CONGRESSO INTERREGIONALE SIIA PIEMONTE - LIGURIA - VALLE D'AOSTA

Torino, 10 ottobre 2020

IPERTENSIONE NEFROVASCOLARE

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III SESSIONE

IPERTENSIONE DI DIFFICILE CONTROLLO

Moderatori: R. Boero (Torino), R. Melchio (Cuneo)

15.00 Esempio di applicazione di PDTA: il "Percorso ipertensione in VDA" ***M. S. Modesti (Aosta)***

15.12 Ipertensione nefrovascolare ***C. Lopez (Torino)***

15.24 Inquadramento dell'ipertensione resistente ***K. Salam (Genova)***

15.36 Ipertensione e trombosi dell'arteria renale ***F. Ardito (Torino)***

15.48 Fibrillazione atriale ed ipertrofia del ventricolo sinistro ***G. Mingrone (Torino)***

16.00 Discussione

16.15 **- UPDATE 2 -** Presenta ***A. Milan (Torino)***
Triplice terapia antitrombotica nella FANV con cardiopatia ischemica: una scelta difficile ***C. Pascale (Torino)***

16.45 Considerazioni conclusive

17.00 Questionario ECM

Avviata terapia farmacologica, non interferente con eventuali dosaggi ormonali, con Amlodipina 10 mg 1cp/die e Doxazosina 4 mg 1cp x2/die e supplementazione con potassio cloruro.

RICHIESTI ACCERTAMENTI PER LA VALUTAZIONE DELLE SECONDARIETA' TENSIVE

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Chi sottoporre a screening per ipertensione secondaria?

Younger patients (<40 years) with grade 2 hypertension or onset of any grade of hypertension in childhood
Acute worsening hypertension in patients with previously documented chronically stable normotension
Resistant hypertension (see section 8.1)
Severe (grade 3) hypertension or a hypertension emergency (see section 8.3)
Presence of extensive HMOD
Clinical or biochemical features suggestive of endocrine causes of hypertension or CKD
Clinical features suggestive of obstructive sleep apnoea
Symptoms suggestive of phaeochromocytoma or family history of phaeochromocytoma

Williams B et al. 2018 ESC/ESH Guidelines for the Management of Arterial Hypertension; Journal of Hypertension 2018

Chi sottoporre a screening per ipertensione nefrovascolare?

Table 5. Clinical Scenarios Associated With Renovascular Disease

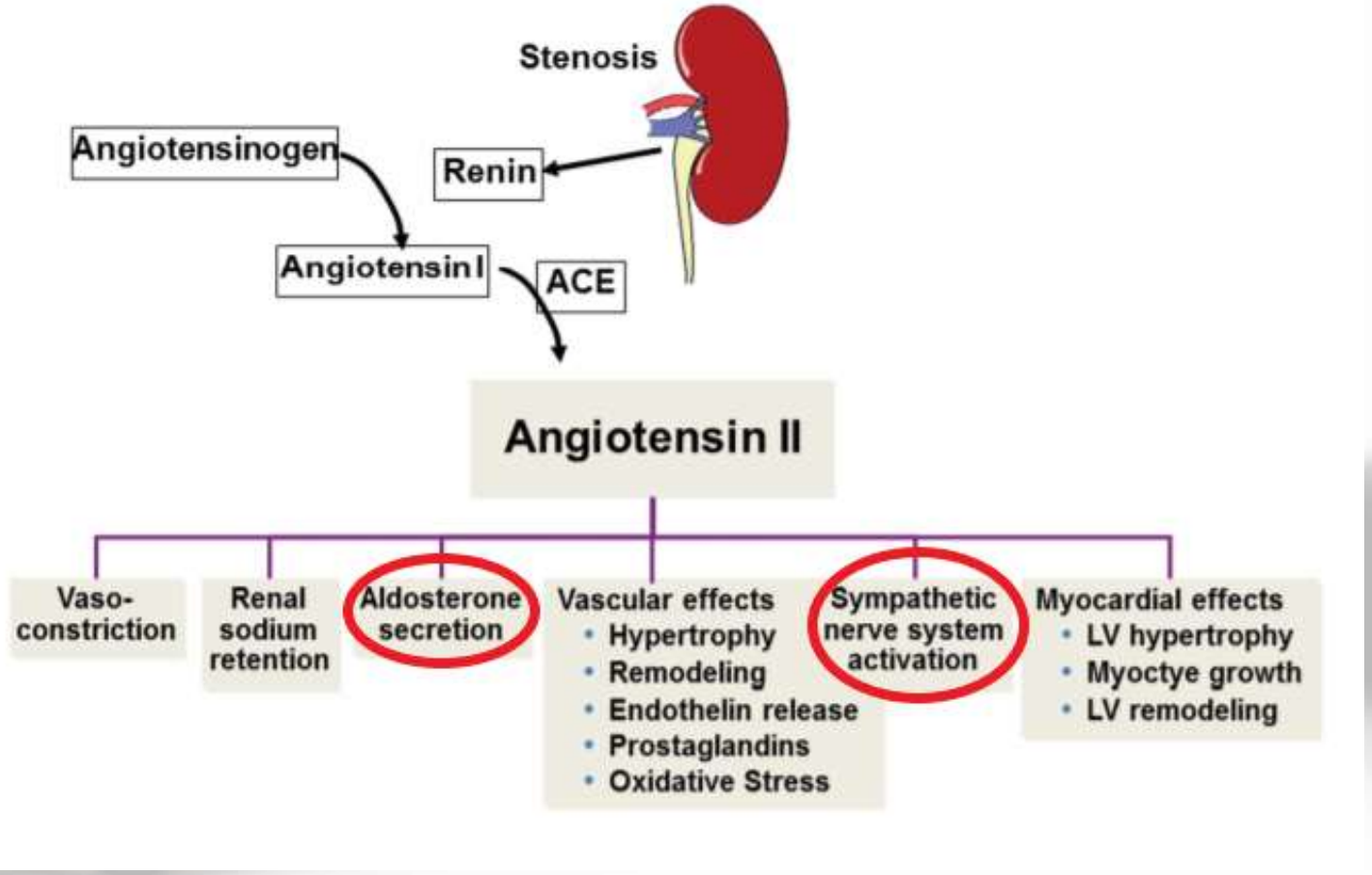
Clinical Scenario
Onset hypertension before age 30 years
Accelerated, resistant, malignant hypertension
Deterioration of renal function (rise in creatinine more than 30% of pretreatment levels) in response to ACE inhibitors or angiotensin-receptor blockers
New onset of hypertension after age 50 years (suggestive of atherosclerotic renal artery stenosis)
Asymmetric kidneys with more than 1.5-cm difference in size and otherwise unexplained loss of kidney function
Sudden unexplained pulmonary edema ("flash pulmonary edema")

Young WF Jr et al. Screening for Endocrine Hypertension: An Endocrine Society Scientific Statement; JCEM 2017

Successiva **Angio TC conferma stenosi ostiale serrata (95%) a carico dell'arteria renale sinistra, con modesta dilatazione post stenotica e distalmente calibro nettamente ridotto (2mm vs 6mm controlaterale)**.

Scintigrafia renale sequenziale: il rene sinistro ha curva di funzionalità in lento e continuo accumulo in accordo con stenosi significativa dell'arteria renale (recente viste le dimensioni del rene). Netta prevalenza funzionale del rene destro (88%) rispetto al sinistro (12%).

Fisiopatologia della stenosi dell'arteria renale



Herrmann SM et al. Current Concepts in the Treatment of Renovascular Hypertension; American J of Hypertension 2018

Ecodoppler arterie renali con determinazione della velocità di picco sistolico:

- eccellente metodica di primo livello;
- fornisce informazioni funzionali e anatomiche;
- velocità di picco sistolico > 200 cm/sec si associa ad una stenosi superiore al 60%;
- Vantaggi: procedura non invasiva, economica, consente di seguire i pazienti nel FU, basso tasso di FP;
- Svantaggi: procedura operatore-dipendente con rischio di FN, di difficile esecuzione nei soggetti obesi.

Angio TC:

- stenosi emodinamicamente significativa >75% o >50% in presenza di dilatazione post-stenotica;
- migliore risoluzione spaziale;
- Vantaggi: sensibilità del 96% e specificità del 94%;
- Svantaggi: esposizione del paziente alle radiazioni ionizzanti e al mezzo di contrasto iodato potenzialmente nefrotossico.

Angio RM:

- stenosi emodinamicamente significativa >75% o >50% in presenza di dilatazione post-stenotica;
- risoluzione spaziale paragonabile all'angio TC;
- Vantaggi: sensibilità circa del 100% e specificità del 96%, non espone il paziente a radiazioni ionizzanti;
- Svantaggi: esposizione del paziente al gadolinio anch'esso potenzialmente nefrotossico, indagine costosa.

Boutari C et al. Renovascular Hypertension: Novel Insight; Current Hypertension Reviews 2020

Quando indicata l'arteriografia?

In presenza di entrambe le seguenti condizioni:

- **elevata probabilità pre-test;**
- **con indagini non invasive inconclusive;**

Whelton PK *et al*. ACC/AHA Guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. Hypertension; 2017
Williams B et al. 2018 ESC/ESH Guidelines for the Management of Arterial Hypertension; Journal of Hypertension 2018

8.1 Resistant hypertension

8.1.1 Definition of resistant hypertension

Hypertension is defined as resistant to treatment when the recommended treatment strategy fails to lower office SBP and DBP values to <140 mmHg and/or <90 mmHg, respectively, and the inadequate control of BP is confirmed by ABPM or HBPM in patients whose adherence to therapy has been confirmed. The recommended treatment strategy should include appropriate lifestyle measures and treatment with optimal or best-tolerated doses of three or more drugs, which should include a diuretic, typically an ACE inhibitor or an ARB, and a CCB. Pseudo-resistant hypertension (see below) and secondary causes of hypertension should also have been excluded (see section 8.2).

Unger T et al. 2020 International Society of Hypertension (ISH) global hypertension practice guidelines. Journal of Hypertension 2020

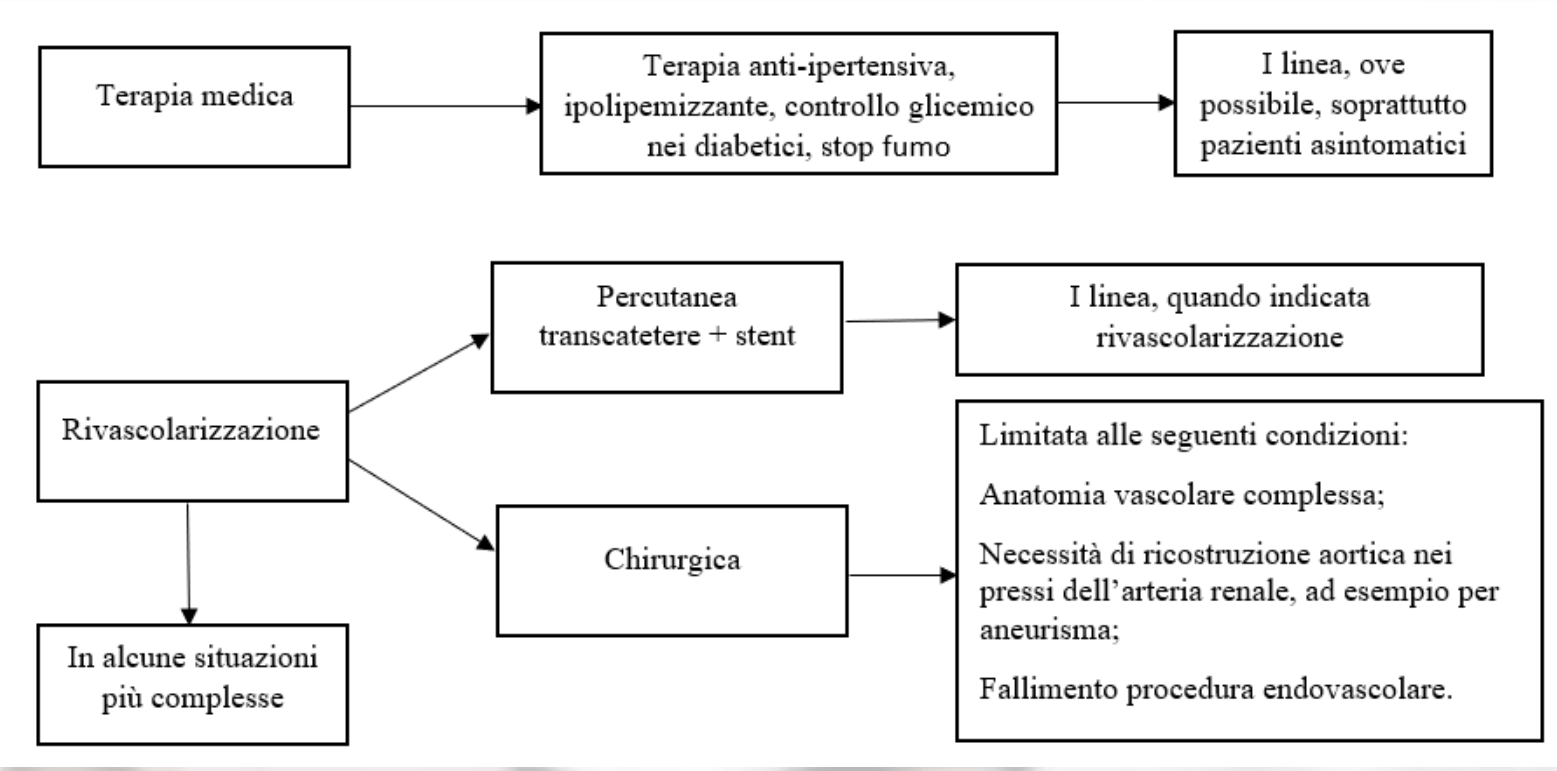
Williams B et al. 2018 ESC/ESH Guidelines for the Management of Arterial Hypertension; Journal of Hypertension 2018

Terapia medica vs PTA

1. Atherosclerotic disease in the renal arteries represents systemic disease and higher risk of both renal failure and cardiovascular morbidity and mortality. No RCT to date has demonstrated a clinical advantage of renal artery revascularization (with either angioplasty or stenting) over medical therapy.[S5.4.3-2] On the basis of the CORAL (Cardiovascular Outcomes in Renal Atherosclerotic Lesions) trial, the recommended medical approach encompasses optimal management of hypertension with an antihypertensive regimen that includes a renin-angiotensin system (RAS) blocker, in addition to low-density lipoprotein cholesterol reduction with a high-intensity statin, smoking cessation, hemoglobin A1c reduction in patients with DM, and antiplatelet therapy.[S5.4.3-1]

Whelton PK *et al*. ACC/AHA Guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. Hypertension; 2017

Alternative terapeutiche



Boutari C et al. Renovascular Hypertension: Novel Insight; Current Hypertension Reviews 2020

COR	LOE	Recommendations
I	A	1. Medical therapy is recommended for adults with atherosclerotic renal artery stenosis.S5.4.3-1,S5.4.3-2
IIb	C-EO	2. In adults with renal artery stenosis for whom medical management has failed (refractory hypertension, worsening renal function, and/or intractable HF) and those with nonatherosclerotic disease, including fibromuscular dysplasia, it may be reasonable to refer the patient for consideration of revascularization (percutaneous renal artery angioplasty and/or stent placement).

Whelton PK *et al*. ACC/AHA Guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. Hypertension; 2017

Chi sottoporre a procedura di PTA ?

TABLE 1 Current Society for Cardiovascular Angiography and Interventions Appropriate Use Criteria and American Heart Association/ American College of Cardiology Recommendations (11,35,39)

Scenario	SCAI Appropriate Use Criteria	AHA/ACC Recommendations
Cardiac disturbance syndromes (flash pulmonary edema, unstable angina, or ACS) with hypertension with moderate RAS with a resting translesional mean gradient of >10 mm Hg and/or severe RAS	Appropriate	Class I, Level of Evidence: B; Class IIa, Level of Evidence: B (unstable angina)
CKD stage IV with bilateral moderate RAS with a resting translesional mean gradient of >10 mm Hg with a kidney size >7 cm in pole-to-pole length	Appropriate	Class IIa, Level of Evidence: B
CKD stage IV and global renal ischemia (unilateral severe RAS with a solitary kidney or bilateral severe RAS) without another explanation	Appropriate	Class IIb, Level of Evidence: B
Resistant hypertension (uncontrolled hypertension having failed maximally tolerated doses of at least three antihypertensive agents, one of which is a diuretic agent) and bilateral or solitary severe RAS	Appropriate	Class IIa, Level of Evidence: B
Recurrent CHF with unilateral moderate RAS with a resting translesional mean gradient of >10 mm Hg	May be appropriate	Class I, Level of Evidence: B
Resistant hypertension (uncontrolled hypertension having failed maximally tolerated doses of at least three antihypertensive agents, one of which is a diuretic agent) and unilateral severe RAS	May be appropriate	Class IIa, Level of Evidence: B
Asymptomatic, unilateral, bilateral, or solitary kidney with hemodynamically significant RAS	Rarely appropriate	Class IIb, Level of Evidence: C

ACC = American College of Cardiology; ACS = acute coronary syndrome; AHA = American Heart Association; CHF = congestive heart failure; RAS = renal artery stenosis; SCAI = Society for Cardiovascular Angiography and Interventions.

Chi può beneficiare maggiormente della rivascolarizzazione?

Indice di resistenza arteriolare intraparenchimale, calcolabile mediante Ecodoppler renale

↓

VPS-VTD/VPS

di norma in presenza di valori < 0.7

Herrmann SM et al. Current Concepts in the Treatment of Renovascular Hypertension; American J of Hypertension 2018

Nel nostro caso

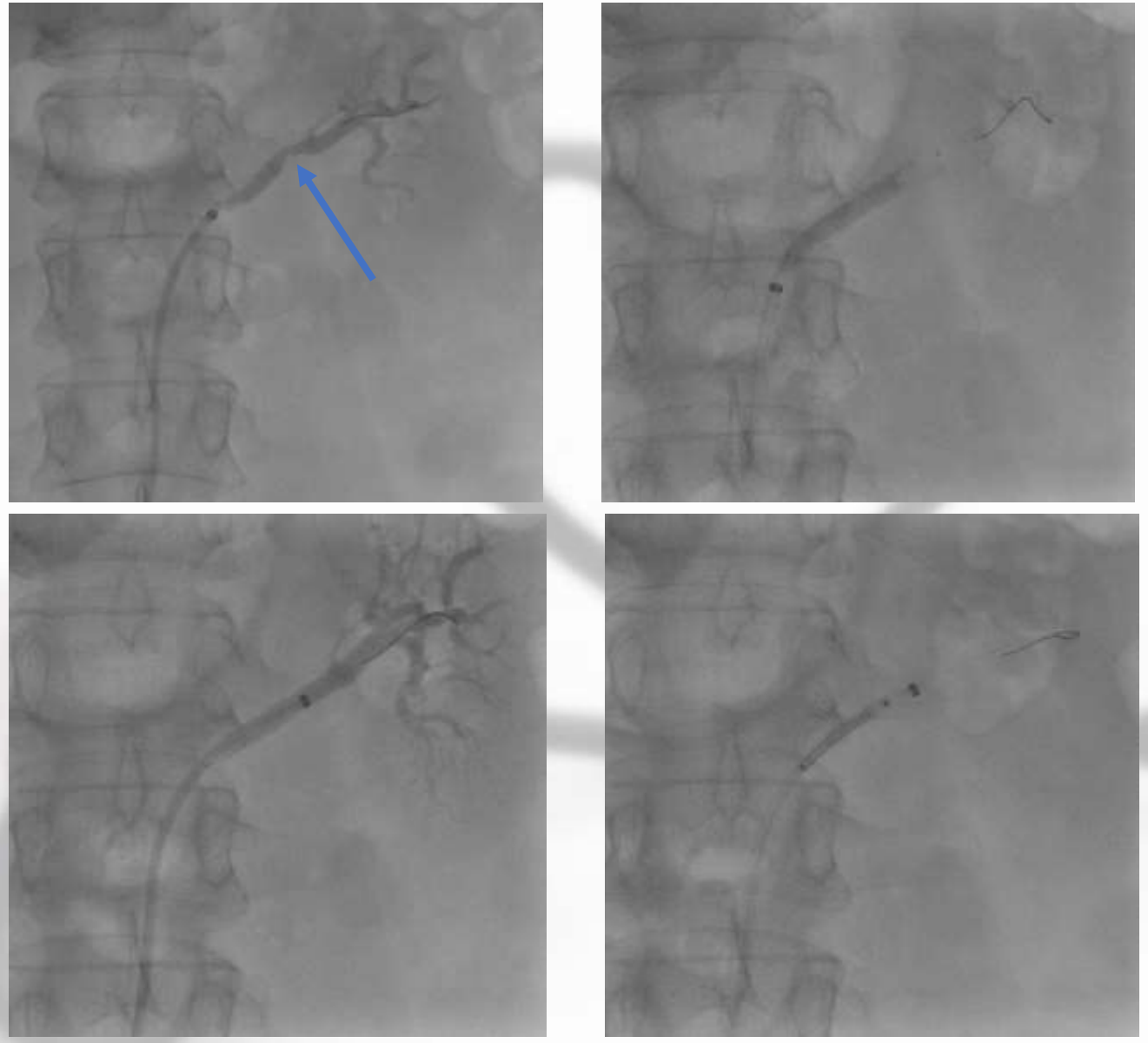
Fattori prognostici favorevoli

- recente insorgenza di ipertensione accelerata;
- dimensioni renali non ridotte >7cm;
- funzione renale conservata;
- resistenze vascolari intraparenchimali IR< 0.80;

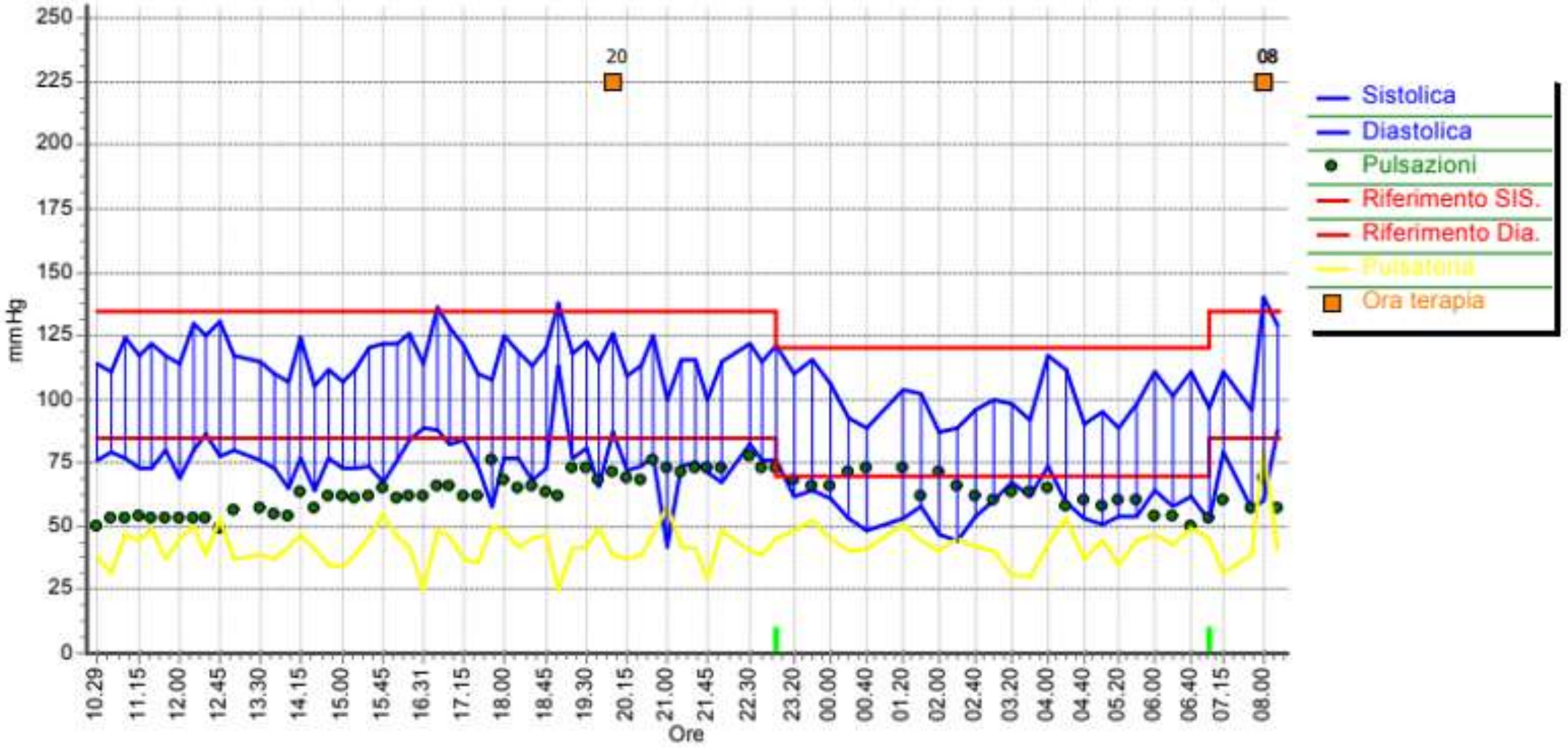
Fattori prognostici sfavorevoli

- vaso quasi completamente occluso;
- microalbuminuria +;
- minimo contributo funzionale renale alla scintrigrafia renale sequenziale;

Posta indicazione a PTA + stent



Nel follow-up



Conclusioni

Furthermore, it is important to highlight that while the post-stenotic kidney has reduced perfusion, the contralateral kidney undergoes hyperperfusion and glomerular hyperfiltration associated with RAAS activation from the stenotic kidney. In these patients, exposure to prolonged hypertension is associated with development of arteriolosclerotic lesions and parenchymal injury of the contralateral kidney. This process can lead to proteinuria sometimes observed in the patient with RVH, and its persistence results in pathological change from secondary focal segmental glomerulosclerosis of the contralateral kidney.[17,18] Indeed, previous reports indicate that proteinuria observed in unilateral RVH is derived from the contralateral kidney.[19] Thus, contralateral kidney is involved in the pathophysiology of RVH and progressive renal injury. In light of these observations, RAAS inhibition by angiotensin-converting enzyme (ACE) inhibitors or angiotensin-receptor blockers (ARBs) is desirable for to reduce hyperfiltration in the contralateral kidney and to decrease proteinuria in RVH. Remarkably, parenchymal fibrosis rarely develops in patients with FMD, unless complicated by dissection and/or thrombus formation leading to renal infarction. These observations suggest that remodeling mechanisms and injury in the post-stenotic kidney are related partly to the atherosclerotic milieu itself.

Herrmann SM et al. Current Concepts in the Treatment of Renovascular Hypertension; American J of Hypertension 2018

Take home message

- **L'ipertensione nefrovascolare è una causa comune di ipertensione secondaria;**
- **La forma aterosclerotica va sospettata in caso di nuovo esordio di ipertensione accelerata oltre i 50 anni, in soggetti con precedente documentata normotensione;**
- **La diagnosi può essere effettuata mediante esecuzione di Ecodoppler renale, AngioTC o angioRM alternativamente;**
- **Per la forma aterosclerotica, la rivascolarizzazione percutanea è riservata a quei pazienti che non rispondono alla terapia medica.**
- **Vi sono dei fattori che predicono la risposta alla procedura di rivascolarizzazione, quali la recente insorgenza di ipertensione accelerata, tuttavia anche in questi pazienti gli outcome dell'angioplastica renale, in termini di pressione e potassio, sono dubbi.**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Aula Magna Dogliotti - Presidio Molinette
Grazie!!!