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Carotid Angioplasty Versus Surgery: About 50 Cases

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Abstract: Atheromatous carotid stenosis are responsible for one out of 10 cerebral infarcts, posing a major public health problem by their mortality and physical disabilities. Their management involves two aspects: medical treatment and revascularization represented by carotid surgery and carotid angioplasty with stenting. The aim of this work is to compare the two techniques of revascularization in terms of feasibility and complications. Our study is based on a retrospective analysis of 50 cases of carotid stenosis treated either by surgery or carotid angioplasty, collected in the department of peripheral vascular surgery of the Military Hospital Avicenne of Marrakech during the period between January 2011 To December 2015.
Keywords: Angioplasty - Surgery - Symptomatic carotid stenosis.

INTRODUCTION

The stenosis of the carotid bifurcation, which are of atheromatous origin in the majority of cases, is both frequent and serious, because of the risk of cerebral infarction that they cause [1]. Management is based on drug treatment and control of vascular risk factors; in addition, a revascularization procedure may be indicated. Revascularization techniques for these stenoses include surgery (mainly endarterectomy) and stent angioplasty. The objective of this work is to report the experience of the AVICENNE military hospital in the management of symptomatic carotid stenosis, whether by conventional surgery or endovascular treatment.

MATERIALS AND METHODS

This is a retrospective and analytical study of a series of 50 patients treated for carotid stenosis over a period of 5 years, stretching from January 2011 to December 2015, collected at the vascular surgery department at Avicenne Military Hospital. of Marrakech all our patients benefited from a standard preoperative assessment (NFS, ionogram, TP-TCA, ECG), a cerebral CT scan, a radiological assessment of the carotid stenosis which contained a combined ultrasound duplex or an arteriography, angioscan or angio-MRI and cardiac evaluation. All our patients were prepared as for conventional surgery, because a conversion is always possible after carotid angioplasty.

All patients were supported by the same team of vascular surgeons and assisted by an anesthetist. The statistical analyses were accomplished by IBM computer using Epi Info version 7.2. The study was performed according to the second principles of the Declaration of Helsinki and approved by the Ethical Committee of the Military Hospital Avicenne.

RESULTS

The study included 50 patients, of which 20 patients (40%) benefited from carotid angioplasty and 30 patients (60%) benefited from carotid surgery. The age of our carotid angioplasty patients ranged from 52 to 74 years with an average age of 63.3 years, while for those who had surgery, age ranged from 54 years and 80 years with an average age of 67.5 years. The symptomatology found in the patients who benefited from angioplasty was with type of ischemic cerebral accidents constituted (AVCI) in 15 cases (or 75%), of transient ischemic attacks (AIT) in 5 cases (or 25%), then that in patients who had benefited from endarterectomy the symptomatology found was a type of ischemic stroke constituted in 11 cases (36.67%), transient ischemic attacks in 16 cases (53.33%), and retinal accidents in 3 cases (10%).

Carotid angioplasty was performed under local anesthesia whereas for carotid surgery, locoregional anesthesia was the most used: 23 cases (76.66%) versus 6 cases (20%) operated under general anesthesia and only one case (3.34%) who underwent locoregional anesthesia and converted to general anesthesia.

For patients treated by angioplasty, during the procedure, two patients (10% of cases) presented complications related to the type of disorder of consciousness that lasted 3 minutes for the patient in whom no cerebral protection performed and 10 min for the other patient who were regressive and without neurological deficit . The revascularization technique used in our patients was patch-free endarterectomy in 19 cases (63.34%) endarterectomy with patch in 1 case (or 3.33%) and eversion endarterectomy: in 9 cases (either 30%) and carotid-carotid venous bypass by VSI 1 patient (or 3.33%). The evolution in the short and medium term was favorable for most of our patients except for a single patient in whom the surgery was performed and who presented a cervical hematoma J1 which has evolved well after surgical drainage. The average length of hospitalization for angioplasty-treated patients was one day except for the 2 patients who presented with problems of consciousness, for whom the duration of hospitalization was 48 hours, and for whom we performed a MRI brain control that was normal. For patients who had surgery, the length of stay was 48 to 72 hours. Patient discharge was allowed after stabilization and without complications; under the prescription of clopidogrel (75 mg / day) in combination with acetylsalicylic acid (160 mg / day) in the endovascular side and only acetylsalicylic acid (160 mg / day) in the surgical side. A radiological control at 15 days by a duplex ultrasound then clinical at 30 days was satisfactory for all the patients. All patients were subsequently referred to the clinic for a clinical evaluation at 3 months, then every 6 months, with a one-year Doppler check.

DISCUSSION

To date, four randomized studies with more than 300 patients comparing endarterectomy to the carotid stent have been published (Figure 3). The SAPPHIRE study (Stenting and Angioplasty with Protection in Patients at High Risk for Endarterectomy) [2]. CAVATAS studies (Carotid and VErtebral ARtery Transluminal Angioplasty Study) [3]. SPACE (Stent Protected Percutaneous Angioplasty of the Carotid Artery versus Endarterectomy) [4]. and EVA-3S (Endarterectomy versus angioplasty in patients with symptomatic severe carotid stenosis) [5].

Compared with literature data [6-8], our patients in this modest series were younger with an average age of 63.3 years for the angioplasty group versus 67.5 years for the surgery group. In the series of A. D. Santos *et al*. in Spain [9], the diagnosis of carotid stenosis was made by Doppler ultrasound in both groups, confirmed by arteriography in the group treated with angioplasty. In the series of J.L.Mas *et al*. in France [6], most patients were evaluated by carotid ultrasonography associated with magnetic resonance angiography or arteriography. Several studies carried out did not show any difference between the series carried out with systematic shunt or without shunt [10-13].

In the choice of revascularization of patients with carotid stenosis, it is very important to consider the risk factors that differ according to the procedures. If the results of the surgery are mainly influenced by the patient's comorbidities, the stent's complications are rather related to the vascular anatomy.

In patients at low risk for surgery, endarterectomy is a valid option. In centers with high volume of endovascular interventions, the carotid stent with the use of distal protection systems is an alternative considered equivalent to surgery, even though several randomized studies are still in progress [14].

CONCLUSION

Angioplasty and endarterectomy are complementary procedures, which can be used for primary and secondary prevention of stroke in symptomatic or asymptomatic patients with carotid stenosis, if performed by experienced operators. A judicious choice of the revascularization technique must be made on a case by case basis.

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