Early and Late Results of CAS in the Italian Registry: What Are the Limits of Registry Data?

G.M. Biasi, MD, Monza, Italy; G. Deleo, MD, Monza, Italy; L. Inglese, MD, Milan, Italy; A. Cremonesi, MD, Cotignola, Italy; A. Froio, MD, Monza, Italy; V. Camesasca, MD, _Monza, Italy; C. Piazzoni, MD, Monza, Italy; A. Liloia, MD, Monza, Italy

Purpose

The Italian Registry for Carotid Stenting (RISC: Registro Italiano per lo Stenting Carotideo) has been proposed by specialists from different disciplines interested and directly involved in Italy in the prevention of stroke due to carotid plaques through stenting of carotid lesions. The registry has been endorsed by four Italian societies: Società Italiana di Chirurgia Vascolare ed Endovascolare (SICVE, for vascular surgery), Società Italiana di Cardiologia Invasiva (GISE, for interventional cardiology), Società Italiana di Radiologia Medica (SIRM, for radiology), and Associazione Italiana di Neuro-radiologia (AINR, for neuroradiology).

The aim of the study was to constitute a multidisciplinary working group collecting data on carotid stenting procedures performed by different specialists with different techniques, outside randomized clinical trials in the "real world" settings.

Method

RISC is a prospective, multidisciplinary, nonrandomized multicenter trial. Investigators are required to certificate their experience with CS (at least 10 procedures in the last 12 months are required to qualify). Each center is required to assemble a multidisciplinary team of physicians, always including a vascular surgeon and an independent neurologist. Indications to treatment are based on the guidelines of the respective societies. Patients are recruited and included in the study by notification to the referring center the day before the procedure by fax; demographic and periprocedural data are collected within 72 hours after the procedure through a Web site procedure. The follow-up is scheduled at 1, 6, 12, and 24 months. The primary end point of the study is the 30-day combined death and stroke rate and the rate of ipsilateral stroke and restenosis between 31 days and 2 years. The Scientific Committee, composed of a vascular surgeon, cardiologist, radiologist, and neuroradiologist, has been instituted to control patient recruitment and to arrange on-site visits. Considerable attention has been paid to the quality control program of the registry in order to ensure scientific validation.

Results

One thousand four hundred fifty-four CS procedures were performed: 244 patients were excluded after recruitment owing to protocol violation, and 1,210 patients entered the registry. Twenty-eight percent of procedures were performed by vascular surgeons, 36% by cardiologists, and 36% by radiologists. Of 1,210 patients, 863 (71.3%) were asymptomatic. Primary lesions were found in 1,042 of 1,210 (86.1%). Preprocedural cerebral computed tomography scan was positive in 418 of 1,210 (34.5%). Technical success was achieved in 1,195 of 1,210 patients (98.7%). A brain protection device was used in 1,107 of 1,210 patients (91.5%). The 30-day death rate was 0.7% and the stroke rate was 1.2%, for a combined rate of 1.9%. Six hundred twenty-three, 367, and 131 patients were analyzed, respectively, at the 6-month, 12-month, and 2-year follow-up. The ipsilateral stroke and neurologic death rate was 0.3%, 0.7%, and 0.7% after 6 and 12 months and 2 years, respectively. The restenosis rate was 6.0%, 3.0%, 2.4%, and 0.8% after 1, 6, and 12 months and 2 years, respectively.

Discussion

Randomized trials are superior to observational studies in the elimination of allocation bias, ensuring that comparison groups of sufficient size differ only in their exposure to the intervention concerned.

Nevertheless, we should keep in mind that randomized studies have some limitations: firstly, the strict inclusion/exclusion criteria, which makes the study sample rather different from the real-world population. For instance, only one-third of patients are candidates for carotid endarterectomy in our centers, which matches the NASCET/ACAS inclusion criteria. According to randomized evidence, we do not know which should be the best treatment for these excluded patients. Subjects excluded from randomized controlled trials tend to have a worse prognosis than those included, which limits the reliability of generalizing results. A correct selection or nonselection of patients, like the concept of "the real population" might put a final word to this challenging situation.

Secondly, the surgical/endovascular skills of participating centers are excellent, far better than other hospitals, often because of the carotid case load per year of different interventionalists. The consequence is that the superiority of a treatment as demonstrated by a randomized study could not be confirmed in hospitals without high case load per year.

Moreover, the need for a standard protocol throughout the randomized study (several years!) does not allow the use of new and more sophisticated devices. In particular, in the field of carotid endovascular technology, it seems that novel self-expanding stents with dynamic tapering design and closed cell structure could adapt and conform better to the unique anatomy of the carotid artery. New brain protection devices with a smaller profile have been developed to reduce the risk of embolization during carotid plaque crossing. These new devices cannot be used in the ongoing randomized trials comparing CAS to CEA.

Lastly, registries are likely to produce final results more rapidly than randomized studies, which could be limited by a non-optimal recruitment.

Conclusions

In conclusion, the RISC was established to constitute a multidisciplinary working group collecting data on carotid stenting procedures performed by different specialists with different techniques, outside randomized clinical trials, in real-world settings. The accuracy of the registry was further supported by the presence of an online database and a quality control program.

The RISC was concluded in October 2004, but the RISC2 Study is starting in October 2005 upon agreement with the Italian National Health Institute (Istituto Superiore di Sanità). The study will continue with the participation of all the centers on the national territory where CAS procedures are performed, in order to set-up reliable observatory of carotid stenting.

NOTES