

Renal Sympathetic Nerve Ablation:

A revolutionary effective safe treatment
for resistant hypertension

John Ormiston

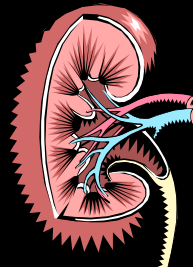
MBChB, FRACP, FRACR, FCSANZ, FAPSIC, FRCP
(Lond), FACC, ONZM



The kidney is the recipient of centrally generated sympathetic signals transmitted via the renal efferent nerves



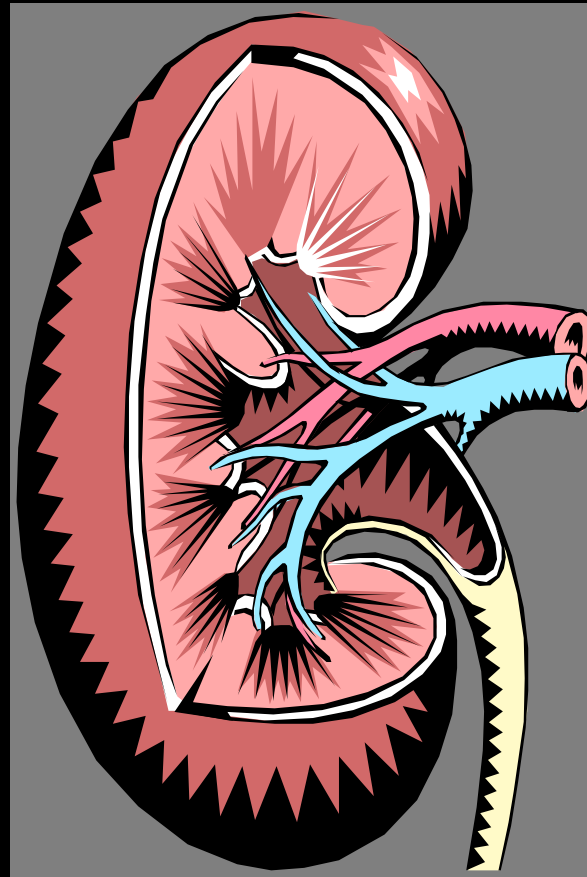
Renal Efferent Nerves



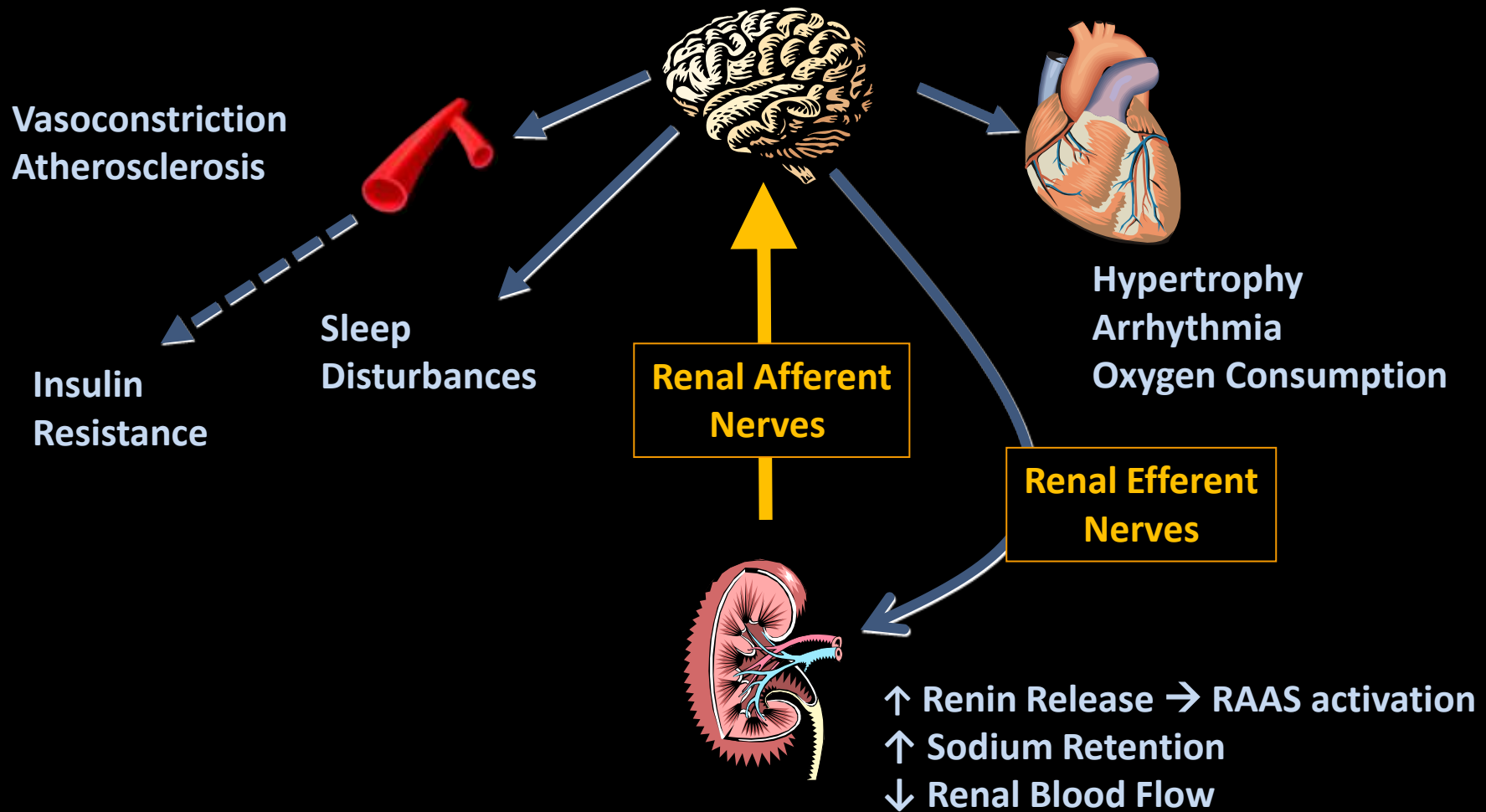
Sympathetic activity

- ↑ Renin Release → RAAS activation
- ↑ Sodium Retention
- ↓ Renal Blood Flow

Sympathetic activity arising in the kidneys plays major role in control of hypertension and in diabetes



The kidney as origin of sympathetic drive carried centrally via renal afferent sympathetic nerves generating central sympathetic drive



The renal sympathetic nerves

- Arise from T10-L1
- Follow the renal artery to and from the kidney
- Primarily lie within the adventitia



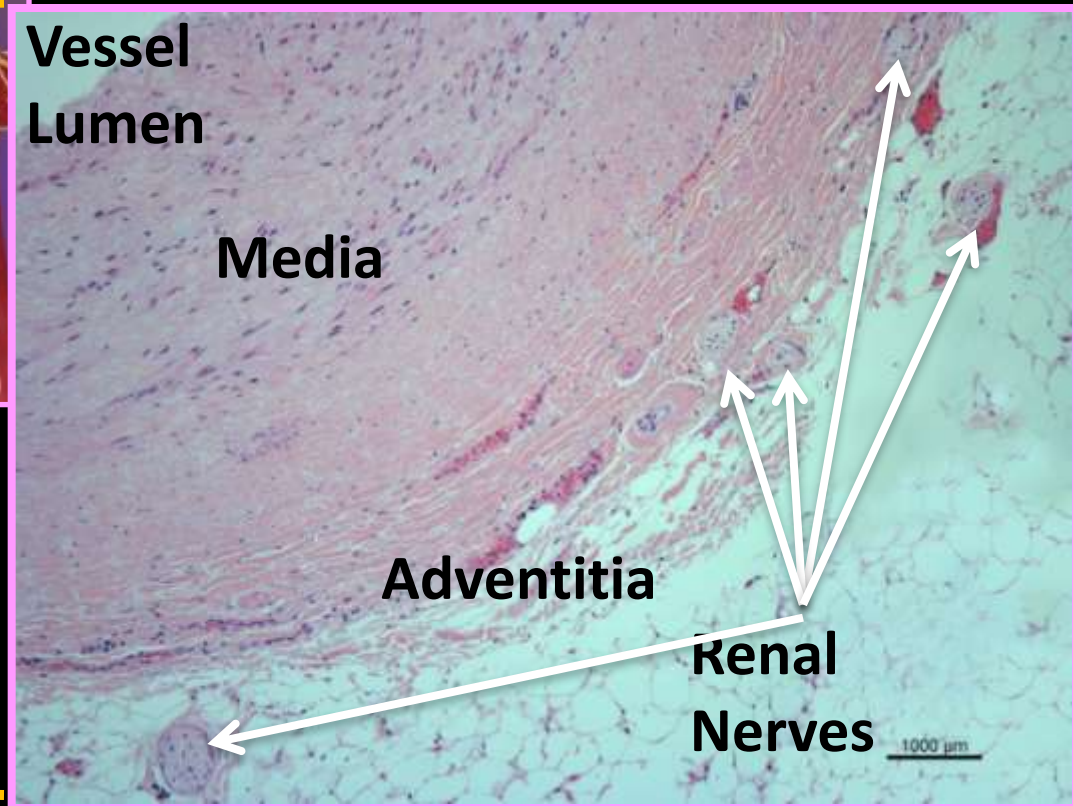
**Vessel
Lumen**

Media

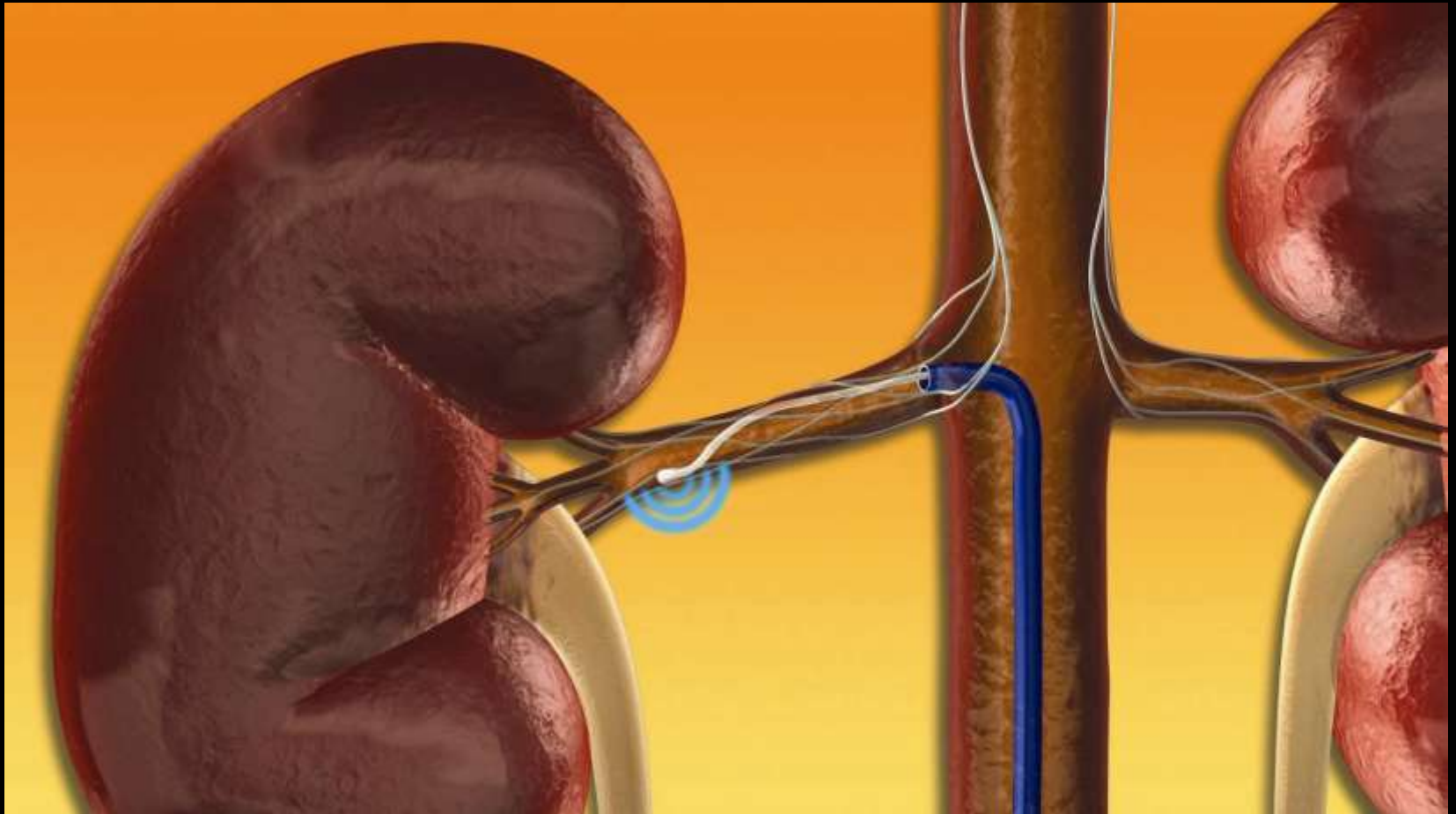
Adventitia

**Renal
Nerves**

1000 μ m



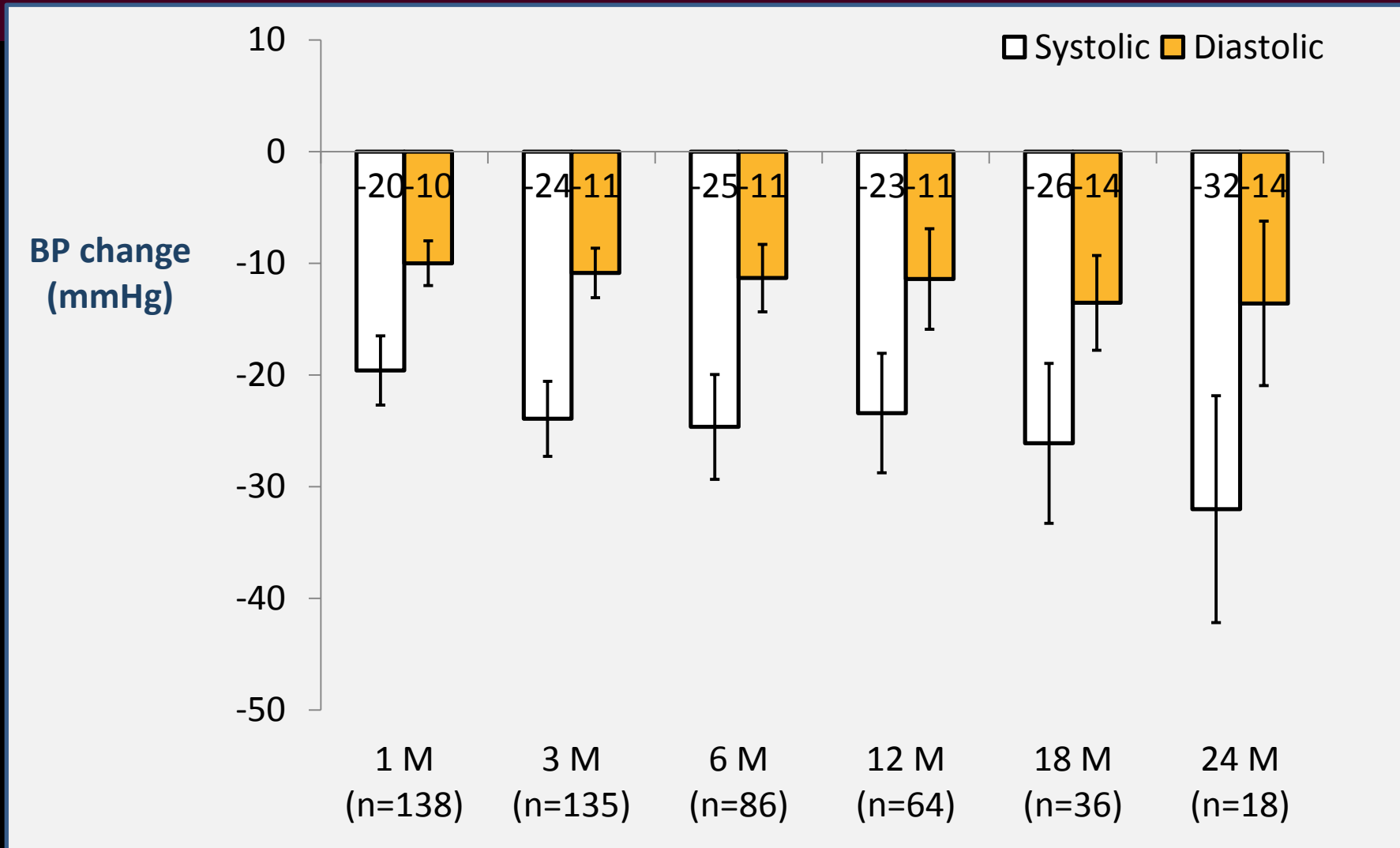
Radiofrequency energy can ablate the renal sympathetic nerves





- First-in-man, non-randomized
- 45 patients with resistant HTN (SBP \geq 160 mmHg on \geq 3 anti-HTN drugs, including a diuretic)
- Expanded cohort of patients (n=153)
- 24-month follow-up

Significant, Sustained BP Reduction



No major complications

Minor complications 4/153:

- 1 renal artery dissection during catheter delivery (prior to RF energy), no sequelae
- 3 access site complications, treated without further sequelae

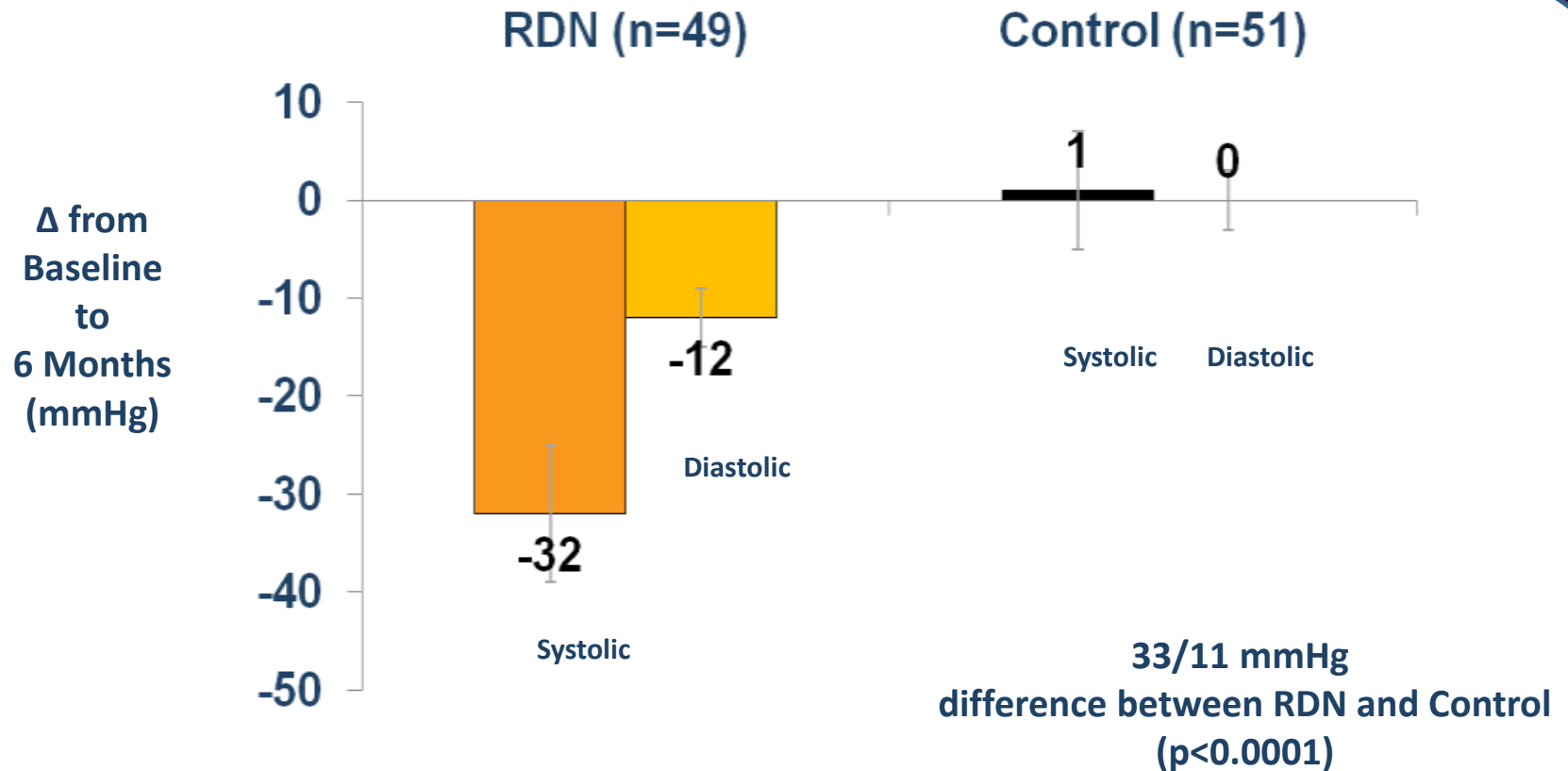
Symplicity HTN-2

THE LANCET

Renal sympathetic denervation in patients with treatment-resistant hypertension (The Symplicity HTN-2 Trial): a randomised controlled trial

- **Randomized trial** Renal catheter based sympathetic denervation and ongoing medical treatment vs medical treatment
- **Inclusion Criteria** Office SBP ≥ 160 mmHg (≥ 150 mmHg with type II diabetes mellitus) Stable drug regimen of 3+ more anti-HTN medications
- **Patients:** 106 patients randomized 1:1 to renal denervation vs. control

Primary Endpoint: 6-Month Office BP



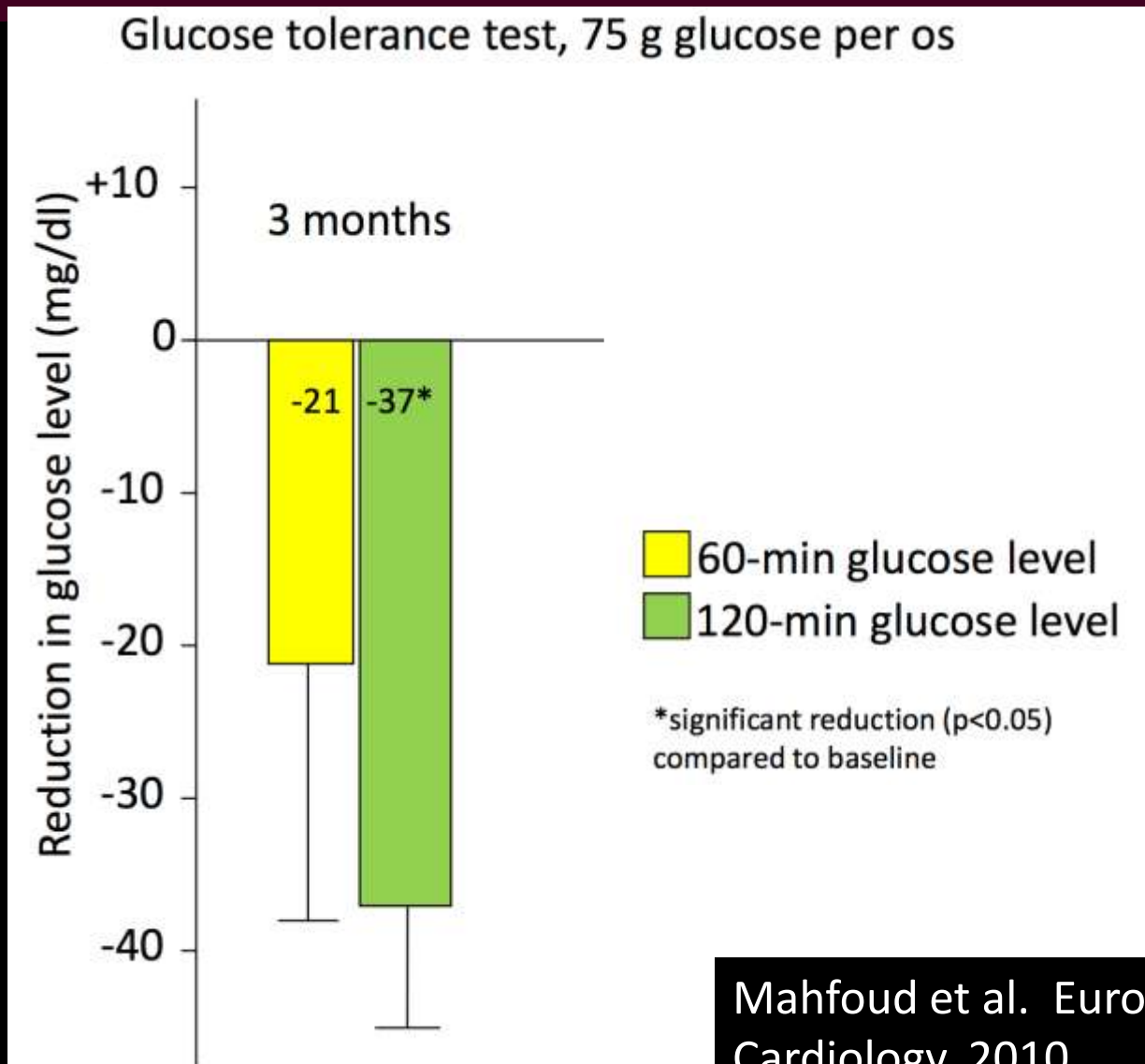
- 84% of RDN patients had ≥ 10 mmHg reduction in SBP
- 10% of RDN patients had no reduction in SBP

Lancet Conclusions

- Renal denervation in a randomised trial in patients caused significant reductions in BP in patients with resistant HT
- The BP reduction is predicted to affect hypertension-related diseases and mortality
- No major complications
- Affirms the crucial relevance of renal nerves in the maintenance of BP in patients with hypertension

Symplicity HTN-2 Investigators. Lancet. 2010;376:1903-1909.

Changes in Glucose Tolerance at 3 Months after Renal Denervation



Mahfoud et al. European Society of Cardiology. 2010.

Catheter based renal sympathetic ablation

- Lowers BP in 90% of patients with HT resistant to 3 drugs or more. Sustained at 2 yrs
- Favourable effect on glucose tolerance
- Minimal complications
- NZ's first cases will be at Mercy Angiography this month
- Patients can be referred to an AHG cardiologist
- Patient information brochure
- Catheter is expensive