

Renal Protection in Renovascular Disease: Is Angioplasty Safe and Effective?

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Atherosclerotic disease of the renal artery is a relatively common entity in which the proximal arterial stenosis may lead to progressive impairment of renal function and even terminal renal failure. Therefore, its identification and treatment are medically significant. Frequently it can also cause secondary hypertension.

One alternative treatment is revascularization by angioplasty with stent implantation, which improves the flow in the artery, but not always improve the renal outcome nor control of hypertension when this is present.

Few randomized studies have carried out to evaluate this topic, some with small numbers of patients. (1, 2)

A study (3) evaluated the long-term results of intensive medical treatment versus revascularization strategy. 106 hypertensive uncontrolled patients were randomized with treatment for at least two drugs, evidence of atherosclerotic renal artery stenosis and serum creatinine less than 2.3 mg / dl undergoing treatment that included inhibitors of angiotensin converting enzyme. Basal blood pressure was similar in both groups and after 3 months it remained with non differences (176 ± 31 and 101 ± 14 mm Hg in the medical treatment group vs. 169 ± 28 and 99 ± 12 mm Hg in the revascularized group; $p = ns$), although the use of more drugs in the medical treatment group (3.2 drugs) in connection with the revascularized group (2.1 drugs) ($p < 0.001$). The final results were that the interventionist strategy was only slightly superior to medical treatment, but this conclusion is conditioned by the fact that 22 patients originally assigned to medical treatment a few weeks later were undergone to renal revascularization by sustained hypertension despite medical treatment.

Another recent study, STAR, (4) evaluated 140 patients who were initially randomized to medical treatment ($n = 76$) or angioplasty ($n = 64$). The medical treatment group received all antihypertensive drugs that were necessary, including inhibitors of angiotensin converting enzyme or antagonists of AT1 receptor to achieve an objective of $< 140/90$ mm Hg and they were also indicated statins and aspirin systematically. In the intervention group, the procedure was carried out in only 46 patients, since in 12 of them, with diagnosis of renal artery stenosis greater than 50% by imaging methods such as CT or MRI, it was confirmed that they had minor injuries in angiography and in other 6 cases

the stent was not placed because of different problems.

The primary objective (20% decline in glomerular filtration rate compared to basal) was achieved in 22% of patients in the treatment group and 16% in the intervention group ($p = ns$) at 10 months follow up. Neither differences were found in the control of hypertension, cardiovascular morbidity and mortality nor in the combination of renal impairment and death. In the intervention group, two patients died due to complications of the procedure and one died because of complication of an infected hematoma of the puncture point. In two cases it was evidenced femoral false aneurysm and in five, renal artery damage without impact on function.

There was no difference in blood pressure between both groups, so much at randomization as at follow-up, besides, without difference between groups in the number of drugs used. The follow-up to 2 years showed non differences between both alternatives of treatment in the progression of renal function impairment.

With these backgrounds, Nau and et al.'s work (5) is interesting, as it provides own information from a center of Argentina about the safety of the procedure and some aspects of away evolution from these patients.

It is remarkable that of 100 procedures could be performed stent placement in 98 cases with a success rate of 99% in terms of recovery of renal flow. There were only three dissections of the renal artery and there was no death related with the procedure. Acute renal failure postimplantation stent was 11.4%, without requiring dialysis in any case. It is clear that this alternative therapy is safe in trained hands.

More controversial are the results of long-term monitoring, since the blood pressure reduction was small (10.0 mm Hg for systolic, unchanged diastolic pressure), although with a reduction of the drugs essential to its control. Moreover, the obtaining data was by patient's reference and in this case, it could not have basal and final data of ambulatory blood pressure monitoring of 24 hours. Regarding renal function, the results are unlike, since 49% of patients showed significant improvement, whereas 20.4% showed impairment after the procedure. Those who received angioplasty with bilateral stenting showed a better development, so much of renal function as the blood pressure control.

On the basis of the procedure safety shown in Nau

and et al.'s work, it remains to be explored in more detail which are the predictors of best response in order to establish with certainty, in what cases of renal stenosis opt for medical treatment and in which ones suggest angioplasty.

BIBLIOGRAPHY

1. D1. Webster J, Marshall F, Adballa M, et al. Randomized comparison of percutaneous angioplasty vs continuous medical therapy for hypertensive patients with atheromatous renal artery stenosis. Scottish and Newcastle Renal Artery Stenosis Collaborative Group. *J Hum Hypertens* 1998;12:329-35.
2. Plouin PF, Chateller G, Darne B, et al. Blood pressure outcome of angioplasty in atherosclerotic renal artery stenosis: a randomized trial. *Essai Multicentrique Medicaments vs Angioplastie (EMMA) Study Group. Hypertension* 1998; 31:823-9.
3. Van Jaarsceld BC, Krijnen P, Pieterman H. The effect of balloon angioplasty on hypertension in atherosclerotic renal-artery stenosis. Dutch Renal Artery Stenosis Intervention Cooperative Study Group. *N Engl J Med* 2000;342:1007-14.
4. Bax L, Woittiez AJ, Kouwenberg H, et al. Stent placement in patients with atherosclerotic renal artery stenosis and impaired renal function. *Ann Intern Med* 2009;150: 840-8.
5. Nau G, Albertal M, Padilla L, Thierer J, Cura F, Candiello A y col. Evolución alejada de la enfermedad renovascular aterosclerótica en pacientes sometidos a angioplastia. *Rev Argent Cardiol* 2011;79: XX-XX.