AN INTERVIEW WITH…
Fiona Rohlffs, MD, PhD

Dr. Rohlffs discusses her current research efforts in stroke related to TEVAR and the carbon dioxide flushing technique and shares her thoughts on cerebral protection devices and follow-up protocols after EVAR.

What are your key takeaways from the initial Stroke from Thoracic Endovascular Procedures (STEP) study of stroke after thoracic endovascular procedures, and what is the current status of phase 2 of the STEP study?

The STEP study was initiated to investigate the risk factors for stroke during endovascular procedures involving the aortic arch and the supra-aortic vessels. We aimed for a global platform because procedures of interest were not regularly performed in many centers, and it was a strategy to include a higher number of cases. After defining the relevant endovascular procedures and devices used for endovascular aortic arch reconstruction, the five manufacturers of those devices were approached to help identify the global operators with the greatest experience. All five companies confirmed their participation, and manufacturer funds were not sought. STEP now includes high-volume centers, where experienced operators perform endovascular aortic arch procedures. In phase 1 of the STEP study, we used a questionnaire to collect data from all included operators on their current practice. The analysis of this survey allowed us to define consensus points—for example, on anticoagulation or imaging. One of the major takeaways was that not much consensus was present on perioperative neurologic monitoring and measures to minimize the risk of stroke.

In discussion with neurologists and neuroradiologists who are advisors for the STEP study, MRI with diffusion-weighted sequences was recommended as the best imaging technique for the detection of new brain lesions and their distribution, and also if the lesions were clinically silent. But as expected, funding and support to regularly perform MRI studies was not available in many participating centers because MRI is not considered standard of care. In the current phase 2 of STEP, we were finally able to pool postoperative MRI data from Hamburg, Germany, and Paris, France, and include a reasonable number of patients. So far, it appears that a very high number of patients have new brain lesions after thoracic endovascular aortic repair (TEVAR). We will be able to publish data from phase 2 soon.

Can you tell us about the carbon dioxide flushing technique for preventing air embolism during TEVAR and any next steps you are taking to research its safety and efficacy?

The carbon dioxide flushing technique has been one of our main research areas over the last 3 or 4 years, with Prof. Tilo Kölbel as the Primary Investigator. We observed that a relevant amount of air is released by the stent graft delivery system despite regular flushing, and we realized that this could be a relevant risk factor for stroke during TEVAR. Room air is not very soluble in blood, so the goal was to replace air with a better dissolving gas: carbon dioxide. Carbon dioxide is not only more soluble, but it is also a natural component of the blood and thus used in the vascular system. In our bench testing experiments, we observed that stent grafts flushed by carbon dioxide and saline did release significantly less gas. We are now working on a method to structurally analyze the released gas components from the stent graft after carbon dioxide flushing to investigate if the remaining gas amounts are pure carbon dioxide or are still mixed with room air.

Do you think there will be a place for cerebral protection devices in TEVAR?

If the use of cerebral protection devices becomes standard, the placement technique of the device itself must be very safe. Placing the protection device is already associated with manipulation at the supra-aortic vessels, and I think more investigation is needed into whether there is a relevant benefit that exceeds the risk of causing embolism during placement. In aortic interventions involving the aortic arch, I generally prefer a strategy with as few steps as possible and without extra manipulation by placing a cerebral protection device. The access routes for aortic arch procedures do allow for other options to reduce the risk of embolism in many cases, such as clamping the carotid artery for a short period during stent graft placement.

(Continued on page 73)

(Continued from page 74)

How would you describe the ideal follow-up protocol after endovascular aneurysm repair (EVAR)?

The most accurate imaging technique for follow-up after EVAR is CTA, and it should be performed postoperatively. But as we learned from large clinical trials (eg, the EVAR trials), the number of patients who adhere to CTA follow-up is not very high, especially in the long term, possibly due to the associated costs and appointments. This is a disadvantage because risk factors for secondary rupture (which could be corrected) might not be detected, making EVAR outcomes less favorable over time. On the other hand, for patients who demonstrate good aortic remodeling after EVAR, continuous follow-up CTA might be overtreatment.

In my eyes, a solid follow-up protocol should be balanced between convenience for the patient and less time-consuming, cheaper methods (eg, sac measurements by ultrasound) and the selection of at-risk patients who should be scheduled for more elaborate imaging like CTA. To allow for such a protocol, better understanding of the risk factors and complications after EVAR associated with secondary rupture is needed to select and define patient groups for other either more or less complex follow-up protocols. Therefore, I think that the best follow-up is an individual, risk-adjusted protocol for specific patient groups.

When do you find time to practice violin, and how often do you have the opportunity to perform?

Playing the violin has been a part of my life since I was 6 years old. I wanted to become a violinist, and music was my main interest until I finished school. I applied to medicine parallel to music. I was fortunate to get a slot in the music and medicine programs, so I started both. Over time, medicine became more and more my focus. However, because I played violin on a high level and practiced so much in my youth, I was able to keep a good standard that I can reactivate quickly for musical projects. The combination of music and medicine gives me opportunities to play at medical events and also be a part of the scientific program. ■

Fiona Rohlffs, MD, PhD
German Aortic Center Hamburg
Department of Vascular Medicine
University Heart & Vascular Center
University Hospital Hamburg-Eppendorf
Hamburg, Germany
f.rohlffs@uke.de
Disclosures: None.