Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

ELSEVIER

Correspondence

Endovascular-First Approach for Symptomatic Carotid Artery Stenosis in a COVID-19 Positive Patient: Expected and Unexpected Advantages

Although carotid endarterectomy (CEA) remains the mainstay of treatment of symptomatic carotid artery stenosis, some authors have proposed to shift to a Carotid Artery Stent (CAS)-first approach during the most acute phases of the Coronavirus Disease 2019 (COVID-19) pandemic, in order to spare anesthesiology staff and facilities employment, and preserve Intensive Care Unit capacity.[1] In 2020, as the first COVID-19 outbreak overwhelmed the Hospitals in Europe and the United States, Hellegering et al. advocated CAS-first to be safe and effective in symptomatic patients, based on their previous experience of a tertiary referral center, but they have not reported the outcomes of their new approach yet.[1] Moreover, they made no mention of the expected results of CAS in symptomatic patients affected by concomitant COVID-19, an aspect worthy of attention not only due to the high prevalence of asymptomatic or undetected COVID-19 among the general population as the Omicron variant is increasingly spreading, but also because of the widely reported higher risk of ischemic stroke and Transient Ischemic Attack (TIA) in those patients.[2] We seek to contribute to the current knowledge on these matters by reporting on a case of a symptomatic patient with recurrent TIAs and concomitant paucisymptomatic COVID-19 successfully treated with CAS.

An 81-year-old male affected by hypertension, chronic ischemic heart disease, atrial fibrillation under novel anticoagulant therapy (Edoxaban 30 mg/day), and previous prostate cancer treated with radiotherapy presented in the Emergency Room of our Center with numbness, paresthesia, and transient motor impairment of the left arm, subsiding within 30 minutes. He underwent neurological evaluation, brain CT scan, Computed Tomography Angiography (CTA) of the supra-aortic vessels, and carotid artery Duplex scan, which revealed a severe stenosis of the right internal carotid artery (>90%) due to a soft plaque located at its origin.

At first, we interrupted the anticoagulant therapy and scheduled urgent carotid endarterectomy (CEA) after at least 48 hours, but routine preadmission pharyngeal swab resulted positive for SARS-CoV2, although the patient had no fever, cough, dyspnea, or fatigue, and oxygen saturation of hemoglobin was steadily above 95%. The patient was therefore admitted in the COVID-19-dedicated ward under close observation, and considering the high thrombotic risk that comes with the infection, the anticoagulant treatment was immediately resumed. We thought of delaying CEA waiting for the COVID-19 test to turn negative, albeit not beyond the recommended period of 14 days, but four days after admission, the patient had a relapse of paresthesia to the left arm. Magnetic resonance was negative for acute ischemic foci or cerebral hemorrhage, but the recurrence of the neurologic symptoms clearly indicated that treatment could not be further delayed.

With the anticoagulant treatment still ongoing, we switched our operative strategy to urgent CAS, for which we obtained fully informed consent from the patient and his family. The procedure was performed under local anesthesia, with right transfemoral percutaneous access. A Carotid Wallstent® (Boston Scientific, Santa Clara, CA) 9 × 40 mm was deployed at the origin of the internal right carotid artery and postdilated with a balloon Ultrasoft SV® (Boston Scientific, Santa Clara, CA) 4.5 × 20 mm. Completion angiogram showed optimal patency of the right carotid axis in the absence of residual stenosis. No neurological deficits occurred during the procedure. The postoperative course was uneventful, without any relapse of sensory-motor impairment of the left arm, and 75 mg of clopidogrel was added to the chronic daily therapy for 30 days. The patient was discharged on postoperative day II, observing home quarantine until his follow-up swab turned negative.

As a renewed interest toward extending CAS to symptomatic carotid artery stenosis is arising in the setting of the last pandemic wave caused by the Omicron variant, this experience completes the one reported by Hellegering et al., showing that a CAS-first approach in symptomatic carotid artery stenosis is useful not only to avoid intensive care facility and staff overload, but also to manage COVID-19 patients requiring urgent interventions.[1] In fact, although no specific literature exists regarding the perioperative risk related to CEA for these patients, current anesthesiology guidelines and consensus documents acknowledge that active COVID-19 increases surgical risk and advise, when feasible that any surgery should be delayed >6 weeks after infection resolution.[3] Moreover, the well-known COVID-19-related hypercoagulability dictates a suitable antithrombotic prophylaxis or even, according to some authors, systemic anticoagulation, which makes the management of chronic anticoagulant and antiplatelet therapy extremely complex and a reason for concern.[4–7] On the one hand, in fact, anticoagulant therapy, if continued in the perioperative period, increases the risk of

bleeding complications and neck hematoma, compromising the success of CEA (but not CAS).[8] On the other hand, its discontinuation exposes patients with active SARS-CoV2 infections to both arterial and venous thrombotic events, with catastrophic consequences in the setting of carotid surgery for cerebral ischemia.[9]

For these reasons, in patients taking chronic anticoagulant therapy, we found that endovascular treatment offers the ideal solution to this problem, allowing its maintenance throughout the perioperative and postoperative course. Other advantages of an endovascular approach in COVID-19 patients include local anesthesia and shorter in-hospital stay, as already highlighted for aortic surgery in previous publications.[10]

In conclusion, we support the view that a CAS-first approach in symptomatic carotid artery stenosis is safe and effective in the pandemic setting, particularly for patients affected by concomitant COVID-19.

Luigi Federico Rinaldi
Department of Vascular Surgery
Policlinico di Monza
Monza, Italy
Vascular Surgery
Department of Integrated Surgical and Diagnostic Sciences
University of Genoa
Genoa, Italy

Chiara Brioschi
Department of Vascular Surgery
Policlinico di Monza
Monza, Italy

Giulia Marazzi
Maura Pallini
Enrico Maria Marone
Department of Vascular Surgery
Policlinico di Monza
Monza, Italy
Vascular Surgery
Department of Clinical-Surgical
Diagnostic and Paediatric Sciences
University of Pavia
Pavia, Italy
E-mail: luigif.rinaldi@gmail.com

REFERENCES

1. Hellegering J, van der Laan MJ, Heide EJ, et al. Preventing stroke in symptomatic carotid artery disease during the COVID-19 pandemic. J Vasc Surg 2020;72:755–6.
2. Esenwa C, Cheng NT, Lipsitz E, et al. COVID-19-associated carotid atherothrombosis and stroke. AJNR Am J Neuroradiol 2020;41:1993–5.
3. Connors JM, Levy JH. Thrombo inflammation and the hypercoagulability of COVID-19. J Thromb Haemost 2020;18:1559–61.
4. Zhang S, Zhang J, Wang C, et al. COVID-19 and ischemic stroke: mechanisms of hypercoagulability (review). Int J Mol Med 2021;47:21.
5. Marone EM, Rinaldi LF. Upsurge of deep venous thrombosis in patients affected by COVID-19: preliminary data and possible explanations. J Vasc Surg Venous Lymphat Disord 2020;8:694–5.
6. Rico-Mesa JS, Rosas D, Ahmadian-Tehrani A, et al. The role of anticoagulation in COVID-19-induced hypercoagulability. Curr Cardiol Rep 2020;22:53.
7. Marone EM, Bonalumi G, Curci R, et al. Characteristics of venous thromboembolism in COVID-19 patients: a multicenter experience from Northern Italy. Ann Vasc Surg 2020;68:83–7.
8. Faggioli G, Pini R, Rapezzi C, et al. Carotid revascularization in patients with ongoing oral anticoagulant therapy: the advantages of stent placement. J Vasc Interv Radiol 2013;24:370–7.
9. Roussopoulou A, Lazaris A, Tsivgoulis G, et al. Risk of perioperative neck hematoma in TIA and non-disabling stroke patients with symptomatic carotid artery stenosis undergoing endarterectomy within 14 days from cerebrovascular event. J Neurol Sci 2020;409:116590.
10. Rinaldi LF, Marazzi G, Marone EM. Endovascular treatment of a ruptured pararenal abdominal aortic aneurysm in a patient with coronavirus disease-2019: suggestions and case report. Ann Vasc Surg 2020;66:18–23.

https://doi.org/10.1016/j.avsg.2022.01.018

Re: "The Impact of Degenerative Connective Tissue Disorders on Outcomes Following Endovascular Aortic Intervention in the Global Registry for Endovascular Aortic Treatment"

To the Editor:

In a recent retrospective original article, Delaney et al.[1] reported their analysis on medium term outcomes of patients with diagnosed connective disorders (CDs) compared to those without CD who were included in Global Registry for Endovascular Aortic Treatment (GREAT) following endovascular treatment of aortic pathology and concluded that the current guidelines,[2] suggesting that the use of endovascular technology in patients with diagnosed connective tissue disorder and aortic pathology should be reserved for use only in an emergency situation or in the event that complex redo surgery is required, could be modified on the basis of GREAT data.

Indeed, they report that the presence of CD is not an independent predictor of a higher reintervention rate in the medium term, the majority of reinterventions required within 2 years of the index procedure was the same for both CD and non-CD patients, and the endoleaks requiring reintervention tend to occur early and resolve following appropriate further treatment; the perioperative mortality rate when compared to open surgery is comparable with endovascular intervention.

In our experience, we agree with these observations and also with that a significantly higher number of branch vessel procedures are needed in patients with CD.[3–6]

No funds were received for this work.
The authors have no conflicts of interest to declare.