

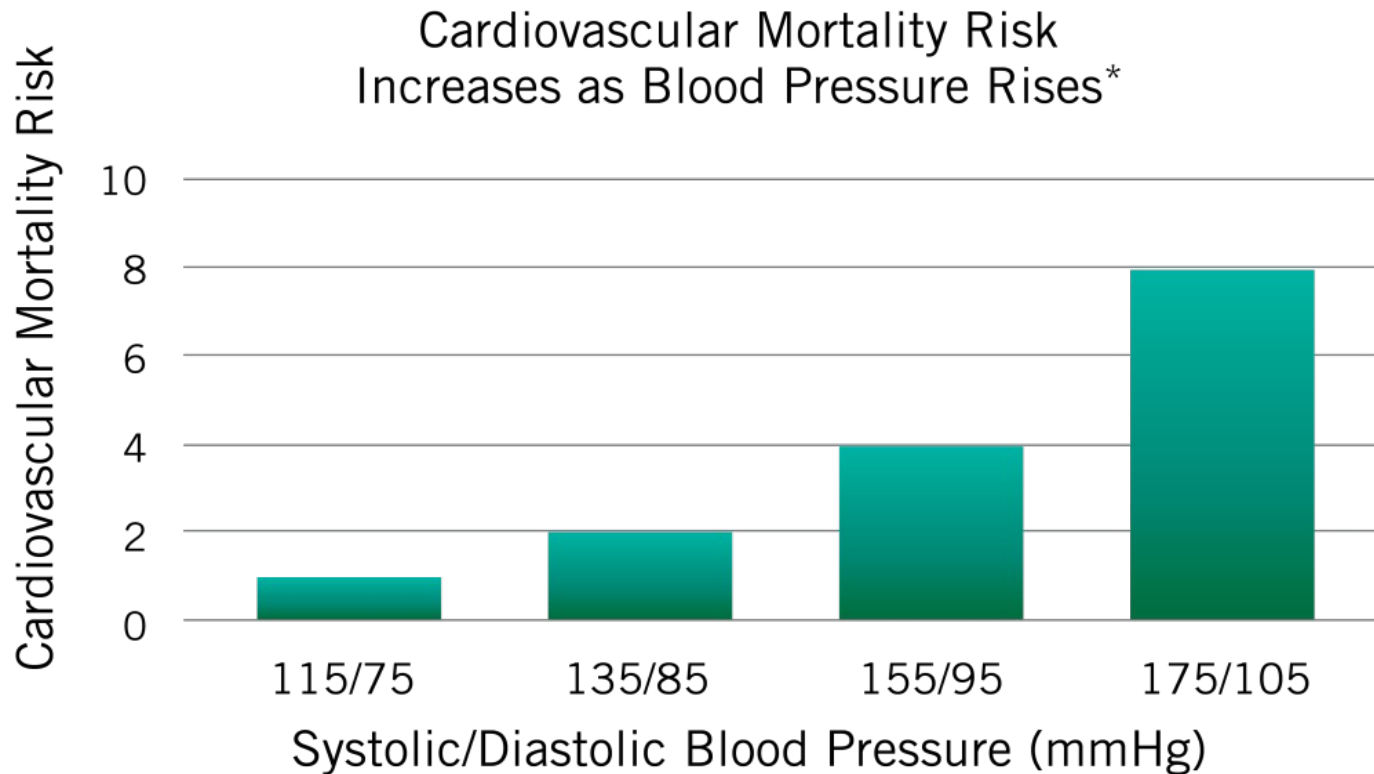
Ренална денервация за неконтролирана хипертония

Васил Велчев дм
УМБАЛ “Света Анна” София

Elevated Morbidity and Mortality Risk

Uncontrolled Hypertension Is a Risk Factor for Cardiovascular Morbidity and Mortality

- Chronic uncontrolled hypertension is related to cardiovascular conditions such as stroke and heart failure¹
- The risk of cardiovascular death increases with rising blood pressure, every 20 mmHg rise in SBP doubles the risk of cardiovascular death (See Figure)²⁻⁴



*Measurements taken in individuals aged 40-69 years, beginning with a blood pressure of 115/75 mmHg, the data in this graph is from Lewington et al. 2002²

References

1. Roger VL, et al. Heart disease and stroke statistics—2011 update: A report from the American Heart Association. *Circulation*. 2011;123(4):e18-e209.
2. Lewington S, et al. Age-specific relevance of usual blood pressure to vascular mortality: A meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet*. 2002;360:1903-13.
3. Chobanian AV, et al. The seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure: The JNC 7 report. *JAMA*. 2003;289:2560-2572.
4. The graph on this page includes data from sources 2 and 3 and was adapted from www.hypertensiononline.org.

Despite Treatment, Many Patients With Hypertension Do Not Achieve Blood Pressure Control

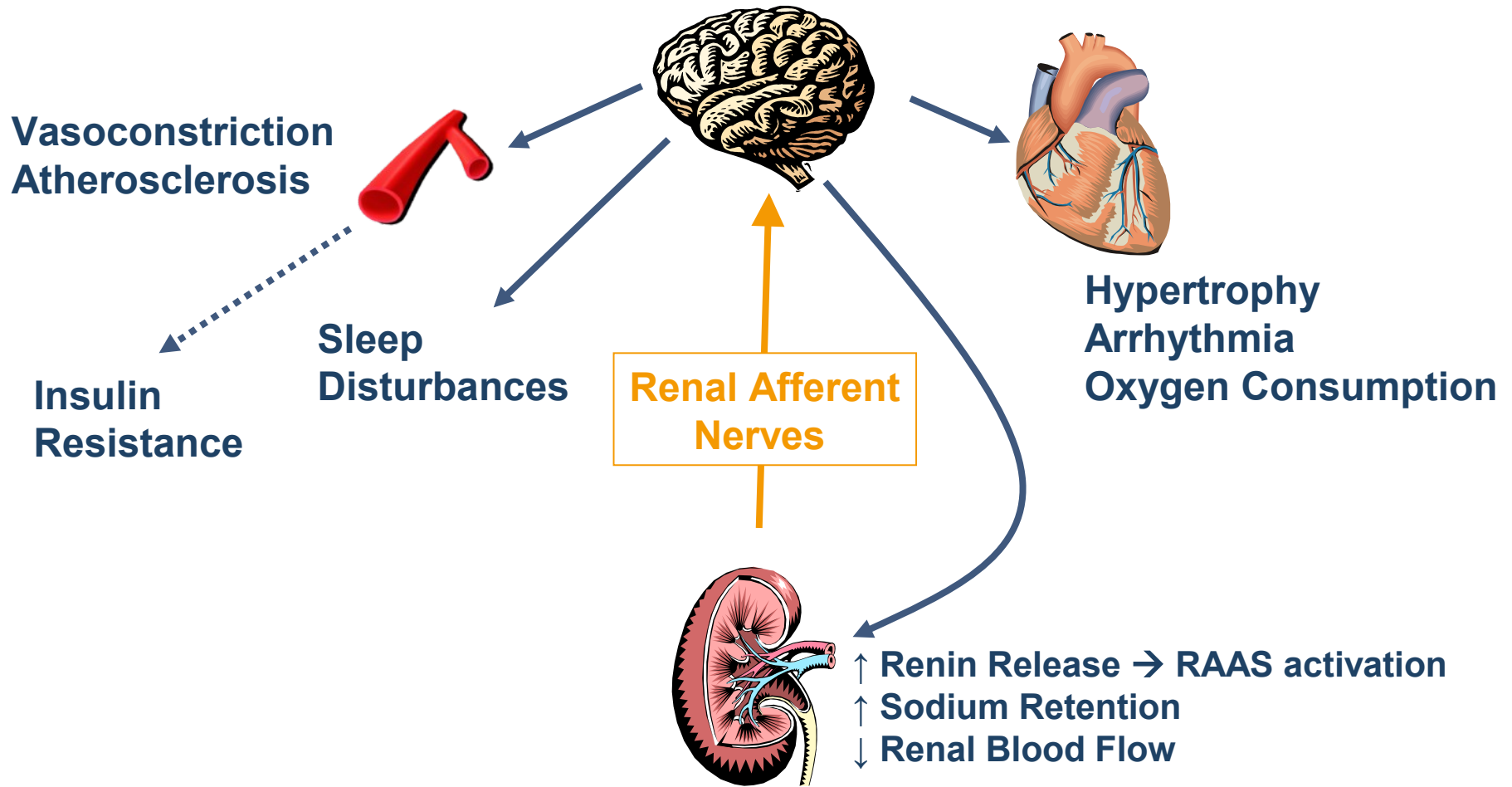
Established Market Economies

Country	Study Year	Age Range	Hypertension			Treated Hypertension
			Aware (%)	Treated (%)	Controlled (%)	Controlled (%)
United States	1999-2000	18-80+	68.9	58.4	31.0	53.1
Canada	1986-1992	18-74	58.0	39.0	16.0	41.0
Spain	1990	35-64	44.5	32.0	5.0	15.5
England	1998	16-75	46.2	31.8	9.3	29.2
Germany	1994-1995	25-74	59.5	35.1	11.8	33.6
Greece	1997	18-90	60.8	54.5	27.0	49.5
China*	2000-2001	35-74	44.7	28.2	8.1	28.8
Japan	1980	30-74	—	40.5 (M) 54.5 (W)	23.6 (M) 36.0 (W)	55.7 (M) 65.4 (W)

*Based on World Bank criteria used in this study, China was not considered an established market economy at time of publication.

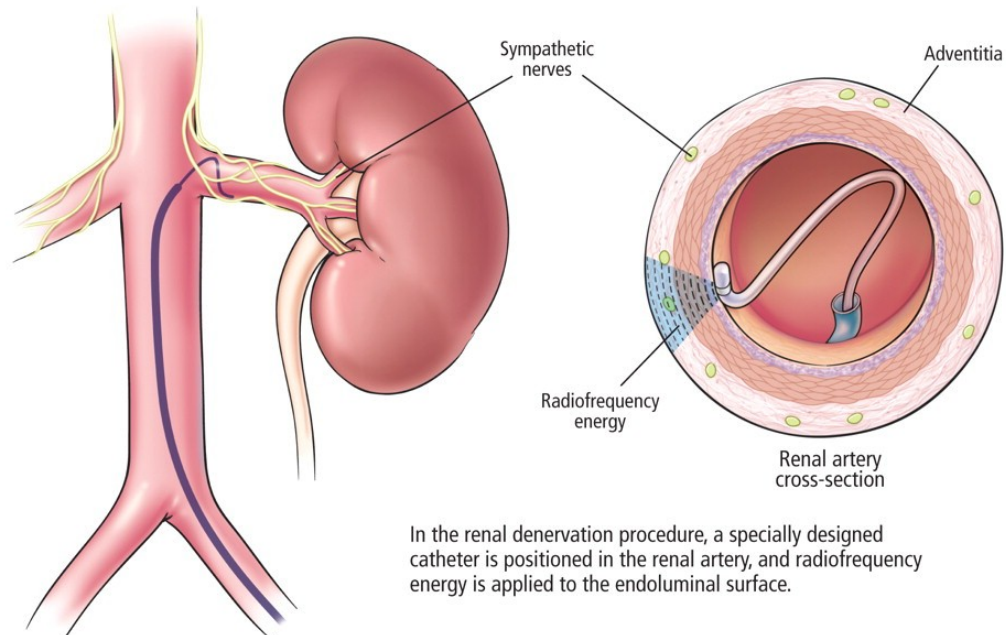
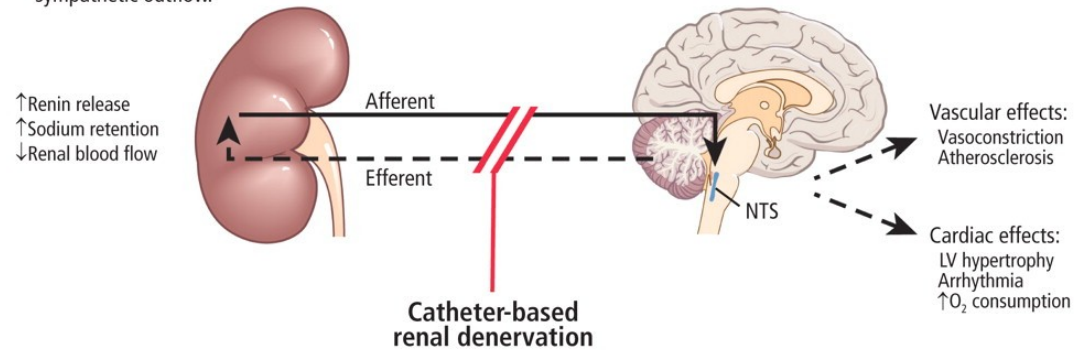
Renal Sympathetic Activation: Afferent Nerves

Kidney as Origin of Central Sympathetic Drive

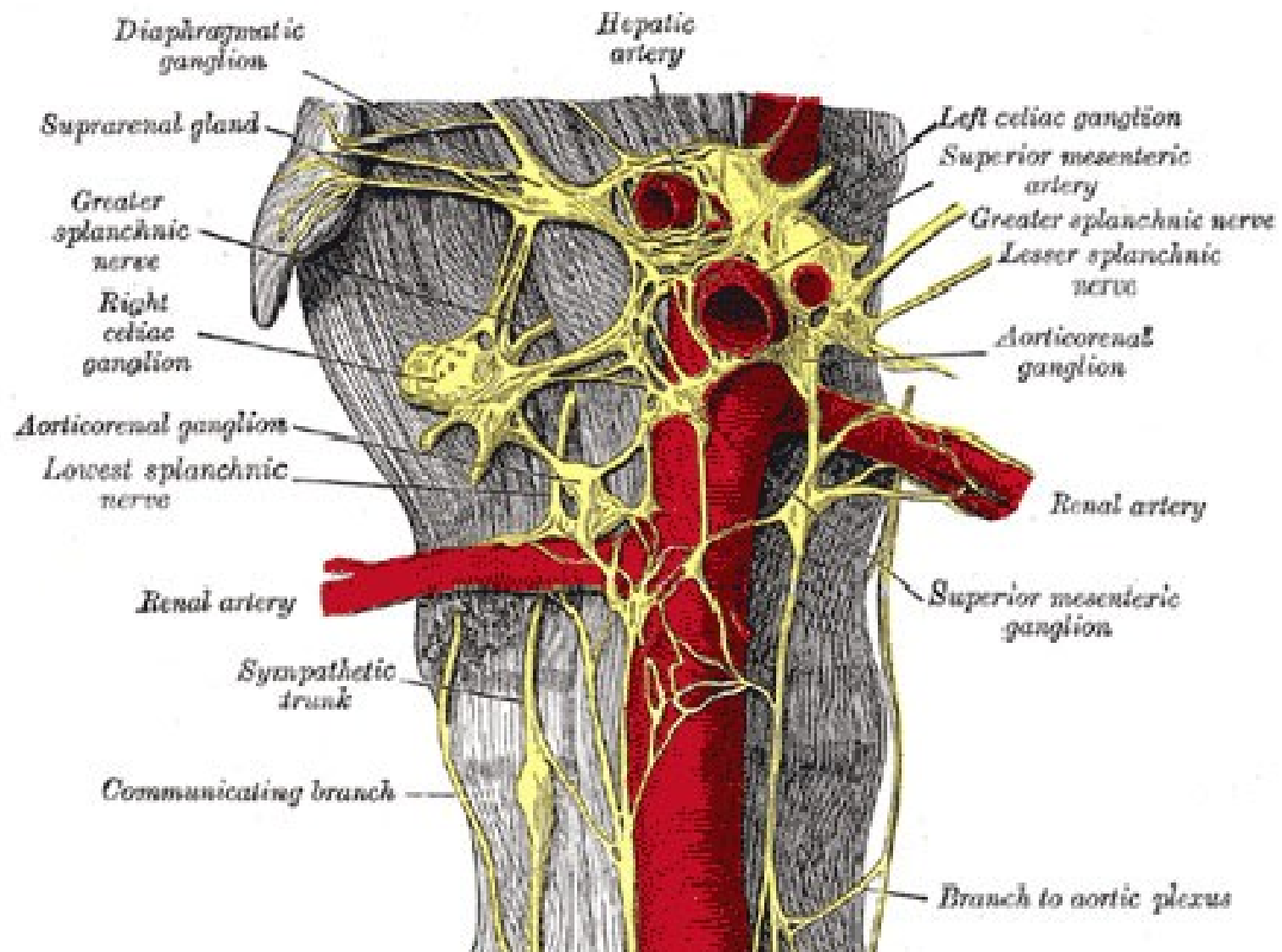


Kidneys, in response to ischemia, send afferent sympathetic signals to the brain that disinhibit the nuclei tractus solitarii (NTS), increasing sympathetic outflow.

The NTS in the brainstem control efferent sympathetic signals from the brain to various organs of the body. Sympathetic signals raise blood pressure by increasing the heart rate, constricting arteries, and, in the kidney, increasing renin release and sodium and fluid retention.



In the renal denervation procedure, a specially designed catheter is positioned in the renal artery, and radiofrequency energy is applied to the endoluminal surface.



Surgical History

THE EFFECTS OF PROGRESSIVE SYMPATHECTOMY ON BLOOD PRESSURE

BRADFORD CANNON

From the Laboratories of Physiology in the Harvard Medical School

Received for publication March 24, 1931



Dr. Reginald H. Smithwick



THE EFFECT OF RENAL DENERVATION ON THE LEVEL OF ARTERIAL BLOOD PRESSURE AND RENAL FUNCTION IN ESSENTIAL HYPERTENSION

By IRVINE H. PAGE AND GEORGE J. HEUER

*(From the Hospital of the Rockefeller Institute for Medical Research, New York, and
the Department of Surgery, New York Hospital, New York)*

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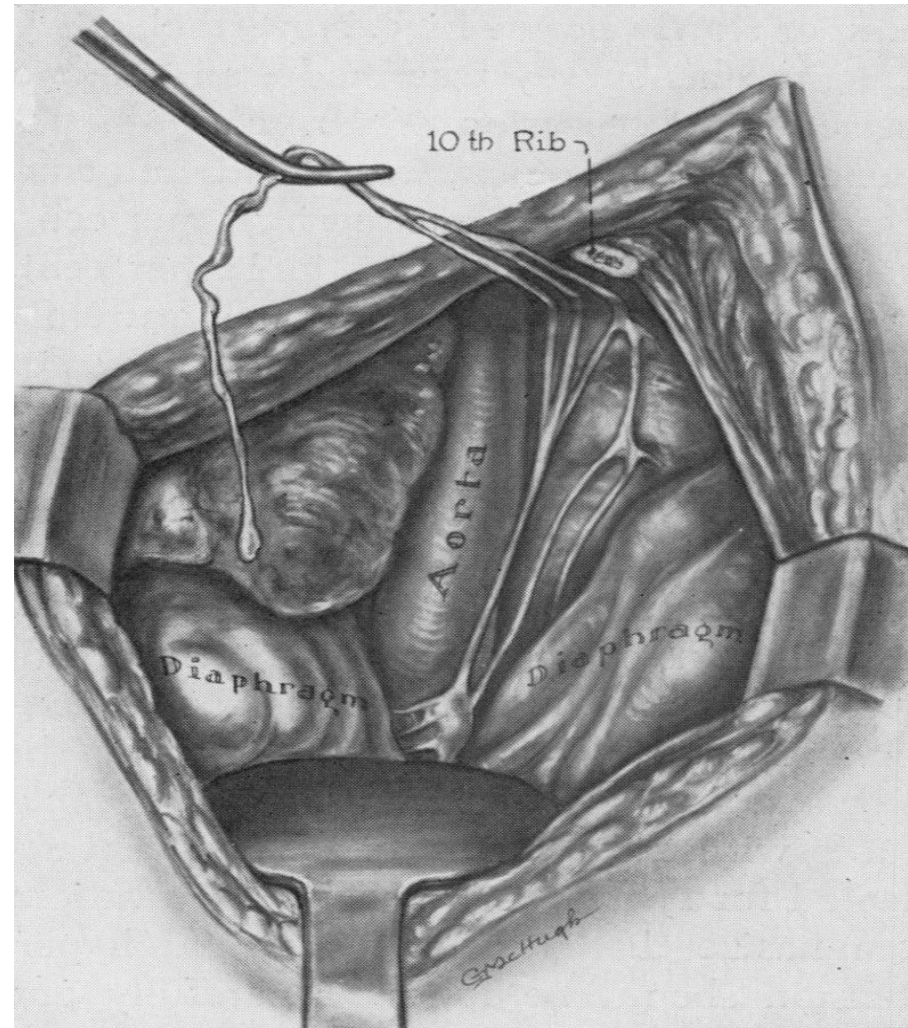
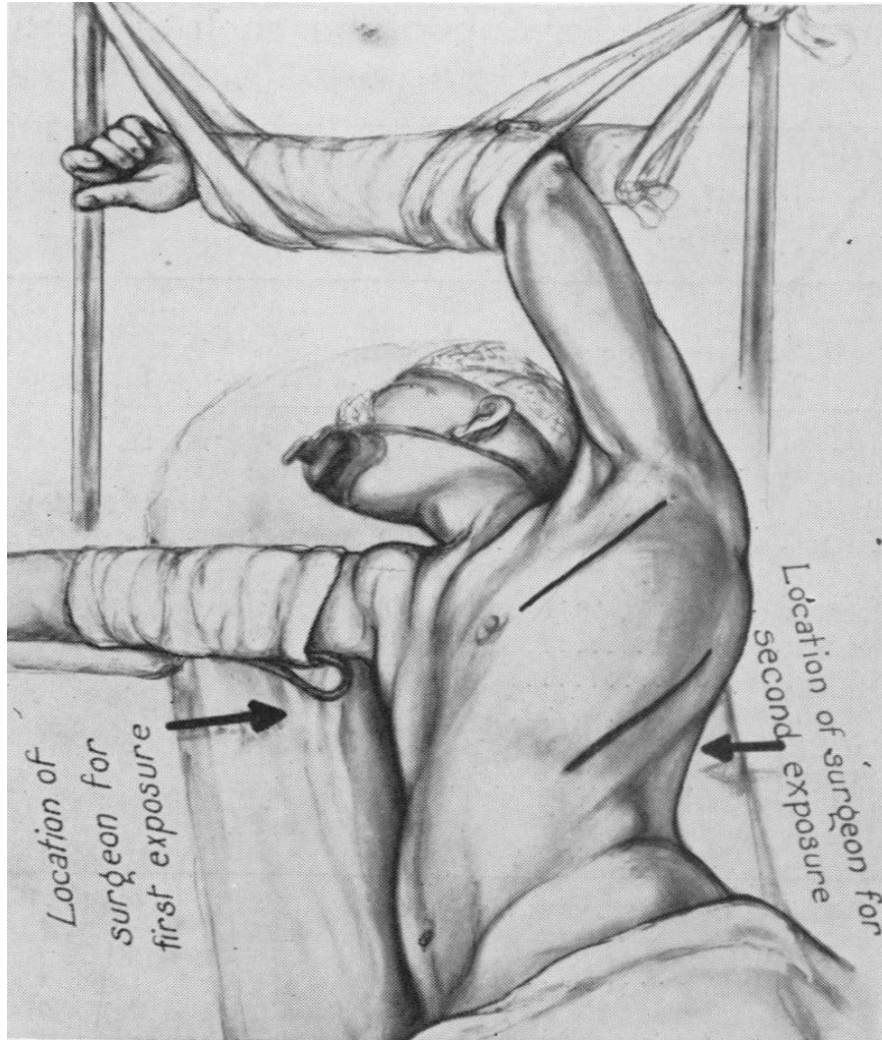
SPLANCHNICECTOMY FOR ESSENTIAL HYPERTENSION

RESULTS IN 1,266 CASES

Reginald H. Smithwick, M.D.

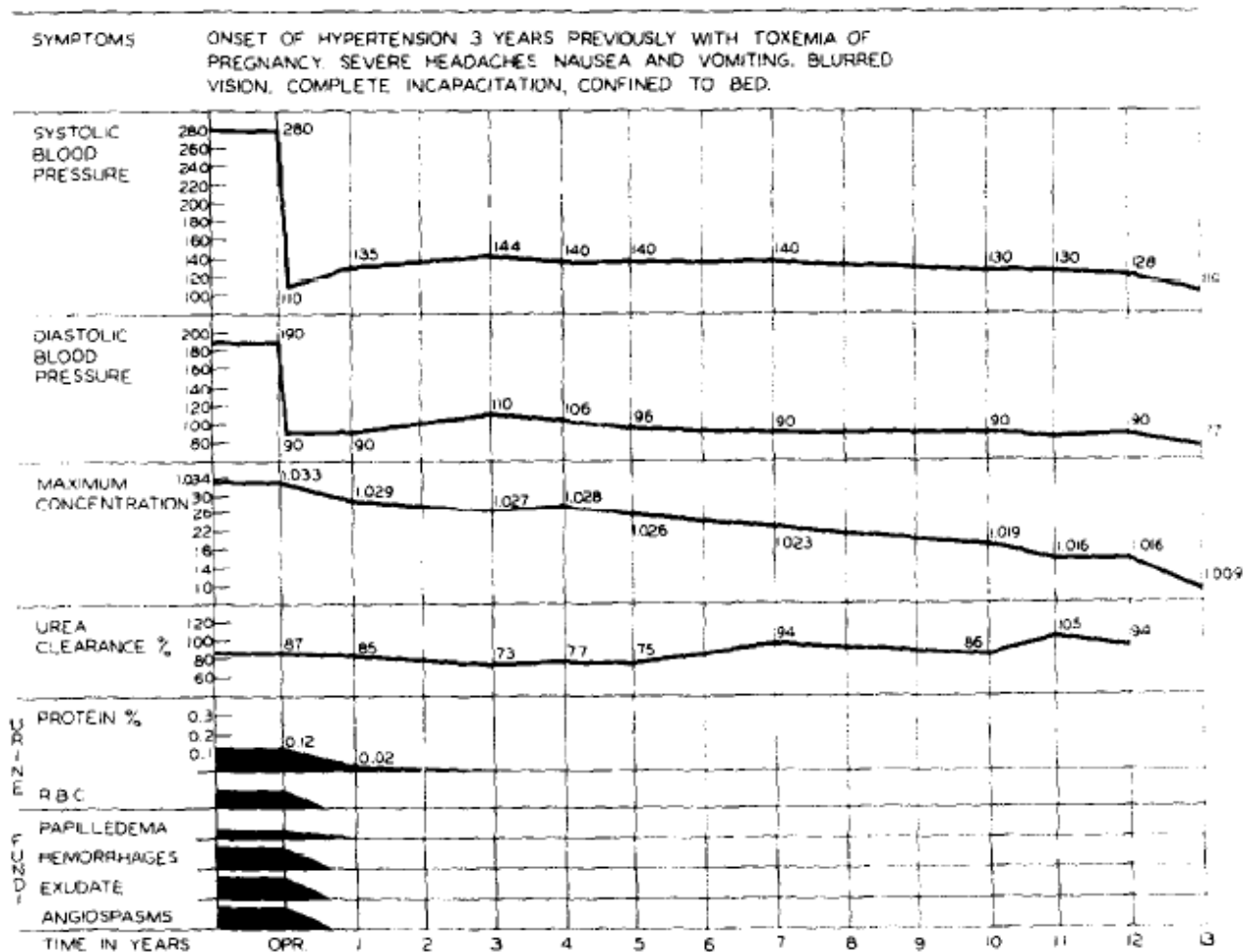
and
Jesse E. Thompson, M.D., Boston

Surgical Sympathectomy



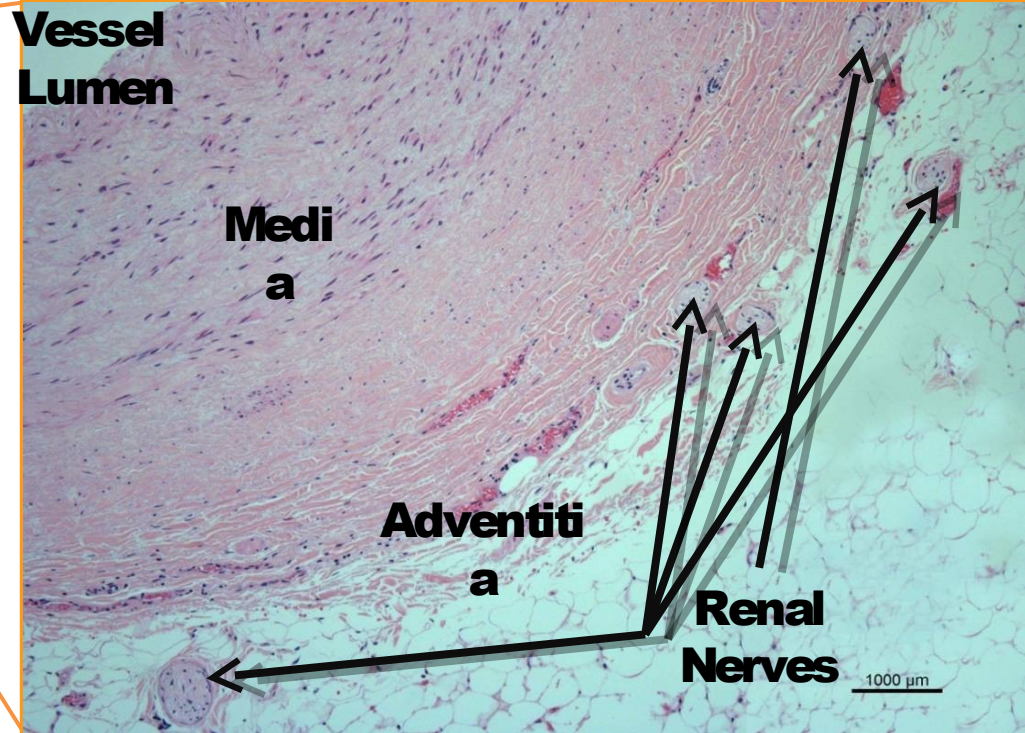
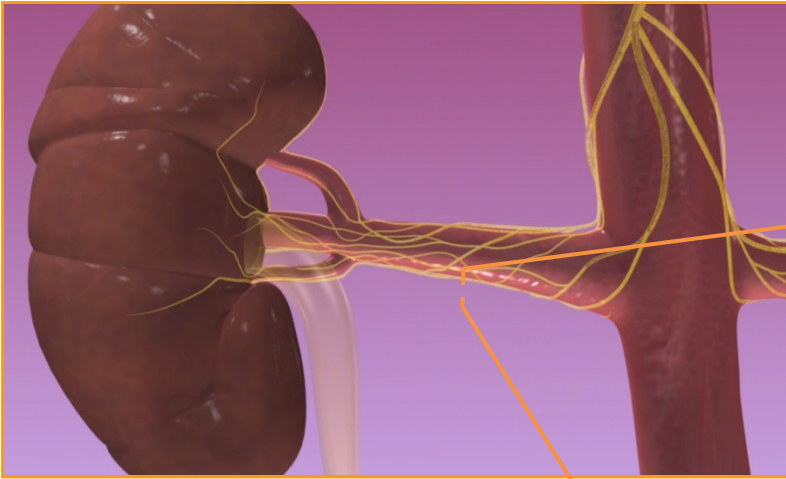
Grimson, Ann Surg 1941

BP Control Maintained Long Term



Renal Nerve Anatomy

- Nerves arise from T10-L2
- The nerves arborize around the artery and primarily lie within the adventitia



From: Eligibility for Renal Denervation in Patients With Resistant Hypertension: When Enthusiasm Meets Reality in Real-Life Patients

J Am Coll Cardiol. 2012;60(23):2422-2424. doi:10.1016/j.jacc.2012.08.1002

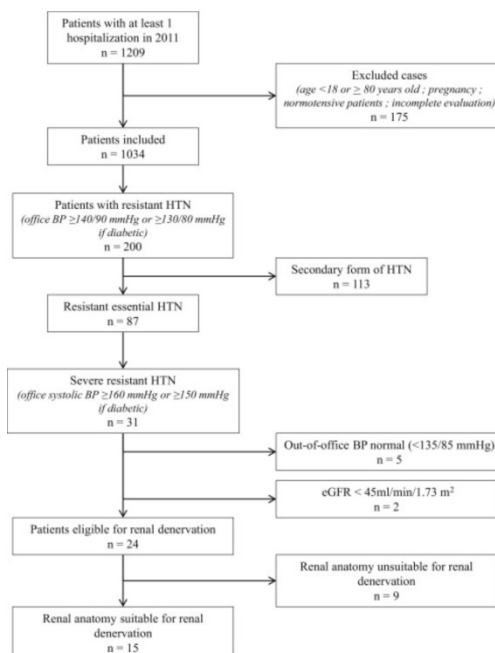
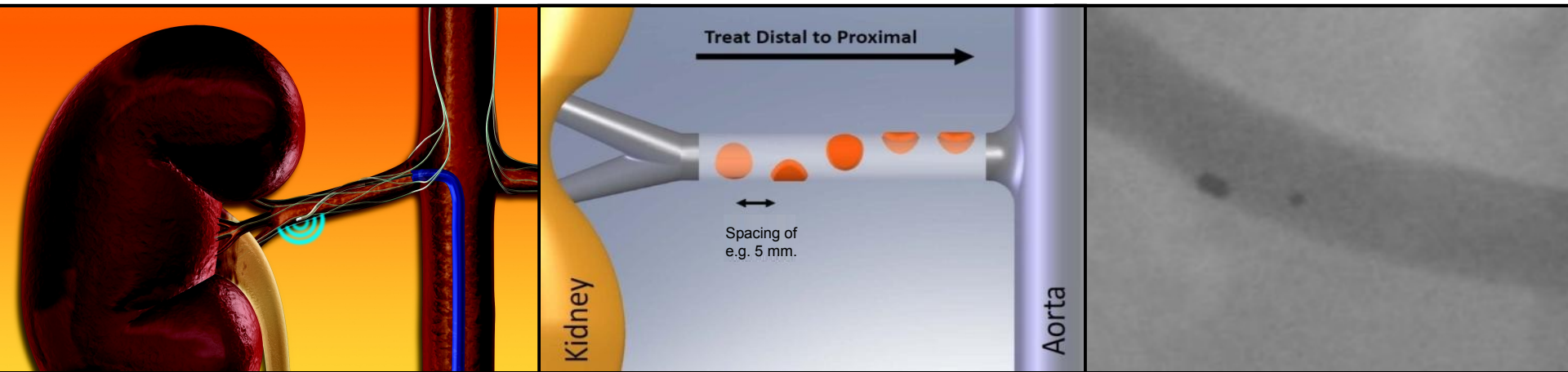


Figure Legend:

Patient Screening and Selection

Diagram showing patient screening for renal denervation in accordance with a European Society of Hypertension position paper. BP = blood pressure; eGFR = estimated glomerular filtration rate; HTN = hypertension.

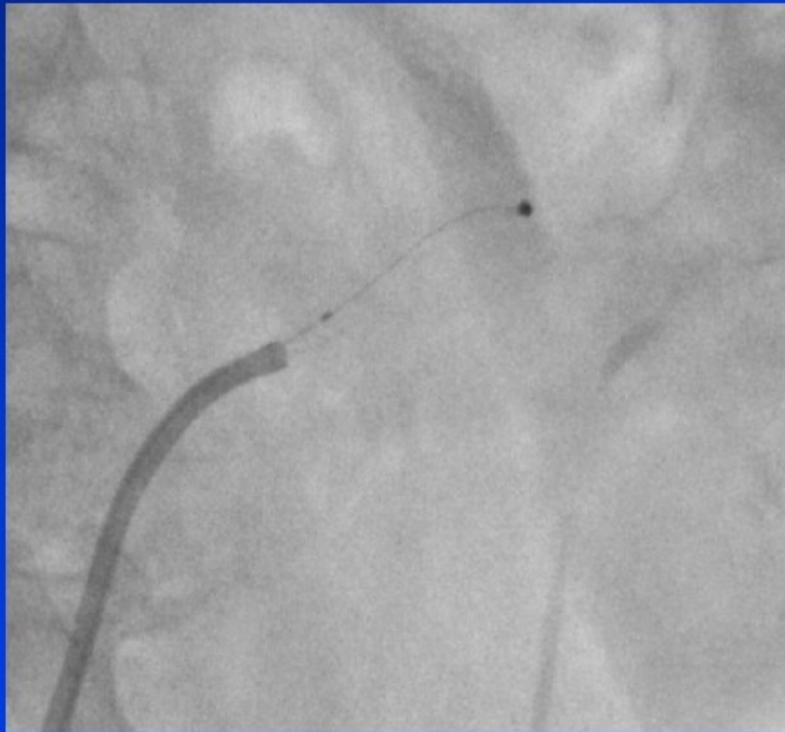
Renal Nerve Anatomy Allows a Catheter-Based Approach



- Renal artery access via standard interventional technique
- 4-6 two-minute treatments per artery
- Proprietary RF generator
 - Automated
 - Low power
 - Built-in safety algorithms

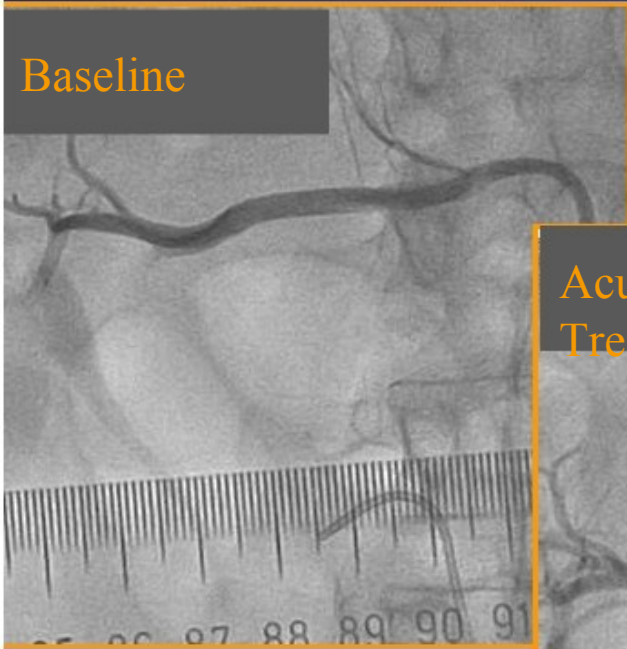


Procedure

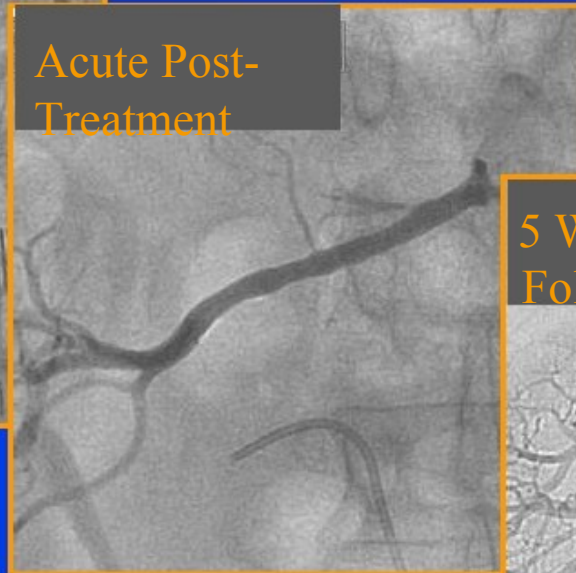


Example of Vessel Reaction

Baseline



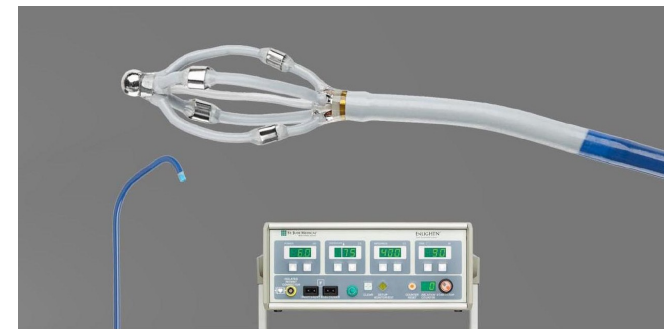
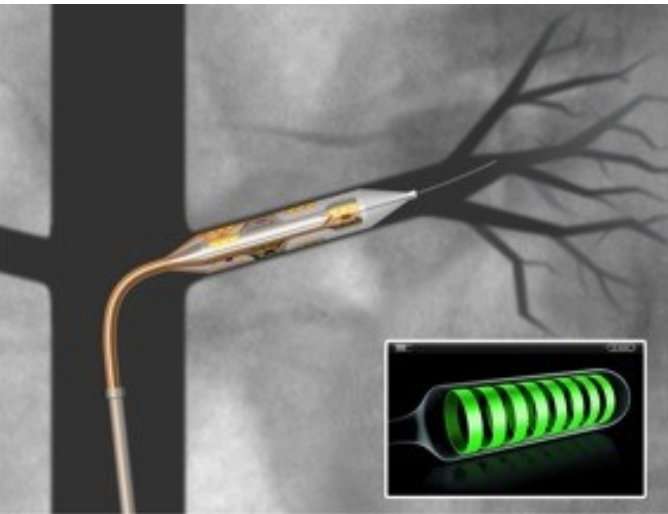
Acute Post-Treatment



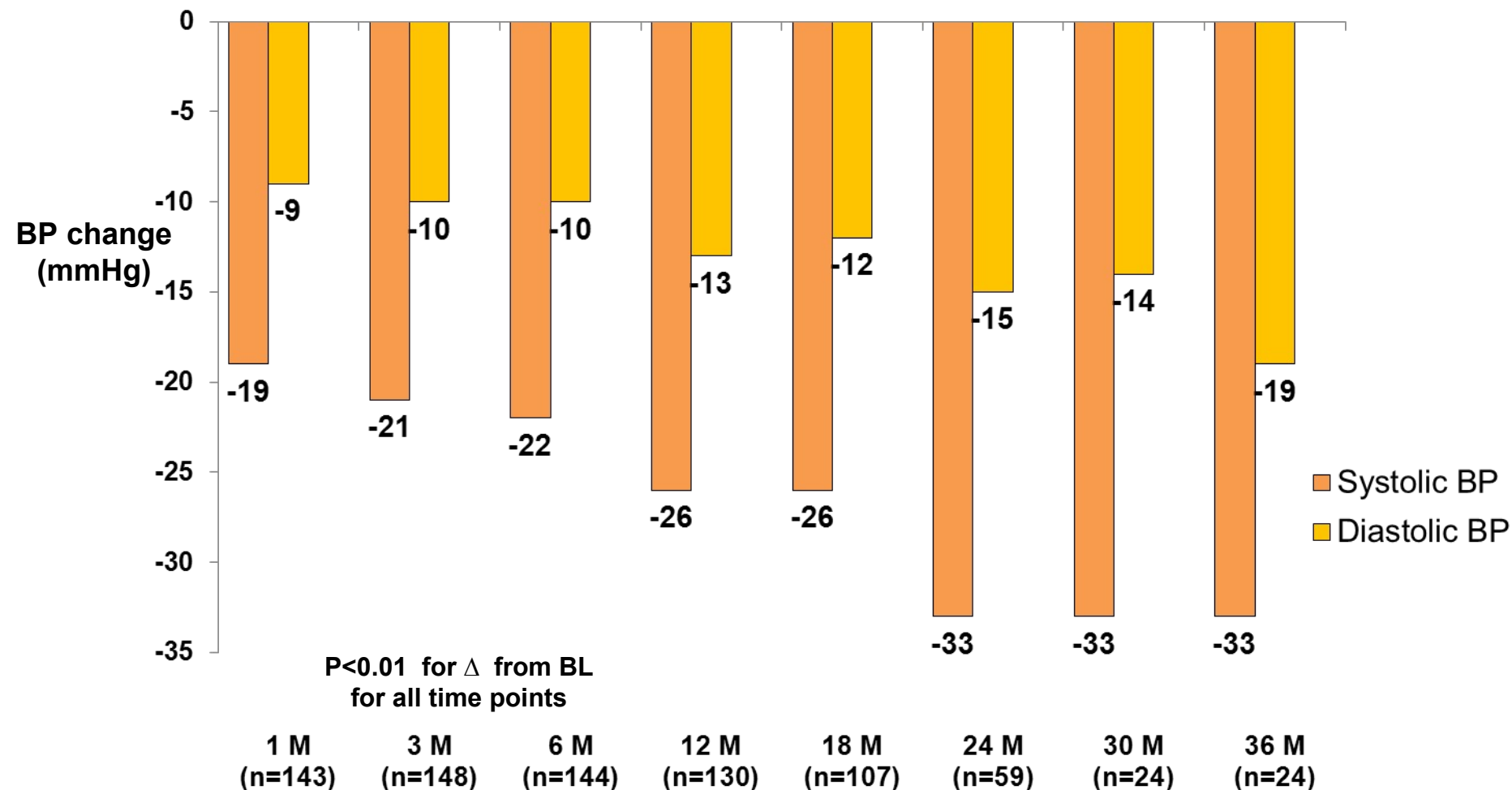
5 Week Follow-Up



Критичен въпрос – как да измерим със сигурност сефекта на процедурата

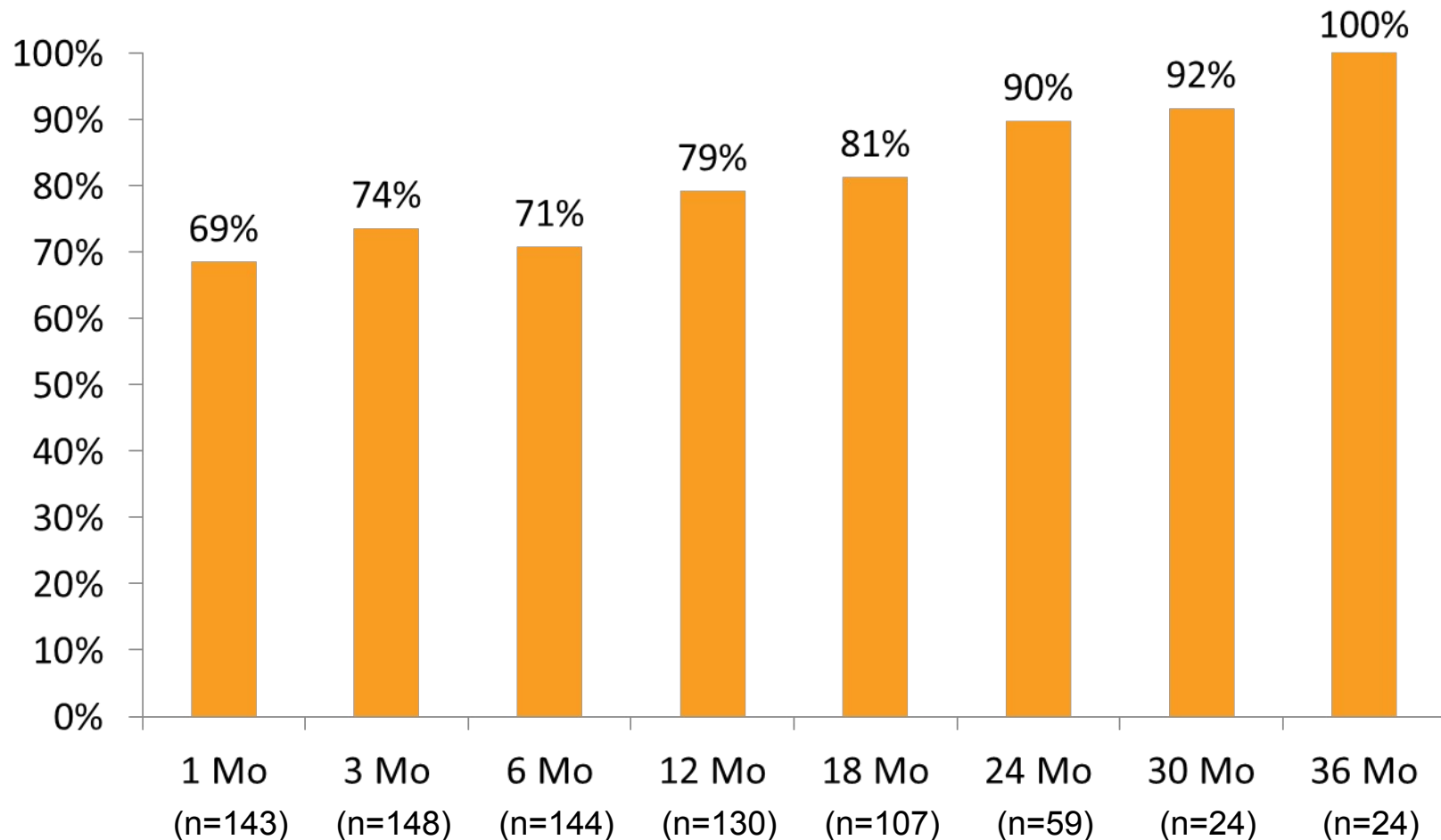


Symlicity HTN-1: BP Reductions through 3 years

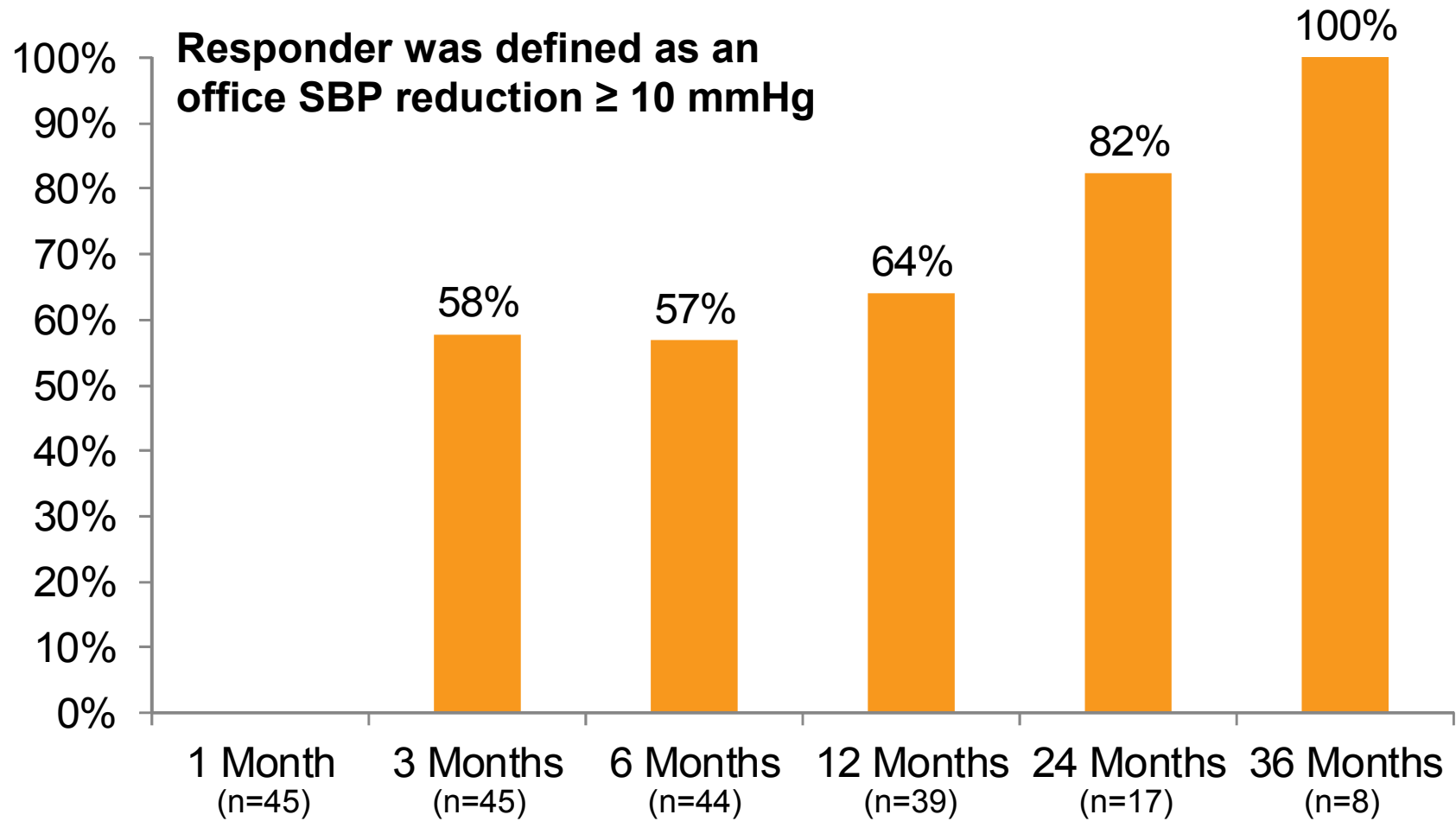


Symlicity HTN-1: Percentage Responders Over Time

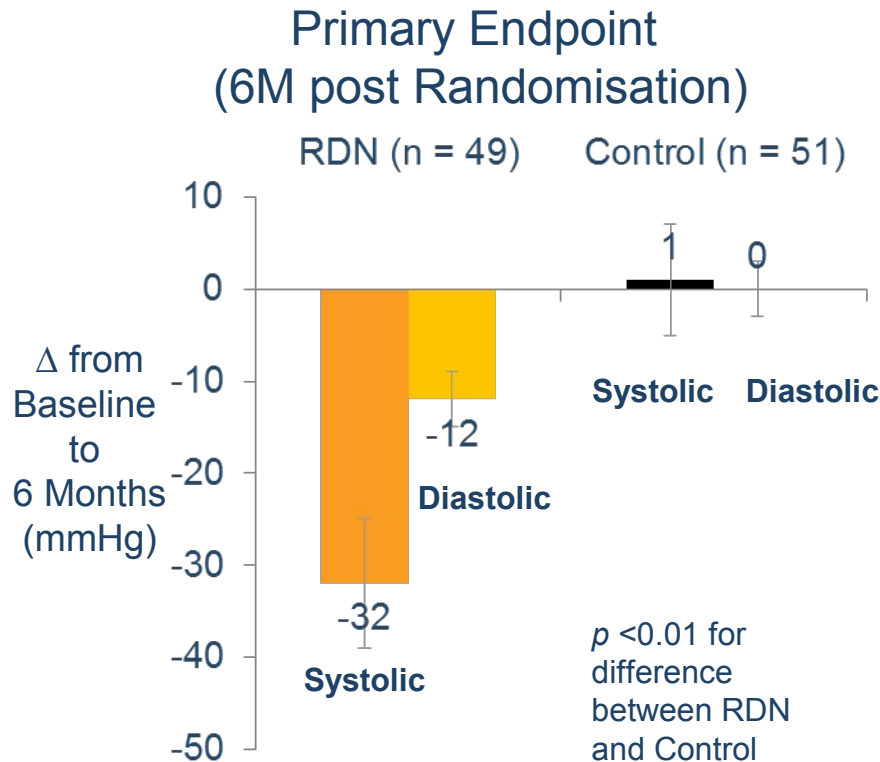
Responder was defined as an office SBP reduction ≥ 10 mmHg



Symplecity HTN-1: Response Rate Among Non-responders at 1 Month (n=45)

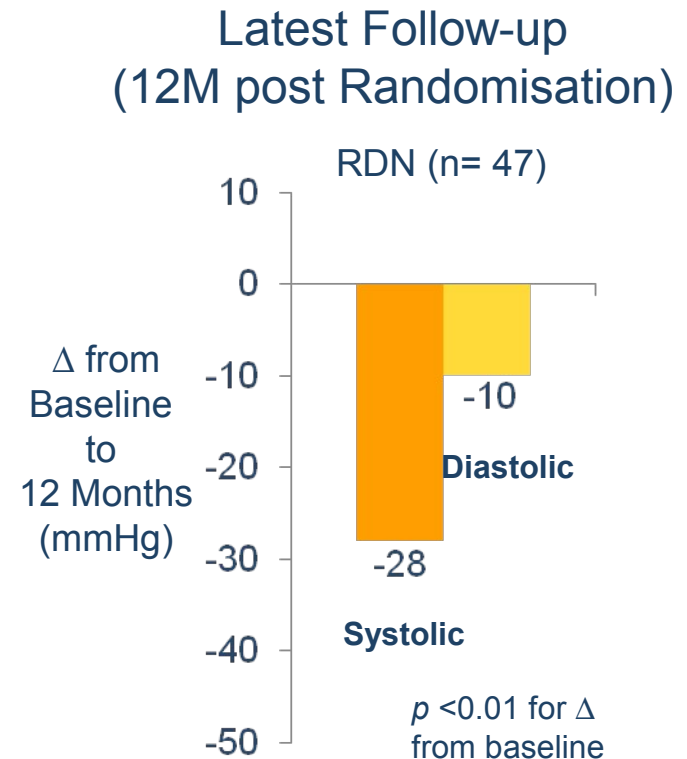


Symplicity HTN-2: Primary Endpoint and Latest Follow-up



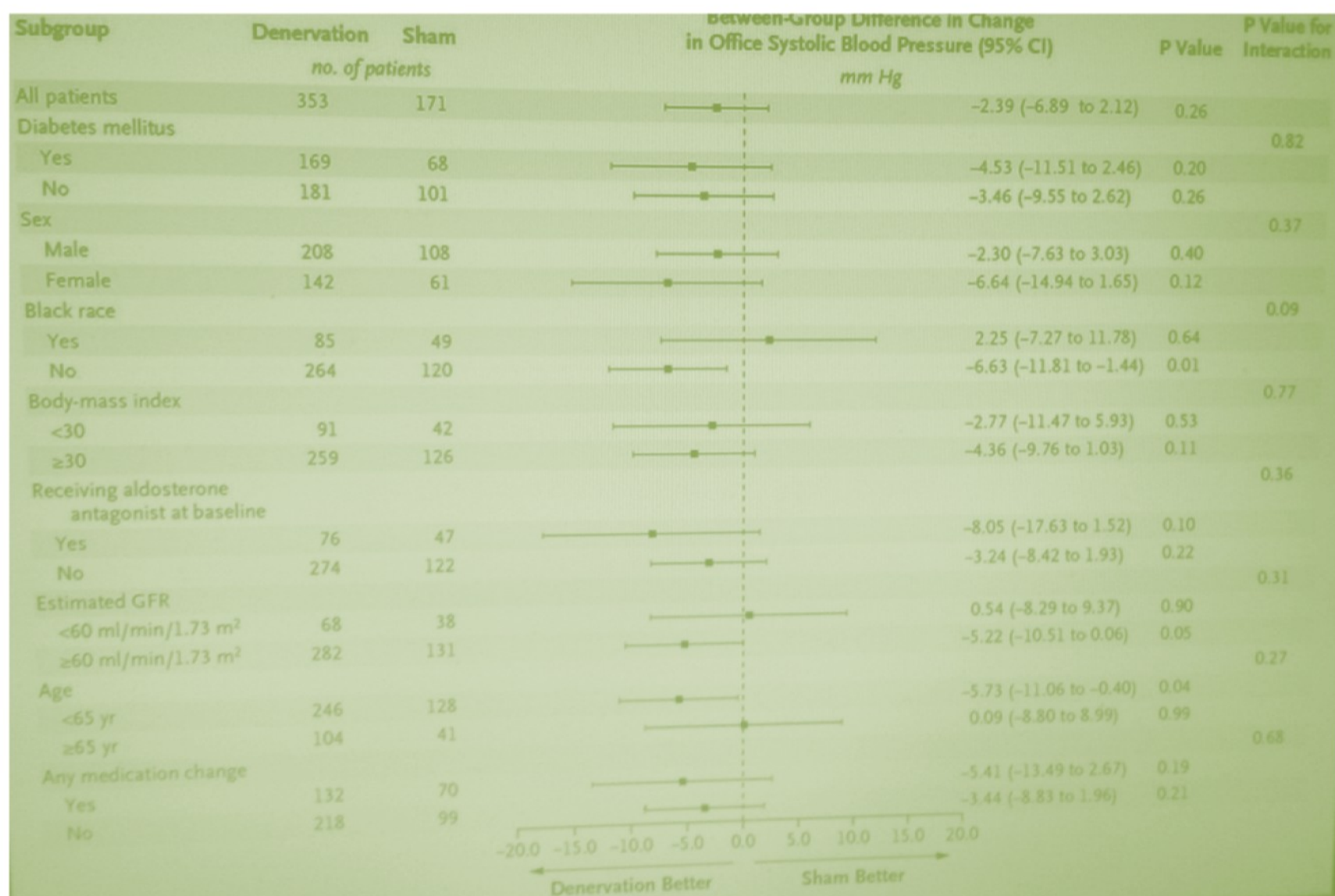
Primary Endpoint:

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



Latest Follow-up:

- Control crossover (n = 35): -24/-8 mmHg (Analysis on patients with SBP ≥ 160 mmHg at 6 M)



Simplicity 3 доказва че:

1. Ефекта на процедурата е по малък от това което показват незаслепените проучвания
2. Афроамериканците и пациентите с лоша бъбречна функция нямат ефект със системата на Medtronic
3. Можем да постигнем отличен краткосрочен ефект при резистентан хипертония с имитация на реналана денервация

