME, Zhang TT, Hui X, Zhang LJ, Chen W, Sun HY. [Clinical prognoses of acute ischemic stroke patients with large core infarction after endovascular therapy and their influencing factors]. *Zhonghua Shenjing Yixue Zazhi* 2021; **20**: 7 [DOI: [10.3760/cma.j.cn115354-20210326-00197](https://doi.org/10.3760/cma.j.cn115354-20210326-00197)]
- 6 **Panni P,** Gory B, Xie Y, Consoli A, Desilles JP, Mazighi M, Labreuche J, Piotin M, Turjman F, Eker OF, Bracard S, Anxionnat R, Richard S, Hossu G, Blanc R, Lapergue B; ETIS (Endovascular Treatment in Ischemic Stroke) Investigators. Acute Stroke With Large Ischemic Core Treated by Thrombectomy. *Stroke* 2019; **50**: 1164-1171 [PMID: [31009354](https://pubmed.ncbi.nlm.nih.gov/31009354/)] DOI: [10.1161/STROKEAHA.118.024295](https://doi.org/10.1161/STROKEAHA.118.024295)]
- 7 **Kim BJ,** Menon BK, Kim JY, Shin DW, Baik SH, Jung C, Han MK, Demchuk A, Bae HJ. Endovascular Treatment After Stroke Due to Large Vessel Occlusion for Patients Presenting Very Late From Time Last Known Well. *JAMA Neurol* 2020 [PMID: [32777014](https://pubmed.ncbi.nlm.nih.gov/32777014/)] DOI: [10.1001/jamaneurol.2020.2804](https://doi.org/10.1001/jamaneurol.2020.2804)]
- 8 **Kakita H,** Yoshimura S, Uchida K, Sakai N, Yamagami H, Morimoto T; RESCUE-Japan Registry 2 Investigators. Impact of Endovascular Therapy in Patients With Large Ischemic Core: Subanalysis of Recovery by Endovascular Salvage for Cerebral Ultra-Acute Embolism Japan Registry 2. *Stroke* 2019; **50**: 901-908 [PMID: [31633899](https://pubmed.ncbi.nlm.nih.gov/31633899/)] DOI: [10.1161/STROKEAHA.118.024646](https://doi.org/10.1161/STROKEAHA.118.024646)]
- 9 **Rotkopf LT,** Tiedt S, Pühr-Westerheide D, Herzberg M, Reidler P, Kellert L, Feil K, Thierfelder KM, Dorn F, Liebig T, Wollenweber FA, Kunz WG. Ischemic Core Volume Combined with the Relative Perfusion Ratio for Stroke Outcome Prediction after Endovascular Thrombectomy. *J Neuroimaging* 2020; **30**: 321-326 [PMID: [32037660](https://pubmed.ncbi.nlm.nih.gov/32037660/)] DOI: [10.1111/jon.12695](https://doi.org/10.1111/jon.12695)]
- 10 **Ko SB,** Park HK, Kim BM, Heo JH, Rha JH, Kwon SU, Kim JS, Lee BC, Suh SH, Jung C, Jeong HW, Kang DH, Bae HJ, Yoon BW, Hong KS. 2019 Update of the Korean Clinical Practice Guidelines of Stroke for Endovascular Recanalization Therapy in Patients with Acute Ischemic Stroke. *J Stroke* 2019; **21**: 231-240 [PMID: [30991800](https://pubmed.ncbi.nlm.nih.gov/30991800/)] DOI: [10.5853/jos.2019.00024](https://doi.org/10.5853/jos.2019.00024)]
- 11 **Campbell BCV,** Majoie CBLM, Albers GW, Menon BK, Yassi N, Sharma G, van Zwam WH, van Oostenbrugge RJ, Demchuk AM, Guillemin F, White P, Dávalos A, van der Lugt A, Butcher KS, Cherifi A, Marquering HA, Cloud G, Macho Fernández JM, Madigan J, Oppenheim C, Donnan GA, Roos YBWEM, Shankar J, Lingsma H, Bonafé A, Raoult H, Hernández-Pérez M, Bharatha A, Jahan R, Jansen O, Richard S, Levy EI, Berkhemer OA, Soudant M, Aja L, Davis SM, Krings T, Tisserand M, San Román L, Tomasello A, Beumer D, Brown S, Liebeskind DS, Bracard S, Muir KW, Dippel

- DWJ, Goyal M, Saver JL, Jovin TG, Hill MD, Mitchell PJ; HERMES collaborators. Penumbra imaging and functional outcome in patients with anterior circulation ischaemic stroke treated with endovascular thrombectomy versus medical therapy: a meta-analysis of individual patient-level data. *Lancet Neurol* 2019; **18**: 46-55 [PMID: 30413385 DOI: 10.1016/S1474-4422(18)30314-4]
- 12 **Manceau PF**, Soize S, Gawlitza M, Fabre G, Bakchine S, Durot C, Serre I, Metaxas GE, Pierot L. Is there a benefit of mechanical thrombectomy in patients with large stroke (DWI-ASPECTS \leq 5)? *Eur J Neurol* 2018; **25**: 105-110 [PMID: 28906581 DOI: 10.1111/ene.13460]
 - 13 **Nogueira RG**, Jadhav AP, Haussen DC, Bonafe A, Budzik RF, Bhuva P, Yavagal DR, Ribo M, Cognard C, Hanel RA, Sila CA, Hassan AE, Millan M, Levy EI, Mitchell P, Chen M, English JD, Shah QA, Silver FL, Pereira VM, Mehta BP, Baxter BW, Abraham MG, Cardona P, Veznedaroglu E, Hellinger FR, Feng L, Kirmani JF, Lopes DK, Jankowitz BT, Frankel MR, Costalat V, Vora NA, Yoo AJ, Malik AM, Furlan AJ, Rubiera M, Aghaebrahim A, Olivot JM, Tekle WG, Shields R, Graves T, Lewis RJ, Smith WS, Liebeskind DS, Saver JL, Jovin TG; DAWN Trial Investigators. Thrombectomy 6 to 24 Hours after Stroke with a Mismatch between Deficit and Infarct. *N Engl J Med* 2018; **378**: 11-21 [PMID: 29129157 DOI: 10.1056/NEJMoa1706442]
 - 14 **Powers WJ**, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, Biller J, Brown M, Demaerschalk BM, Hoh B, Jauch EC, Kidwell CS, Leslie-Mazwi TM, Ovbiagele B, Scott PA, Sheth KN, Southerland AM, Summers DV, Tirschwell DL; American Heart Association Stroke Council. 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. *Stroke* 2018; **49**: e46-e110 [PMID: 29367334 DOI: 10.1161/STR.0000000000000158]
 - 15 **Albers GW**, Marks MP, Kemp S, Christensen S, Tsai JP, Ortega-Gutierrez S, McTaggart RA, Torbey MT, Kim-Tenser M, Leslie-Mazwi T, Sarraj A, Kasner SE, Ansari SA, Yeatts SD, Hamilton S, Mlynash M, Heit JJ, Zaharchuk G, Kim S, Carrozzella J, Palesch YY, Demchuk AM, Bammer R, Lavori PW, Broderick JP, Lansberg MG; DEFUSE 3 Investigators. Thrombectomy for Stroke at 6 to 16 Hours with Selection by Perfusion Imaging. *N Engl J Med* 2018; **378**: 708-718 [PMID: 29364767 DOI: 10.1056/NEJMoa1713973]
 - 16 **Son S**, Kang DH, Hwang YH, Kim YS, Kim YW. Efficacy, safety, and clinical outcome of modern mechanical thrombectomy in elderly patients with acute ischemic stroke. *Acta Neurochir (Wien)* 2017; **159**: 1663-1669 [PMID: 28730457 DOI: 10.1007/s00701-017-3269-y]
 - 17 **Miszcuk M**, Bauknecht HC, Kleine JF, Liebig T, Bohner G, Siebert E. Direct puncture of the carotid artery as a bailout vascular access technique for mechanical thrombectomy in acute ischemic stroke-the revival of an old technique in a modern setting. *Neuroradiology* 2021; **63**: 275-283 [PMID: 32803336 DOI: 10.1007/s00234-020-02520-x]
 - 18 **Venditti L**, Chassin O, Ancelet C, Legris N, Sarov M, Lapergue B, Mihalea C, Ozanne A, Gallas S, Cortese J, Chalumeau V, Ikka L, Caroff J, Labreuche J, Spelle L, Denier C. Pre-procedural predictive factors of symptomatic intracranial hemorrhage after thrombectomy in stroke. *J Neurol* 2021; **268**: 1867-1875 [PMID: 33389028 DOI: 10.1007/s00415-020-10364-x]
 - 19 **Jia B**, Ren Z, Mokin M, Burgin WS, Bauer CT, Fiehler J, Mo D, Ma N, Gao F, Huo X, Luo G, Wang A, Pan Y, Song L, Sun X, Zhang X, Gui L, Song C, Peng Y, Wu J, Zhao S, Zhao J, Zhou Z, Li Y, Jing P, Yang L, Liu Y, Zhao Q, Peng X, Gao Q, Guo Z, Chen W, Li W, Cheng X, Xu Y, Zhang Y, Zhang G, Lu Y, Lu X, Wang D, Wang Y, Li H, Ling L, Peng G, Zhang J, Zhang K, Li S, Qi Z, Xu H, Tong X, Ma G, Liu R, Guo X, Deng Y, Leng X, Leung TW, Liebeskind DS, Miao Z; ANGEL-ACT Study Group†. Current Status of Endovascular Treatment for Acute Large Vessel Occlusion in China: A Real-World Nationwide Registry. *Stroke* 2021; **52**: 1203-1212 [PMID: 33596674 DOI: 10.1161/STROKEAHA.120.031869]
 - 20 **Zhang X**, Xie Y, Wang H, Yang D, Jiang T, Yuan K, Gong P, Xu P, Li Y, Chen J, Wu M, Sheng L, Liu D, Liu X, Xu G. Symptomatic Intracranial Hemorrhage After Mechanical Thrombectomy in Chinese Ischemic Stroke Patients: The ASIAN Score. *Stroke* 2020; **51**: 2690-2696 [PMID: 32811387 DOI: 10.1161/STROKEAHA.120.030173]
 - 21 **Panni P**, Gory B, Xie Y, Consoli A, Desilles JP, Mazighi M, Labreuche J, Piotin M, Turjman F, Eker OF, Bracard S, Anxionnat R, Richard S, Hossu G, Blanc R, Lapergue B; ETIS (Endovascular Treatment in Ischemic Stroke) Investigators. Acute Stroke With Large Ischemic Core Treated by Thrombectomy. *Stroke* 2019; **50**: 1164-1171 [PMID: 31009354 DOI: 10.1161/STROKEAHA.118.024295]
 - 22 **Kaesmacher J**, Chaloulos-Iakovidis P, Panos L, Mordasini P, Michel P, Hajdu SD, Ribo M, Requena M, Maegerlein C, Friedrich B, Costalat V, Benali A, Pierot L, Gawlitza M, Schaafsma J, Mendes Pereira V, Gralla J, Fischer U. Mechanical Thrombectomy in Ischemic Stroke Patients With Alberta Stroke Program Early Computed Tomography Score 0-5. *Stroke* 2019; **50**: 880-888 [PMID: 30827193 DOI: 10.1161/STROKEAHA.118.023465]
 - 23 **Duan YX**, Zhao Y, Pei HL, Chen SQ, LYU PY. [Relationship between cerebral small vessel disease and the outcome after intravascular thrombectomy in patients with acute ischemic stroke]. *Guoji Naixueguanbing Zazhi* 2021; **29**: 602-607 [DOI: 10.3760/cma.j.issn.1673-4165.2021.08.008]
 - 24 **Campbell BCV**. Selecting Patients With Large Ischemic Core Who May Benefit From Endovascular Reperfusion. *JAMA Neurol* 2019; **76**: 1140-1142 [PMID: 31355867 DOI: 10.1001/jamaneurol.2019.1789]
 - 25 **Powers WJ**, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, Biller J, Brown M, Demaerschalk BM, Hoh B, Jauch EC, Kidwell CS, Leslie-Mazwi TM, Ovbiagele B, Scott PA, Sheth KN, Southerland AM, Summers DV, Tirschwell DL. Guidelines for the Early Management of Patients With Acute Ischemic Stroke: 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. *Stroke* 2019; **50**: e344-e418 [PMID: 31662037 DOI: 10.1161/STR.0000000000000211]
 - 26 **Hou X**, Chen H. Proposed antithrombotic strategy for acute ischemic stroke with large-artery atherosclerosis: focus on patients with high-risk transient ischemic attack and mild-to-moderate stroke. *Ann Transl Med* 2020; **8**: 16 [PMID: 32055607 DOI: 10.21037/atm.2019.10.111]
 - 27 **Saber H**, Khatibi K, Szeder V, Tateshima S, Colby GP, Nour M, Jahan R, Duckwiler G, Liebeskind DS, Saver JL. Reperfusion Therapy Frequency and Outcomes in Mild Ischemic Stroke in the United States. *Stroke* 2020; **51**: 3241-3249 [PMID: 33081604 DOI: 10.1161/STROKEAHA.120.030898]

- 28 **Liu HW**, Ye F. [Effect of rt-PA thrombolysis combined with antiplatelet therapy on recurrent cardiovascular and cerebrovascular events in patients with mild acute ischemic stroke]. *Zhongguo Jiceng Yiyao* 2019; **26**: 461-465 [DOI: [10.3760/cma.j.issn.1008-6706.2019.04.020](https://doi.org/10.3760/cma.j.issn.1008-6706.2019.04.020)]
- 29 **Wang Z**, Song HQ. [Research progress on endovascular treatment of acute ischemic stroke]. *Zhongguo Naoxueguanbing Zazhi* 2021; **18**: 3 [DOI: [10.3969/j.issn.1672-5921.2021.01.013](https://doi.org/10.3969/j.issn.1672-5921.2021.01.013)]



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