

# ROLE FOR <sup>131</sup>I-6β-iodomethyl-norcholesterol SCINTIGRAPHY IN SUBCLINICAL CUSHING SYNDROME WITH BILATERAL ADRENAL LESIONS

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## INTRODUCTION

Subclinical Cushing Syndrome (SCS) is the most frequent endocrine dysfunction found in adrenal incidentalomas. Although adrenalectomy constitutes a therapeutic option for selected cases, the presence of bilateral tumours can complicate the surgical decision.

## OBJECTIVES

Evaluate the utility of <sup>131</sup>I-6β-iodomethyl-19-norcholesterol scintigraphy in SCS with bilateral adrenal tumours.

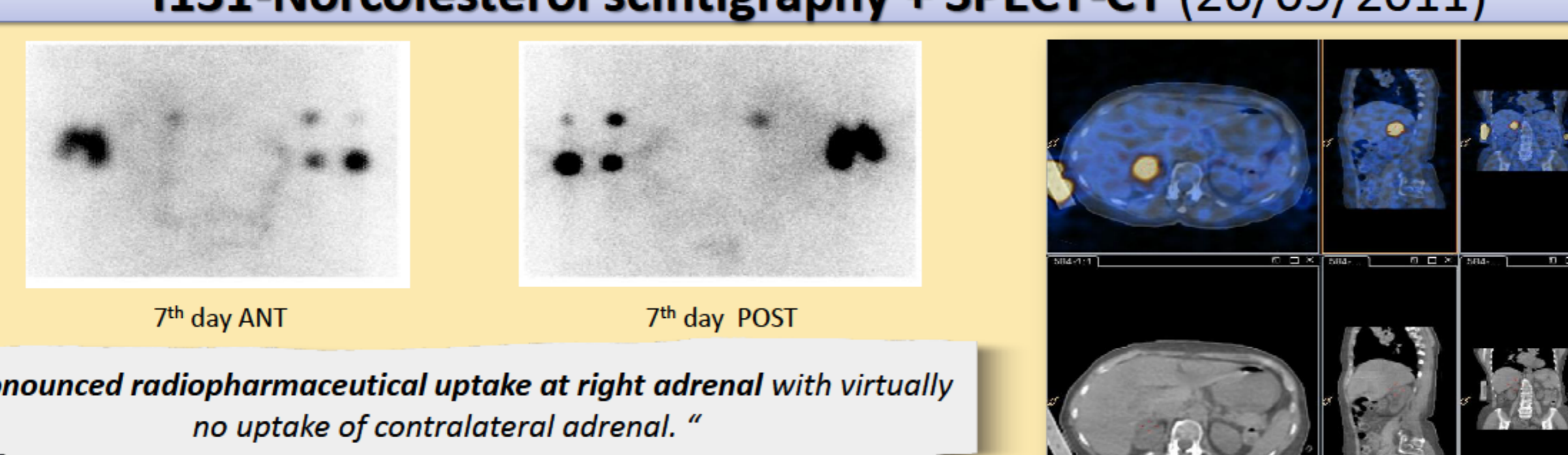
## METHODS

- Retrospective analysis of all patients with SCS and bilateral adrenal lesions submitted to <sup>131</sup>I-6β-iodomethyl-19-norcholesterol scintigraphy in our Nuclear Medicine Department. Following suppression with dexamethasone, planar thoracoabdominal scintigraphy and single photon emission computed tomography (SPECT/CT) images were obtained at 3<sup>rd</sup>, 5<sup>th</sup> and 7<sup>th</sup> days after intravenous administration of 1mCi of <sup>131</sup>I-6β-iodomethyl-19-norcholesterol.

## RESULTS

**1** ♀, 67 years  
 Adrenal lesions identified in abdominal-CT (31/10/2008)  
 • Right adrenal with 2,4cm of Ø and left adrenal with 0,7cm of Ø

**I131-Norcholesterol scintigraphy + SPECT-CT (26/09/2011)**



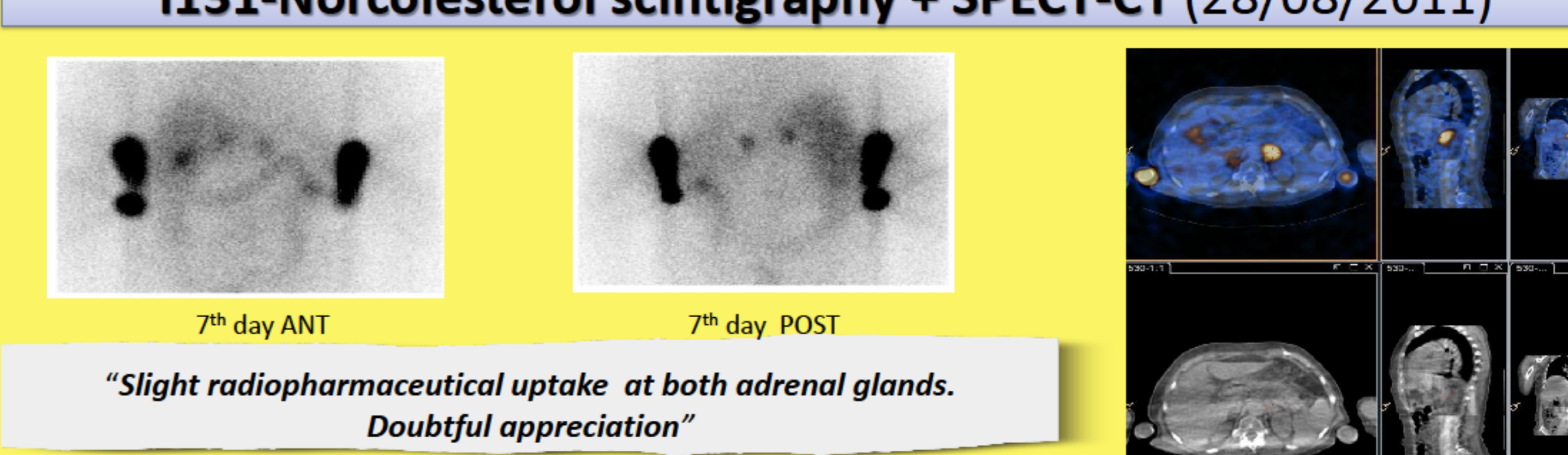
7<sup>th</sup> day ANT      7<sup>th</sup> day POST

*"Pronounced radiopharmaceutical uptake at right adrenal with virtually no uptake of contralateral adrenal."*

**Rx** Right adrenalectomy was performed at 23/04/2012  
 • Histopathology: "Cortical adenoma of right adrenal gland"  
 • Evolution: Reduction of anti-hypertensive drugs

**2** ♀, 66 years  
 Adrenal lesions identified in abdominal-CT(11/07/2005)  
 • Right adrenal with 2,5cm of Ø and left adrenal with 1,5cm of Ø

**I131-Norcholesterol scintigraphy + SPECT-CT (28/08/2011)**



7<sup>th</sup> day ANT      7<sup>th</sup> day POST

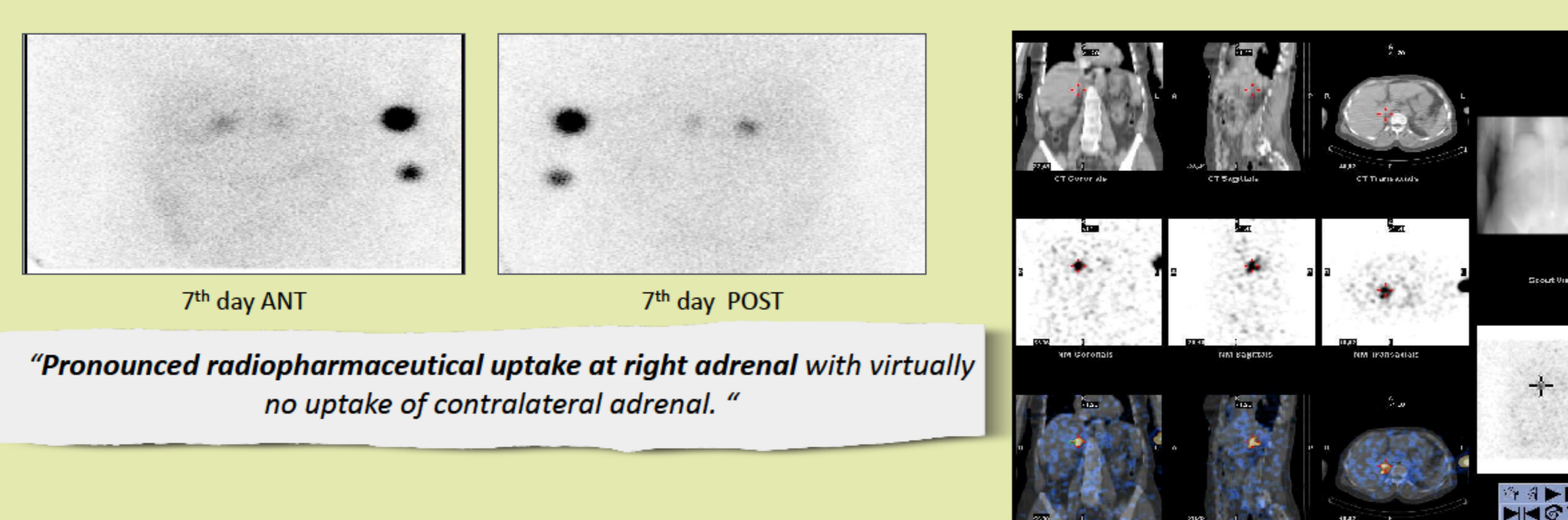
*"Slight radiopharmaceutical uptake at both adrenal glands. Doubtful appreciation"*

**Rx** Medical treatment  
 • Spironolactone 50mg 2id  
 • Evolution: clinical surveillance

Blood samples	1	2	3	4	N
TSH (uIU/mL)	1,52	5,2	1,1	1,18	0,4-4,0
ft4 (ng/dL)	1,19	1,1	1,2	1,09	0,8-1,9
Urinary metanefrines (ug/24h)	69,38	26,1	72,4	4,9	64-302
VMA (ug/24h)	0,8	1,9	5,4	4,2	1,8-5,7
Active renin (uU/mL)	12	16	5,1	12,5	7-76
Aldosterone (pg/mL)	192	143	125	11,5	40-310
DHEA-S (ug/mL)	<0,2	0,5	0,2	1,4	0,35-4,3
Total testosterone (ng/mL)	---	--	2,4	0,4	2,7-11
Androstenedione (ug/dL)	0,3	1,6	1,0	0,9	0,5-3,4
ACTH (pg/ml)	<5,0	<5,0	<5,0	5,8	9-52
Cortisol (ug/dL)	12	12	8,9	8,4	5-25
Urinary free cortisol (ug/24h)	27	64	102	52,9	10-80
Low dose DXM supression test (ug/dL)	6,6	4,8	5,2	7,3	<1,8

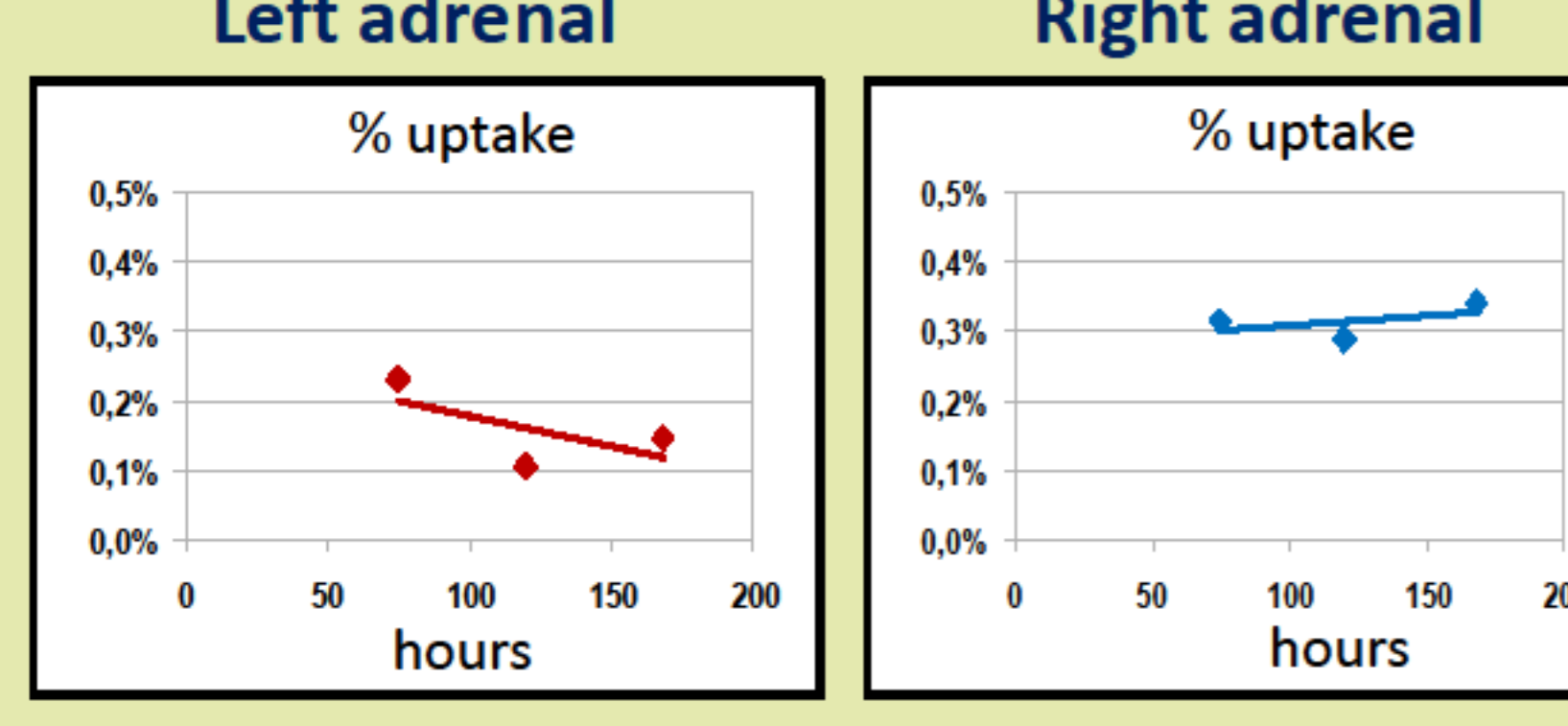
**3** ♀, 49 years  
 Adrenal lesions identified in abdominal-CT(11/06/2012)  
 • Right adrenal with 2,1cm of Ø and left adrenal with 1,6cm of Ø

**I131-Norcholesterol scintigraphy + SPECT-CT (17/03/2014)**



7<sup>th</sup> day ANT      7<sup>th</sup> day POST

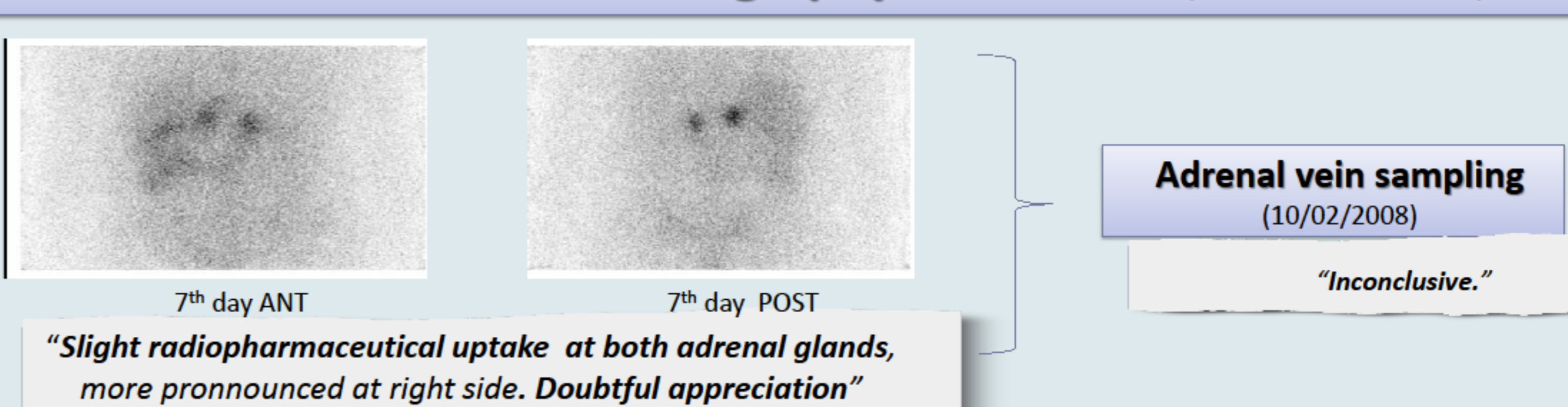
*"Pronounced radiopharmaceutical uptake at right adrenal with virtually no uptake of contralateral adrenal."*



**Rx** Right adrenalectomy was performed at 02/12/2014  
 • Histopathology: "Cortical adenoma of right adrenal gland"  
 • Evolution: Reduction of anti-hypertensive drugs

**4** ♀, 46 years  
 Adrenal lesions identified in abdominal-CT (06/05/2005)  
 • Right adrenal with 3,0cm of Ø and left adrenal with 2,5cm of Ø

**1st I131-Norcholesterol scintigraphy + SPECT-CT (10/11/2010)**




7<sup>th</sup> day ANT      7<sup>th</sup> day POST

*"Slight radiopharmaceutical uptake at both adrenal glands, more pronounced at right side. Doubtful appreciation"*

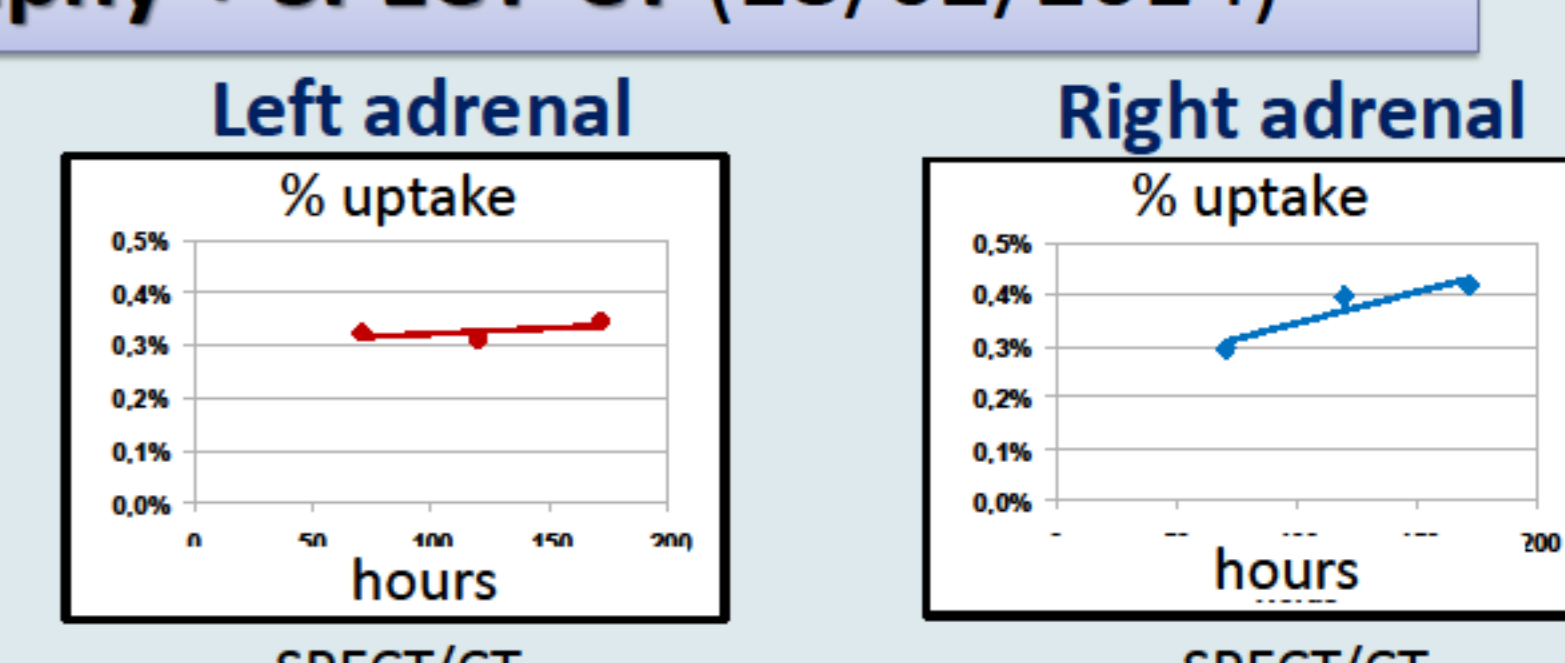
Adrenal vein sampling (10/02/2008)  
*"Inconclusive."*

**1st I131-Norcholesterol scintigraphy + SPECT-CT (18/02/2014)**



7<sup>th</sup> day ANT      7<sup>th</sup> day POST

*"Pronounced radiopharmaceutical uptake at right adrenal with virtually no uptake of contralateral adrenal."*



**Rx** Right adrenalectomy was performed at 14/10/2014  
 • Histopathology: "Cortical adenoma of right adrenal gland"

## CONCLUSION

The adrenal <sup>131</sup>I-6β-iodomethyl-19-norcholesterol scintigraphy with SPECT-CT provides a more precise picture of functional structural lesions, crossing the information obtained by CT and hormonal assays. In these patients enabled a more targeted surgical approach.

BIBLIOGRAPHY: Wong K. Et al. Clinical Nuclear Medicine. 2010; 35(11):865-869; Yen RF, et al. J Nuc Med. 2009; 50:1631-1637; Rubello D., et al. Eur J Endocrin. 2002; 143:13-28