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Role of Unilaterally-Cannulating Adrenal Venous Sampling for Identifying Unilateral Primary Aldosteronism:

EXPERIENCE AT A LOW VOLUME CENTRE

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INTRODUCTION :

1. Adrenal venous sampling (AVS) is the gold standard for lateralizing primary aldosteronism
2. However, failed bilateral cannulation is common
3. There is no consensus on the role of unilaterally-cannulating AVS.

Can unilaterally-cannulating AVS effectively select patients for unilateral adrenalectomy?

What did we learn?

- Unilateral AVS is useful in selecting patients for unilateral adrenalectomy
- It has greater positive predictive value for cure following surgery compared to CT / iodocholesterol scan

METHODS :

Study Design	Retrospective observational study
Study Period	2009-2023
Inclusion	Patients with primary aldosteronism who underwent AVS
Exclusion	Patients with other adrenal hormonal co-secretion
Definition	Unilateral Primary aldosteronism was confirmed by biochemical cure following unilateral adrenalectomy
Primary outcome	Diagnostic performance of unilateral AVS compared to other lateralization methods

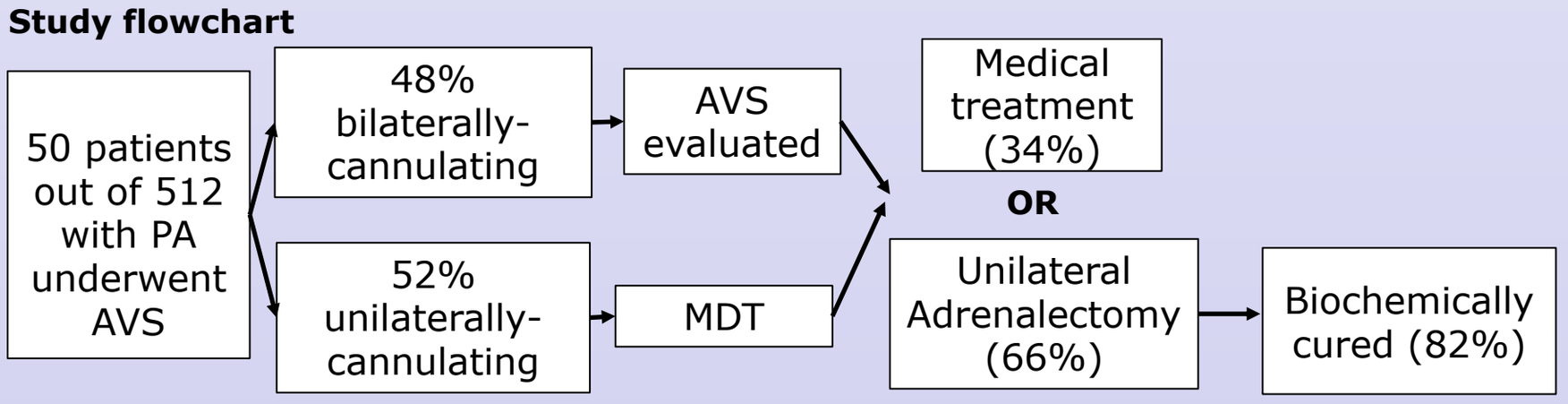
AVS was interpreted as per expert consensus

Rossi, G.P. *et al.* (2014), *Hypertension*, 63(1), pp. 151–160.

AVS evaluation	Formula	Clinical Significance
Selectivity index (SI)	$Cortisol_{adrenal\ vein} / Cortisol_{IVC}$	>3 represent successful selective cannulation
Cortisol-corrected Aldosterone (CCA)	*Aldosterone /Cortisol*	
Lateralization index (LI)	$CCA_{Dominant} / CCA_{Nondominant}$	>4 represent lateralized aldosterone excess
Contralateral suppression index (CSI)	$CCA_{Nondominant} / CCA_{IVC}$	<cutoff suggests aldosterone excess from contralateral adrenal
Relative Aldosterone Secretion Index (RASI)	$CCA_{Dominant} / CCA_{IVC}$	>cutoff suggests aldosterone excess from ipsilateral adrenal

RESULTS

Study flowchart



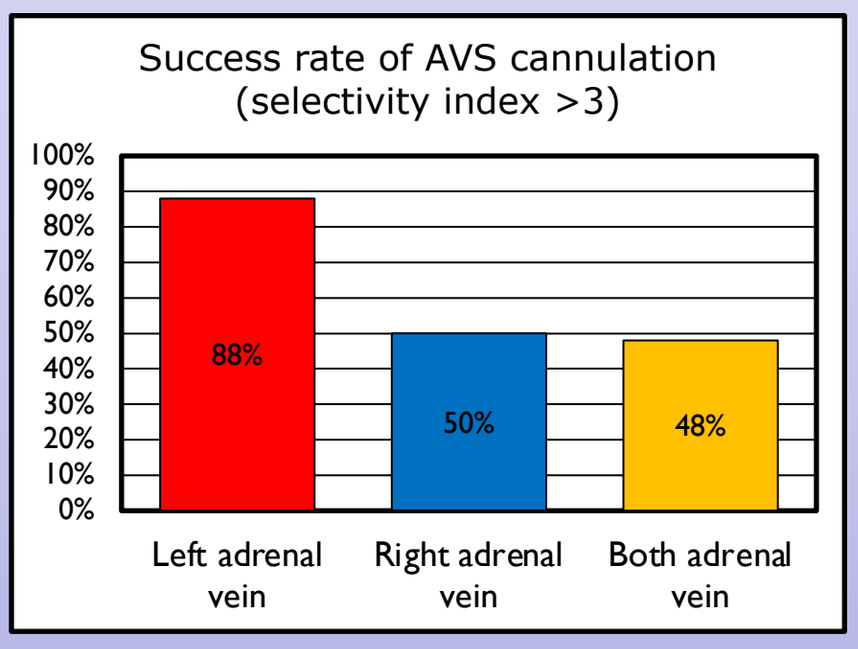
Decision to operate

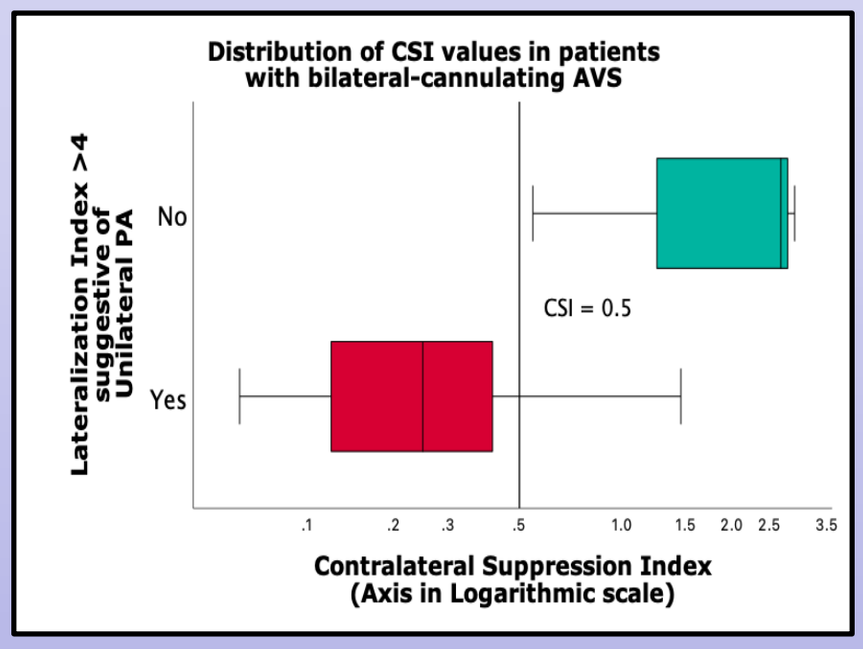
45.5% by AVS

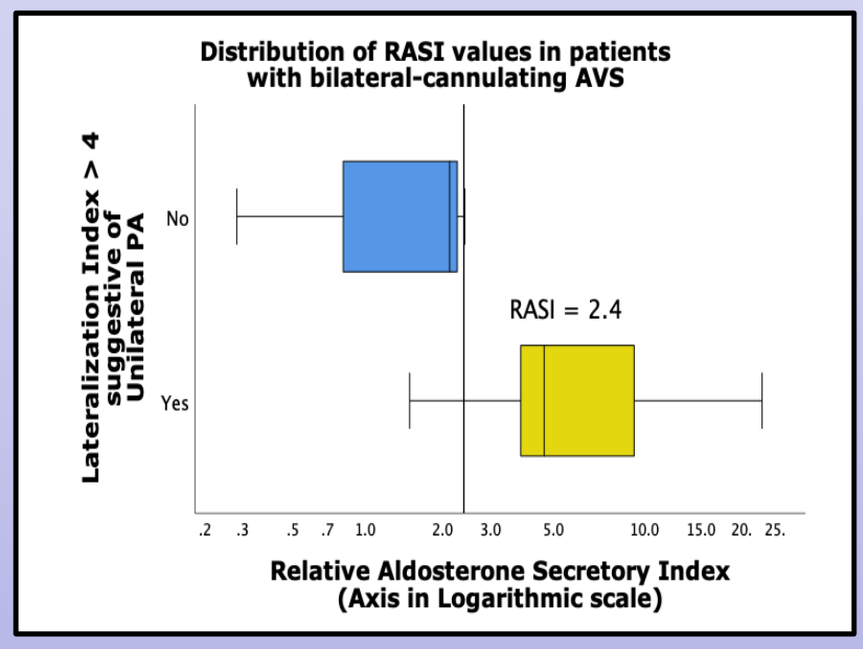
54.5% by CT / iodocholesterol scan

0% suffered AVS-related adverse events

1. Bilateral cannulating AVS was achieved in **only 48% of cases**
2. **CSI <0.5** was optimal cutoff to predict unilateral PA in our cohort (Youden index 0.789)
3. **RASI >2.4** was optimal cutoff to predict unilateral PA in our cohort (Youden index 0.895)







Diagnostic performance of lateralization methods

	Sensitivity (95% CI)	Positive Predictive Value
Bilateral AVS *LI >4*	100.0% (75.3-100.0%)	**86.7%** (59.5-98.3%)
Computed Tomography	92.6% (75.7-99.1%)	**86.2%** (68.3-96.1%)
Iodocholesterol scan	50.0% (18.7-81.3%)	62.5% (24.5-91.5%)
Unilateral AVS CSI <0.5 or RASI >2.4	87.5% (67.6-97.3%)	**95.5%** (77.2-99.9%)

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CONCLUSIONS :

- Only 48% of AVS were bilateral, but 88% cannulated at least the left adrenal vein
- AVS was safe with low complication rates
- Utilizing unilateral AVS for surgical decision-making could avoid one unnecessary operation for every:

  11 unsuccessful operation based on CT

  3 unsuccessful operation based on nuclear imaging

Despite failed bilateral cannulation, Unilateral AVS remains a valuable tool for guiding treatment decisions !