Original article

Influence of anatomical factors on the feasibility and safety of carotid stenting in a series of 154 consecutive procedures

Antonio Silvestro[a], Patrizia Civelli[b], Giorgio Laffranchini[c], Biagio Troianiello[d] and Lanfroi Graziani[a]

Objective The present study assessed the impact of unfavourable vascular anatomy on the feasibility and safety of carotid angioplasty and stenting (CAS).

Methods Between 2000 and 2005, 154 CAS procedures (46% in symptomatics) were performed in 138 consecutive patients (mean age 72 W 7 years, 63% males), followed for a median period of 16 months by a neurologist performing clinical and duplex scan examination. The impact on outcome of tortuous supra-aortic vessels, tortuous internal carotid artery (ICA), calcified stenosis and contralateral ICA occlusion were assessed.

Results The feasibility was 100%. The 1-month rate of death and disabling stroke was 2.6% (1.2% in the asymptomatic group and 4.2% in symptomatic group, P U 0.33). The 1-month rate of any stroke and death was 4.5%. During follow-up, a further seven events occurred (one ipsilateral major stroke, one ipsilateral minor stroke and five deaths). There was no difference in occurrence of any event during follow-up between asymptomatic and symptomatic group (8.4% versus 9.6%, P U 0.78). At least one unfavourable vascular anatomy condition was present in 48% of cases, two conditions in 16% and three in 3%. No statistically significant association was found between unfavourable vascular anatomy and outcome. Intra-stent restenosis was registered by duplex scan in five cases (3.2%); it was associated with occurrence of minor stroke during follow-up (P U 0.032).

Conclusions CAS as first choice procedure is feasible, safe and effective, despite hostile vascular anatomy may be encountered in some patients. Unfavourable anatomic conditions appear to have a scarce impact on outcome.
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[a]Servizio di Emodinamica, [b]Divisione di Neurologia, [c]Divisione di Chirurgia Vascolare, Istituto Clinico 'Citta` di Brescia' and [d]Divisione di Neurologia, Istituto Clinico 'Sant' Anna', Brescia, Italy

Correspondence and requests for reprints to Antonio Silvestro, Servizio di Emodinamica, Istituto Clinico 'Città di Brescia', Via Gualla 15, 25100 Brescia, Italy
Tel: +39 030 3710367; fax: +39 030 3710370;
e-mail: antoniosilvestro@libero.it

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Introduction

Carotid artery angioplasty and stenting (CAS) has emerged in the last years as a valid alternative to thrombo-endarterectomy (TEA) for the prevention of stroke caused by carotid artery stenosis in patients at high risk for surgical treatment [1]. Several observational [2–4] and randomized studies [5,6] have shown that, in high-risk patients, the safety and clinical efficacy of the less invasive CAS is comparable to TEA. On the basis of current evidence, however, it is recommended to avoid systematic replacement of TEA with endovascular procedures [7]. Recent 1-month follow-up results from the SPACE trial failed to show a statistically significant non-inferiority of CAS compared to TEA [8]. Data from the EVA-3S trial indicate an increased 30-day complication risk for CAS compared to TEA in symptomatic patients [9].

A complete analysis off easibility is essential when promoting an endovascular treatment. CAS itselfi s associated with complication risk. For example, an increased risk in the presence of some clinical conditions has been reported [10]. According to some studies, a difficult vascular anatomy may represent a limitation for CAS [1], although clear data confirming this assertion are lacking. The periprocedural complication risk has to be taken into account, particularly for the treatment of patients with asymptomatic carotid stenosis, who could have a lower benefit from the intervention [1]. Thus, the presence of anatomic conditions, such as an elongated aortic arch, common or internal carotid tortuosity, occlusion of the contralateral carotid artery, or relevant circumferential calcification of the target lesion, has to be considered before starting a CAS procedure, which

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