

# CASE REPORT



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# PRESENTATION



- 47 years old women
- Remitted to our hospital because resistant hypertension.
- Former smoker (20 cigarettes/day)
- Diabetes mellitus
- Hypercholesterolemia
- Hyperuricemia
- Hypertension 24 years evolution since her first pregnancy (preeclampsy) with organ end damage (LVH, severe left ventricule hypertophy)
- Sedentary lifestyle
- **Treatment:**
  - \*Bisoprolol 5 mg a day
  - \*Hidroclorotiazida 12.5 mg a day
  - \*Diliazem 60 mg every 8 hours
  - \*Losartan 50 mg every 12 hours
  - \*Doxazosina de 4 mg at night.

# PHISICAL EXAMINATION



Weight 79.3 kg

Height 151 cm (body index 34.8)

Waist circumference 119 cm

PA 140/85 mmHg

HR 79 spm

The rest of physical examination is normal

¿WHAT IS THE PROBLEM?



# RESISTANT HYPERTENSION (RH)



Systolic blood pressure (SBP)  $\geq$  140 mmHg and/o  
Diastolic blood pressure (DBP)  $\geq$  90 mmHg

In patient who are being treated with  $\geq$  3 antihypertensive drugs (maximum dosis), one of them a diuretic, with treatment compliance

\*Calhoun et al: patients treated with  $\geq$  4 drugs even if they have reached the therapeutic goal terapéutica

Specialized centers 20%.

Associated factors RH:

- Advanced age
- Diabetes mellitus
- Chronic renal disease
- Obesity
- Use of some drugs (NSAIDs, sympathomimetics, stimulants, alcohol, oral contraceptives, cyclosporine, erythropoietin, licorice and herbs)

# DIFERENTIAL DIAGNOSIS



# RESISTANT HYPERTENSION DIFERENTIAL DIAGNOSIS



- **Primary aldosteronism** (10-20% resistant hypertension)

46 percent had hypokalemIA

- **Renal artery stenosis**

Common cause of resistant hypertension

Can be due to either atherosclerotic disease or, in younger patients, fibromuscular dysplasia.

- **Chronic kidney disease**

- **Obstructive sleep apnea**

It was detected in 71 to 85 percent

Severity of sleep apnea correlates with the severity of hypertension

Screening if patient has the following risk factors: obesity, loud snoring, and/or daytime sleepiness

- **Less common causes:** pheochromocytoma, Cushing's syndrome and aortic coarctation

# DIAGNOSIS TESTS



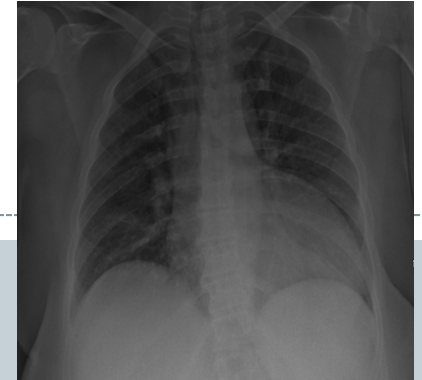
- HbA1C 7.1%
- Renal function: Creatinin 1.29 mg/dl. k 5 mEq/l. GFR (Cockroft-Gault) 40 ml/min. Microalbuminuria 603.5 mcg/ml. Urine microalb/cr ratio 805 mcg a/mg.
- Thyroid function: normal
- Triglycerides 257 mg/dl. HDL 41 mg/dl. LDL 198 mg/dl. Lp(a) 87 mg/dl.
- Electrocardiogram : sinus rhythm 73 spm and a no progresión of R vector in precordial derivation from V1 to V5.
- Ambulatory blood presure monitoring (ABPM) under treatement show a media presure 155/77 mmHg, systolic load 91% y dyastolic 34.3%. non dipper and a high variability.
- Echocardiography severe left ventricule hypertrophy LVH concentric 17 mm wiht preserve ejection fraction.



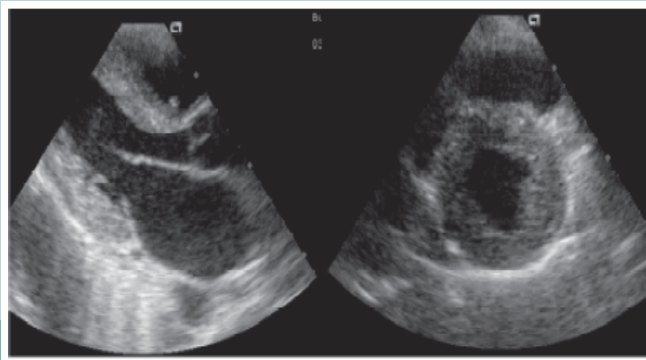


# ¿RENAL KIDNEY: ETIOLOGY OR DAMAGE?

# DIAGNOSIS TEST



- Torax radiology:
- Echocardiography: severe left ventricular hypertrophy. Preserved ejection fraction. No dilated left ventricle
- Abdominal echography:
  - Left renal are loss of size (7 cm). Right ok.
  - Doppler: suggest left renal stenosis
  - hepatic steatosis





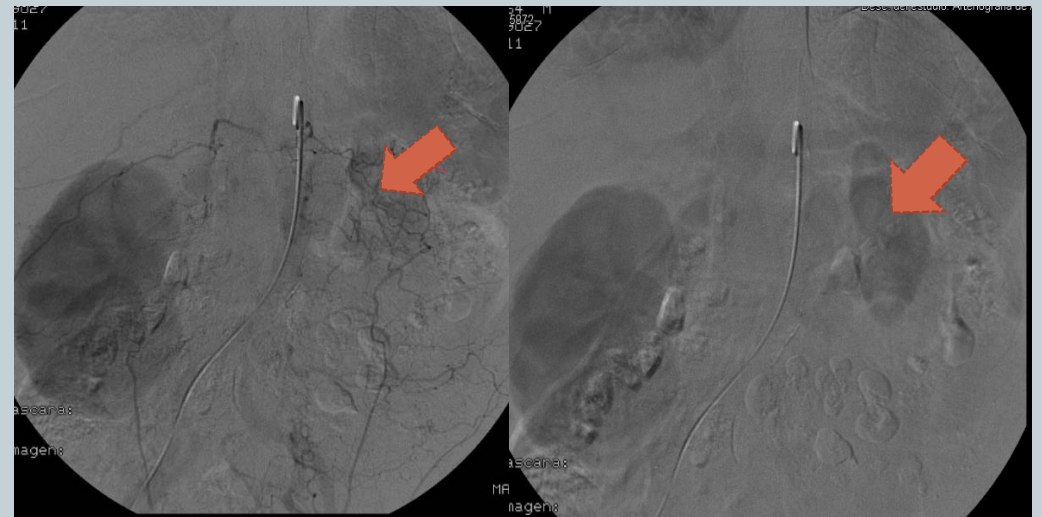
¿RENAL KIDNEY? ETIOLOGY and DAMAGE, the both

# DIAGNOSIS TEST



- **Arteriography**

- Irregular wall of aorta and proximal amputation with distal obliteration of the left renal artery.
- Renal arteriography was performed which confirmed the diagnosis but was not possible percutaneous intervention.



# DIAGNOSIS



**SEVERE RESISTANT HYPERTENSION (level 3) DUE TO A RENOVASCULAR STENOSIS WITH A PRESOR KIDNEY WITH A END ORGAN DAMAGE (LVH, BLOOD VESSELS AND RENAL FUNTION).**

**METABOLIC SYNDROME**

# MANAGEMENT



- Cardiovascular risk calculate
- setting treatment goals for this patient

**SCORE 0%**

- Lipid. LDL-col < 115 mg/dl
- Blood Pressure < 130/80 mmHg. Hypertension treatment
- Glucose < 130 mg/dl
- Lifestyle

¿ANY MORE?

# ROLE OF SURGERY IN RENOVASCULAR HYPERTENSION MANAGEMENT

## RENAL ANGIOPLASTY

Total occlusions and ostial lesions (like our patient) generally do not respond well to angioplasty

## RENAL SURGERY

Surgery is only preferred for selected patients who have complex anatomic lesions:

- Multiple small renal arteries
- Early primary branching of the main renal artery
- Requirement for aortic reconstruction near the renal arteries for other indications
- Surgical therapy in unilateral atherosclerotic renal artery stenosis consists of bypassing the stenotic segment or of removing a small atrophic kidney with nearly complete arterial occlusion

Stanley JC. Surgical treatment of renovascular hypertension. Am J surg 1997.

Novick AC. Long-Term of surgical revascularization for renal artery disease. Urol Clin North Am 2001

# ¿DIAGNOSIS TEST?





# DIAGNOSIS



- Renal scintigraphy: left kidney decreased in size with very poor relative function (10%).
- Determination of plasma renin activity (PRA):

Lateralization to the left renal vein where the activity was 3.69 times higher

# ROLE OF SURGERY IN RENOVASCULAR HYPERTENSION MANAGEMENT

In our patient:

- \*Lack of blood retrograde filling through collateral circulation
- \*Severe renal dysfunction
- \*Renal size less than 9 cm

**Left nephrectomy by laparoscopy**

**NEXT VISIT:**

She only needs three drugs and she has better control:

- Losartan 50 mg/12 h
- Bisoprolol 5 mg/24 h
- Hydrochlorothiazida 12.5 mg /day



# CONCLUSIONS



- Renovascular hypertension is a common etiology of secondary hypertension (prevalence of 2% to 20%, reaching 40% in some series)
- Atherosclerosis and fibromuscular disease in over 90% of the causes.
- We must to evaluate revascularization either by percutaneous angioplasty (with or without stenting) and, if no possible, surgery
- Certain situations do not benefit from revascularization (lack of blood retrograde filling through collateral circulation, glomerular damage, tubular or severe arteriolar sclerosis, renal size less than 9 cm, severe renal dysfunction or when angioplasty fails) where nephrectomy is an alternative.
- Lateralization defined as a ratio of renals veins' s plasma renin activity greater than 1.5 to dysfunctional kidney predicts 93% of curability.

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