Abordatge i maneig de l'incidentaloma hipofisiari: aspectes pràctics

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No conflict of interest (financial or non-financial)

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Desarrollo tecnológico en nuestras vidas

No technology is without its unintended consequence

El cohete Starship de Elon Musk explota durante su vuelo de prueba

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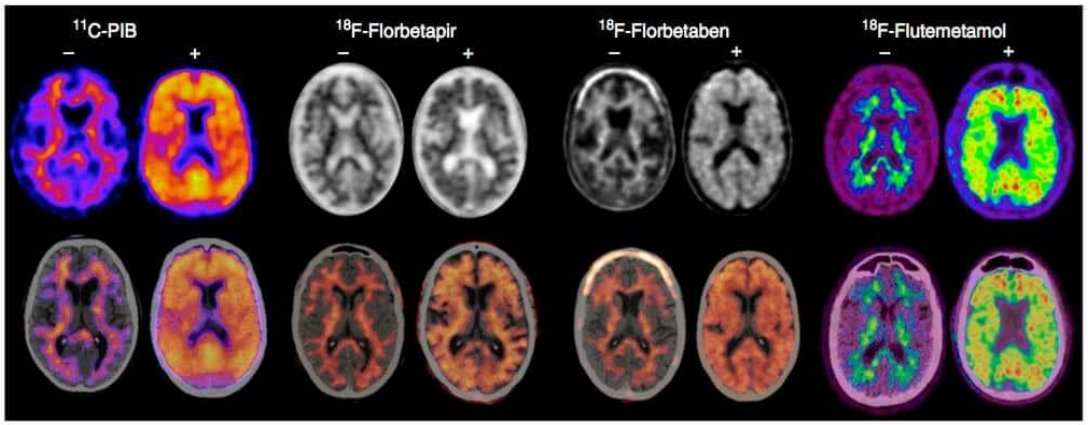
Pruebas de imagen anatómicas y funcionales



Ability to '**see more clearly**' into hidden anatomic realms

«Incidentalomas»
«Disease of modern technology»

Tiroides
Suprarrenales
Páncreas
Hipófisis

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Lesiones hipofisarias ¿frecuentes?

Nonfunctioning Pituitary Tumors and Pituitary Incidentalomas

Mark E. Molitch, MD

30 series autopsias

Table 1
Frequency of pituitary adenomas found at autopsy

Series	No. pituitaries examined	No. adenomas found	Frequency (%)	No. macroadenomas found	Stain PRL-positive (%)
Total	18,631	1,969	10.6%	7	

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Lesiones hipofisarias ¿frecuentes?

Clinical Trial > AJNR Am J Neuroradiol. 1994 Apr;15(4):675-9.

Pituitary gland MR: a comparative study of healthy volunteers and patients with microadenomas

52 voluntarios sanos → 20 lesiones (**38,4%**)

> Ann Intern Med. 1994 May 15;120(10):817-20. doi: 10.7326/0003-4819-120-10-199405150-00001.

Pituitary magnetic resonance imaging in normal human volunteers: occult adenomas in the general population

100 voluntarios sanos → 10 AH (**10%**)

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Lesiones hipofisarias ¿frecuentes?

› Clin Endocrinol (Oxf). 2021 Feb;94(2):269-276. doi: 10.1111/cen.14353. Epub 2020 Nov 6.

Pituitary incidentalomas in paediatric population: Incidence and characteristics

1428 niños → 31 lesiones (**2,2%**)

TABLE 1 Distribution of sex, age and size among the different diagnoses of the incidental pituitary lesions

	Frequency	Sex		Age (years)	Size (mm)
	N, %	Females (n, %)	Males (n, %)	Mean ± SD	Mean ± SD
Ratkhe cleft cyst	21 (67.7%)	14 (66.7%)	7 (33.3%)	9.6 ± 5.8	4.4 ± 3
Cystic lesion	6 (19.4%)	3 (50%)	3 (50%)	13 ± 5.3	3.8 ± 2.6
Microadenoma	4 (12.9%)	3 (75%)	1 (25%)	14.3 ± 4.5	3.5 ± 1.7
All incidental lesions	31 (100%)	20 (64.5%)	11 (35.5%)	10.9 ± 5.7	4.2 ± 2.7

TABLE 3 Incidence of incidental pituitary lesions among age groups

Age group (years)	Incidence per 1000 patient
0-4	17/1000
5-9	17/1000
10-14	22/1000
15-18	30/1000

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Lesiones hipofisarias ¿frecuentes?

› Oncotarget. 2017 Feb 16;8(33):55544-55549. doi: 10.18632/oncotarget.15417. eCollection 2017 Aug 15.

Evaluation of pituitary uptake incidentally identified on ^{18}F-FDG PET/CT scan

24,007 PET FGD → 32 lesiones (**0,13%**)

Multicenter Study › Eur J Nucl Med Mol Imaging. 2010 Dec;37(12):2334-43. doi: 10.1007/s00259-010-1571-5. Epub 2010 Jul 27.

Incidental pituitary uptake on whole-body 18F-FDG PET/CT: a multicentre study

40,977 PET FGD → 30 lesiones (**0,07%**)

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¿Qué son estas lesiones?

Pituitary Magnetic Resonance Imaging for Sellar and Parasellar Masses: Ten-Year Experience in 2598 Patients

Pouyan Famini, Marcel M. Maya, and Shlomo Melmed

TABLE 3. Diagnoses of 282 incidentalomas discovered by imaging modality[a]

Diagnoses	n CT	n MRI
Anterior pituitary tumors		
Nonfunctioning adenoma	51	66
Prolactinoma	9	13
GH adenoma	3	5
ACTH adenoma	1	3
GH/prolactin mixed adenoma	1	0
GH/TSH mixed adenoma	1	0
TSH adenoma	0	1
Cysts		
Rathke's cleft cyst	1	21
Craniopharyngioma	4	11
Epidermoid	0	1
Nonadenomatous neoplasms		
Meningioma	7	11
Chordoma	1	2
Chondrosarcoma	0	1
Germinoma	0	1
Granular cell tumor	1	0
Leiomyosarcoma	1	0
Mucoepidermoid carcinoma	0	1
Xanthogranuloma	0	1
Inflammatory and vasculitidies		
Wegener's granulamatosis	1	0
Metastases		
CNS lymphoma, to pituitary stalk	0	1
Liver epitheliod hemangioendothelioma	1	0
Nasopharyngeal lymphoma	0	1
Pineal germinoma/dysgerminoma	0	1
Plasmacytoma	1	0
Prostate adenocarcinoma	0	1
Squamous cell carcinoma of sinus	1	0
Infectious		
Pseudomonas aeruginosa	0	1
Vascular		
Apoplexy with masses	8	6
Carotid aneurysm	1	0
Hypothalamic interpeduncular hematoma	0	1
Miscellaneous		
Hyperplasia	4	0
Empty sella	0	2
Lipoma	1	0
Undiagnosed masses	5	22
Total	104	176

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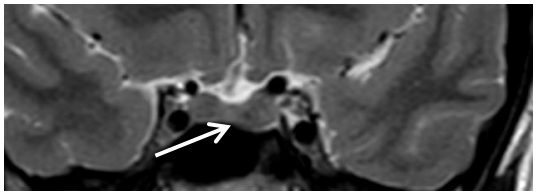
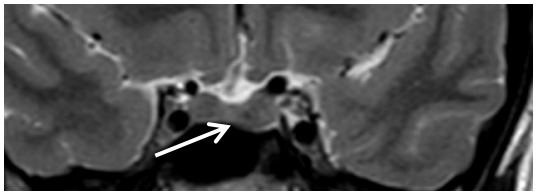
¿Qué son estas lesiones?

Mujer de 27a, migraña → RM
No datos de hiper/hipofunción hipofisaria
Estudio hormonal normal

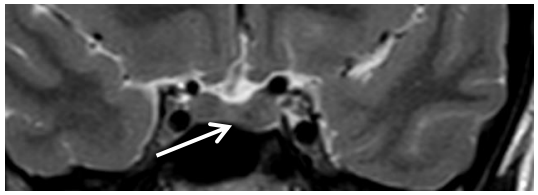
2019



2021



2023



Dudosa focalidad hipofisaria paramedial izquierda de 5mm que podria corresponder a microadenoma versus discreta compresión de la hipòfisis por la arteria trigeminal

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Incidencia

Definición, AH, lesiones quísticas, técnica imagen

Definición **amplia**

› World Neurosurg. 2022 Feb:158:e843-e855. doi: 10.1016/j.wneu.2021.11.079. Epub 2021 Nov 25.

Pituitary Incidentalomas in the United States: A National Database Estimate

Gina Watanabe [1], So Yung Choi [1], David Cory Adamson [2]

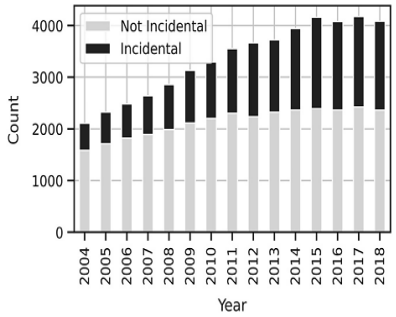
50,220 registro SEER (Surveillance Epidemiology and End Results) 2004-2018

Incidentalomas hipofisarios:

1,53 ± 0.02/100,000 hab (2004-2018)

0,73 ± 0.05/100,000 hab (2004) – 24,9% AH

2,00 ± 0.09/100,000 hab (2018) – 42,1% AH



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Incidencia

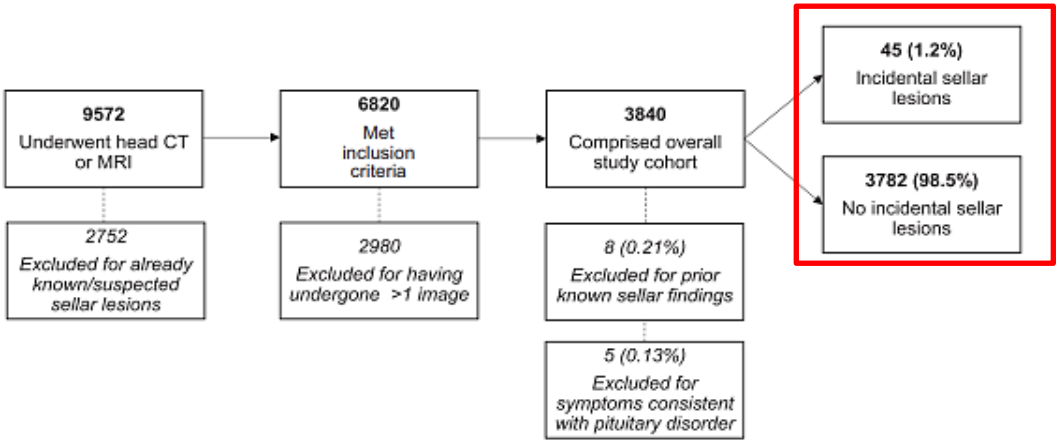
Definición **restringida**

J Endocr Soc. 2020 Nov 29;5(2):bvaa186. doi: 10.1210/jendso/bvaa186. eCollection 2021 Feb 1.

Prospective Evaluation of Incidental Pituitary Imaging Findings in the Sella Turcica

Michael Kuo [1], Marcel M Maya [2], Vivien Bonert [1], Shlomo Melmed [1]

Estudio prospectivo 1/1-31/12/2019 – RM/TC
No APP, no síntomas hiperfunción, no alteración laboratorio, defecto visual



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Síndromes hipofisarios ¿fácil?

Hiperfunción hipofisaria

Prolactin	Prolactinoma Hypogonadism and galactorrhea	¿Mujer postmenopáusica? ¿Varones?
Growth hormone 	Acromegaly Headaches, joint pain, seborrhea, hyperhidrosis, enlargement of hands and feet, macroglossia, teeth spacing, prognathism, visceromegaly, secondary diabetes, hypertension, sleep apnea	¿Formas leves?
Adrenocorticotropic hormone 	Cushing disease Truncal obesity, weight gain, skin thinning, easy bruising, proximal muscle weakness, secondary diabetes, hypertension, osteoporosis, oligomenorrhea	
Thyroid-stimulating hormone	Hyperthyroidism (rare) Tachycardia, weight loss, tremor,heat intolerance, hyperdefecation	¿?

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Síndromes hipofisarios ¿fácil?

Hipofunción hipofisaria

Growth hormone (GH)	GH deficiency Fatigue, weight gain, decreased productivity and quality of life
Luteinizing hormone–follicle-stimulating hormone (LH–FSH)	Hypogonadism Low libido and infertility Women: oligomenorrhea Men: erectile dysfunction, low muscle mass, gynecomastia
Thyroid-stimulating hormone (TSH)	Hypothyroidism Fatigue, constipation, weight gain, cold intolerance, hair loss
Adrenocorticotropic hormone (ACTH)	Adrenal insufficiency Fatigue, orthostatic hypotension, nausea, anorexia, weight loss
Prolactin	Prolactin deficiency Inability to lactate
Antidiuretic hormone	Diabetes insipidus Polyuria, nocturia, polydipsia

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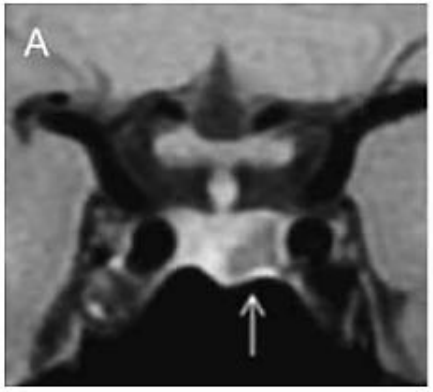
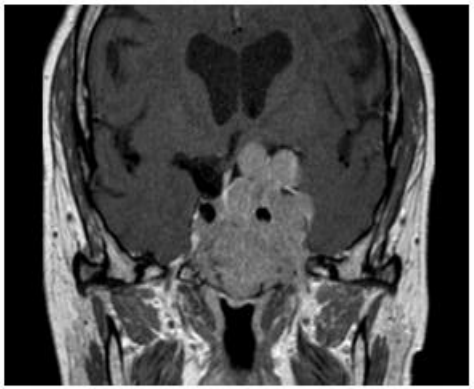
Síndromes hipofisarios ¿fácil?

Cefalea y lesiones hipofisaria

¿Puede un endocrinólogo experto asegurar cuando una **cefalea** se debe a una lesión hipofisaria?



Mujer de 41 años
microprolactinoma
CON cefalea



Mujer de 78 años
corticotropinoma silente
SIN cefalea

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“Primum non nocere”

The **challenge** is to recognize and treat the small percentage of pituitary incidentalomas that do pose a significant risk, either because of their hormonal activity, mass effect or growth potential, while leaving the rest alone

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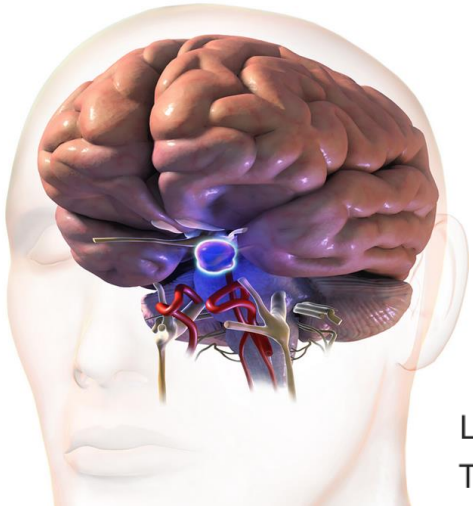
Pituitary Incidentaloma: An Endocrine Society Clinical Practice Guideline

Pamela U. Freda, Albert M. Beckers, Laurence Katznelson, Mark E. Molitch, Victor M. Montori, Kalmon D. Post, and Mary Lee Vance

2011



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Pituitary incidentalomas

AUTHOR: Peter J Snyder, MD
SECTION EDITOR: David S Cooper, MD
DEPUTY EDITOR: Kathryn A Martin, MD

All topics are updated as new evidence becomes available and our peer review process is complete.

Literature review current through: **Jan 2025.**

Literature review current through: **Jan 2025.**
This topic last updated: **Apr 10, 2023.**

Management of nonfunctioning pituitary incidentaloma☆

Prise en charge des incidentalomes hypophysaires non fonctionnels

Françoise Galland[a], Marie-Christine Vantyghem[b], Laure Cazabat[c], Anne Boulin[c], François Cotton[d], Jean-François Bonneville[e], Emmanuel Jouanneau[f], Gwénaelle Vidal-Trécan[g], Philippe Chanson[h,i,j,l,*]

2015

First German Guideline on Diagnostics and Therapy of Clinically Non-Functioning Pituitary Tumors

Authors
Timo Deutschbein[1,2], Cornelia Jaursch-Hancke[3], Ulrich J. Knappe[4], Wolfgang Saeger[5], Jörg Flitsch[6], Jörg Bojunga[7], Michael Buchfelder[8], Beate Ditzen[9], Rüdiger Gerlach[10], Elfriede Gertzen[11], Jürgen Honegger[12], Gerhard A. Horstmann[13], Arend Koch[14], Ilonka Kreitschmann-Andermahr[15], Mirjam Kunz[16], Wolf A. Lagrèze[17], Nils H. Nicolay[18], Werner Paulus[19], Martin Reincke[20], Manuel A. Schmidt[21], Matthias M. Weber[22], Helmut Wilhelm[23], Martin Fassnacht[1]

2021

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Evaluación inicial

	ENDOCRINE SOCIETY			UpToDate®
HC y EF completa	✓	✓	✓	✓
Hormonal (hiperfunción)	✓	**Micro** PRL, IGF-1 Cortisol (sospecha)	✓	**Micro** PRL
Hormonal (hipofunción)	✓	No **Micro** GH 6-9mm	No **Micro** Considerar 6-9mm	No **Micro**
CCVV (QO)	✓	✓	✓	✓

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Evaluación inicial

Evaluación inicial

Screening for ACTH-dependent hypercortisolism in patients affected with pituitary incidentaloma

A Toini[1,2,*], A Dolci[2,3,*], E Ferrante[1], E Verrua[1], E Malchiodi[1,2], E Sala[1,2], A G Lania[4], I Chiodini[1], P Beck-Peccoz[1,2], M Arosio[2,3], A Spada[1,2] and G Mantovani[1,2]

	Patient N.1	Patient N.2	Patient N.3	Patient N.4	Patient N.5
Serum cortisol after 1 mg dexamethasone (nmol/l)	505	151.7	231.7	132.4	63.5
Urinary free cortisol (nmol/24 h)	372	135	210	520	NE
2400-h serum (Se) or salivary (Sa) cortisol (nmol/l)	NE	3.1 (Sa)	4.8 (Sa)	413.8 (Se)	3.7 (Sa)
Plasma ACTH (pmol/l)	9	21	12.5	14.7	3.1
Serum cortisol after 8 mg dexamethasone (%)	NE	−91%	−91%	NE	NE
CRH test: ΔACTH baseline – peak	NE	ACTH +173.7%	ACTH +19.5%	ACTH +134%	NE
DDAVP test: ΔACTH baseline – peak	ACTH +337%	ACTH +50.3%	ACTH +72.1%	ACTH +40%	NE
Immunohistochemistry	ACTH +	Not operated	ACTH +	ACTH +	Not operated
Ki67 (%)	1	NE	<1	<1	NE

68 consecutive patients
7.3% (n=5) pituitary hypercortisolism
4,4% (n=3) microadenomas

	Patient N.1	Patient N.2	Patient N.3	Patient N.4	Patient N.5
Sex	F	F	M	M	M
Age at diagnosis	65	38	54	37	82
Reason for MRI	Non-specific visual defects	Fronto-occipital headache	Obesity[a]	Fronto-occipital tension headache	Ischemic stroke
Pituitary tumor size	Macroadenoma	Microadenoma	Microadenoma	Microadenoma	Macroadenoma
BP (mmHg)	Normotensive	Normotensive	Hypertensive[b]	'Non-dipper' profile at 24-h ABPM	Hypertensive[b]
BMI (kg/m^2)	23.2	25.2	31	22	25
Visual field	Arched scotomas	Normal	Normal	Normal	Bitemporal hemianopsia
Lipid and glucose profile	Mixed dyslipidemia	Normal	Mixed dyslipidemia	Normal	Normal
Hormonal evaluation	Hyperprolactinemia (stalk compression)	Normal	Normal	Hypogonadotropic hypogonadism, GH deficiency	Hypogonadotropic hypogonadism
Z-score at lumbar site	NE	0.9	−0.1	−2.4	NE
Surgery	Yes	Surgery refused	Yes	Yes	Not operable
Follow-up (months)	36	48	30	12	24

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Evaluación inicial

European Journal of Endocrinology, 2023, **189**, 87–95
https://doi.org/10.1093/ejendo/lvad070
Advance access publication 22 June 2023
Original Research

Natural history of non-functioning pituitary microadenomas: results from the UK non-functioning pituitary adenoma consortium

Ross Hamblin,[1,2,3] Athanasios Fountas,[1,2,3] Kirstie Lithgow,[1,2,3] Paul Benjamin Loughrey,[4,5] Efstathios Bonanos,[4] Shah Khalid Shinwari,[6] Kirsten Mitchell,[7] Syed Shah,[8] Lydia Grixti,[9] Mike Matheou,[10] Kristina Isand,[10] David S. McLaren,[11] Ashutosh Surya,[12] Hafiz Zubair Ullah,[12]

459 patients

Table 5. Prevalence of reported pituitary hormone deficits at time of micro-NFPA detection.

Pituitary hormone deficiency	Number of patients (%)
Isolated FSH/LH deficiency	26 (5.7)
Isolated TSH deficiency	3 (0.7)
Isolated ACTH deficiency	1 (0.2)
FSH/LH and TSH deficiency	1 (0.2)
FSH/LH and ACTH deficiency	2 (0.4)
FSH/LH, TSH and ACTH deficiency	4 (0.9)

85,4% >5mm
14,6% <5mm

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Tratamiento

ENDOCRINE SOCIETY			UpToDate®
Afectación AV (QO)	✓	✓	✓
Síndrome hiperfunción	✓	✓	✓
Síndrome hipofunción	✓	✓	
Cerca QO y embarazo	Riesgo apoplejía (grandes, varones, ACO)		No IQ
Crecimiento seguimiento	Dificultad seguimiento (macro)	✓	<2cm sin HP ni AV
Cefalea persistente	Dudas malignidad (macro)	✓	>2cm edad, riesgo IQ

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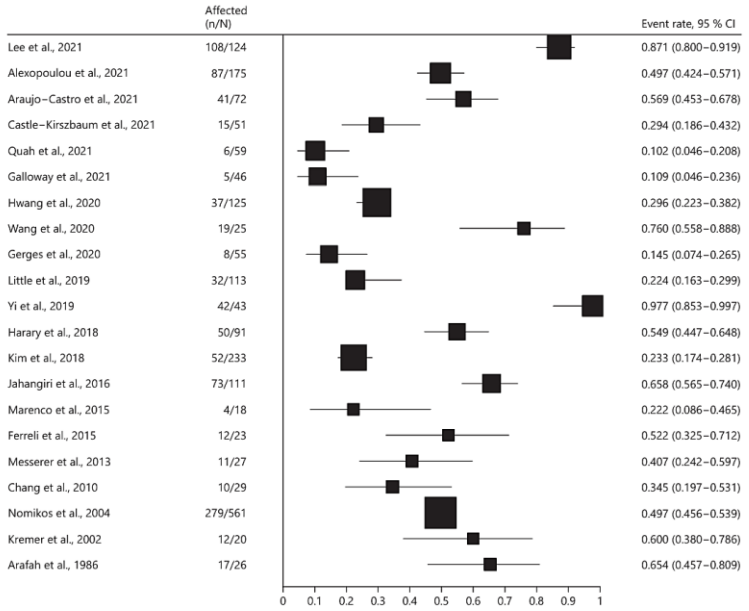
Tratamiento

HIPOPITUITARISMO

Endocrine Function after Transsphenoidal Surgery in Patients with Non-Functioning Pituitary Adenomas: A Systematic Review and Meta-Analysis

Mathias Brown Pedersen[a] Stefan Dukanovic[a] Jacob Bertram Springborg[b]
Mikkel Andreassen[a] Jesper Krogh[a]



3,816 participants from 24 studies

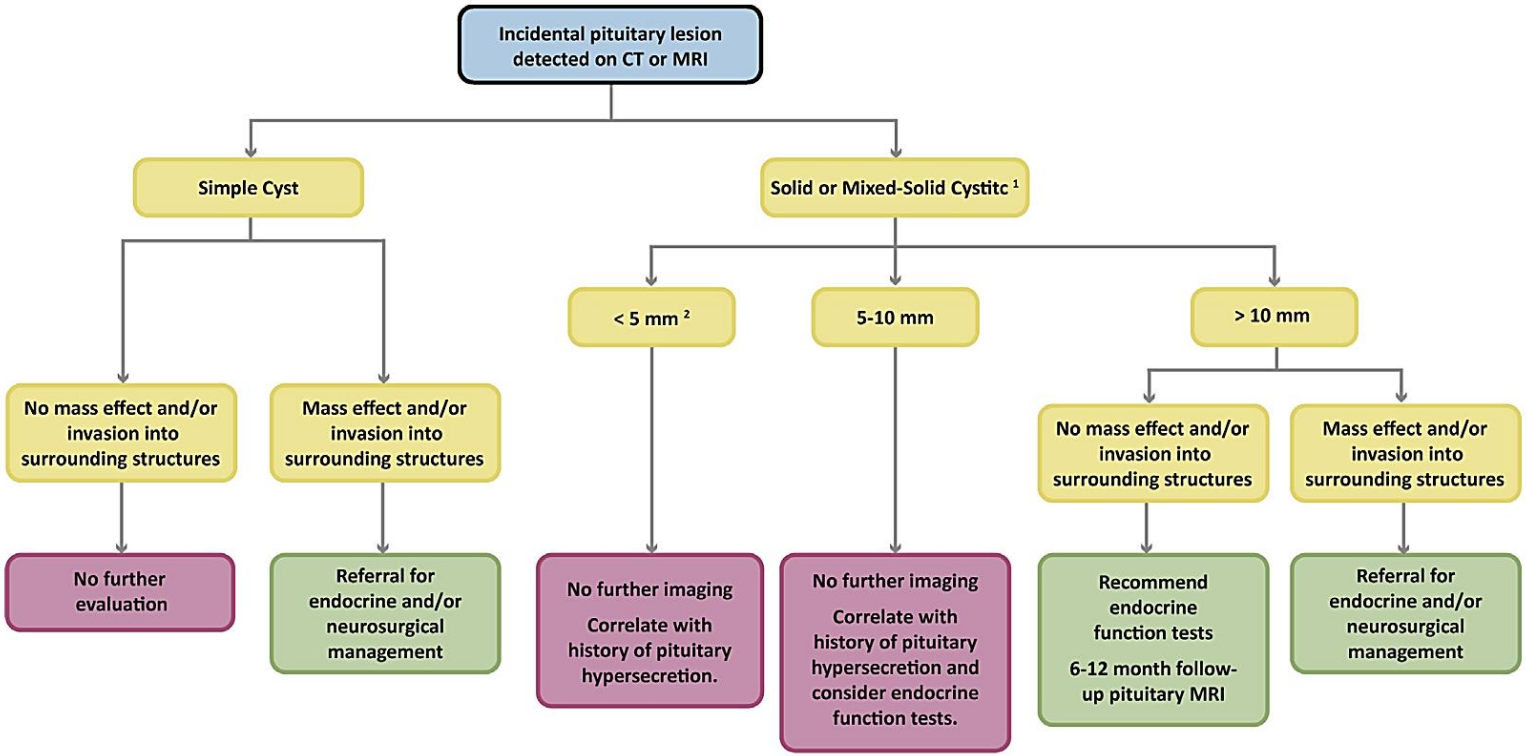
Recovery of at least one pituitary axis 10-97%

Loss of at least one axis 0-36%

Endocrine effect of pituitary surgery is **unclear** both in terms of the chance of recovery and in terms of the risk of pituitary failure

Seguimiento

Management of Incidental Pituitary Findings on CT, MRI, and ^{18}F-Fluorodeoxyglucose PET: A White Paper of the ACR Incidental Findings Committee SA-CME



Seguimiento

	ENDOCRINE SOCIETY			UpToDate®
Macro 6m	✓	✓	✓	✓
Micro 6-12m	✓	✓	✓	✓
Micro <5mm Stop		✓		✓
Stop Micro	?	2a	?	?
Stop Macro	?	?	?	?

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¿Que hacen los endocrinólogos?

Pituitary (2023) 26:94–104
https://doi.org/10.1007/s11102-022-01290-4

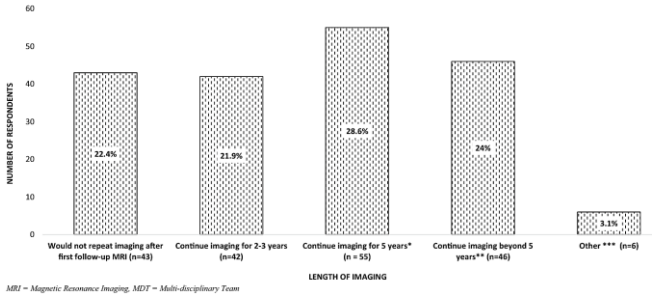
UK practice on incidentally detected non-functioning pituitary microadenomas: analysis of two national surveys during a 12-year interval

Ross Hamblin[1,2,3] · Athanasios Fountas[1,2,3] · Miles Levy[4] · Niki Karavitaki[1,2,3]

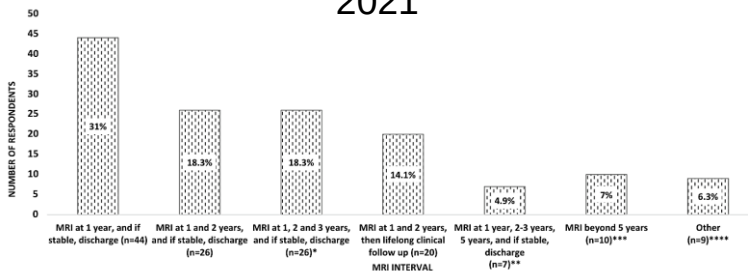
150 (2021) and 214 (2009) survey, response rates 31.2% and 35.4% respectively)

Prolactin	204/213 (95.8%)	145/149 (97.3%)	0.438
IGF-1	152/205 (74.1%)	143/149 (96.0%)	<0.001
GH	84/197 (42.6%)	39/149 (26.2%)	0.002
Gonadal function			
FSH/LH and gonadal hormones		144/149 (96.6%)	
FSH/LH	155/204 (76.0%)		
Oestradiol	118/201 (58.7%)		
Thyroid function			
TSH + free T4		142/149 (95.3%)	
TSH	187/209 (89.5%)		
Free T4	193/209 (92.3%)		
Morning cortisol	124/198 (62.6%)	131/149 (87.9%)	<0.001
SST/dynamic test of ACTH reserve†	59/194 (30.4%)	17/149 (11.4%)	<0.001
		A further 9 would perform dynamic testing if clinical features, suboptimal morning cortisol, or if a large microadenoma	
Screen for hypercortisolaemia			
ONDST		17/149** (11.4%)	##
24 h UFC	44/190 (23.2%)	5/149** (3.4%)	<0.0001
		A further 17 would screen for hypercortisolaemia if relevant clinical features	

2009



2021



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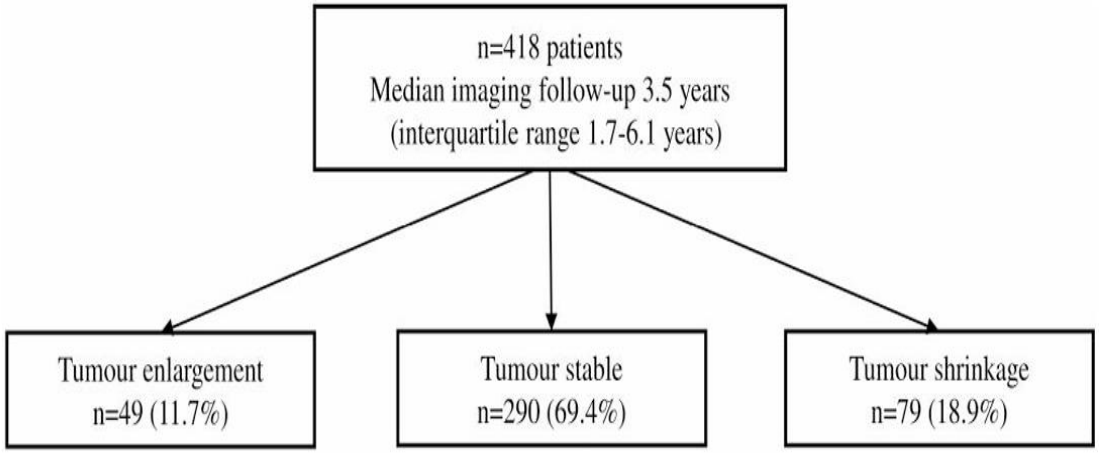
Historia Natural

Eur J Endocrinol. 2023 Jul 20;189(1):87-95. doi: 10.1093/ejendo/lvad070.

Natural history of non-functioning pituitary microadenomas: results from the UK non-functioning pituitary adenoma consortium



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Historia Natural

Eur J Endocrinol. 2023 Jul 20;189(1):87-95. doi: 10.1093/ejendo/lvad070.

Natural history of non-functioning pituitary microadenomas: results from the UK non-functioning pituitary adenoma consortium

Table 3. Cumulative probability of tumour growth and reduction.

	Total	<5 mm[a]	≥5 mm[a]
Cumulative probability of tumour growth (95% CI)			
1 year	1.3% (0.1-1.9)	0%	1.9% (0.3-3.5)
2 years	4.2% (2.0-6.4)	1.1% (0.0-3.3)	5.7% (2.8-8.6)
3 years	7.8% (4.9-8.1)	4.6% (0.0-9.9)	9.9% (8.0-11.8)
5 years	14.5% (10.2-18.8)	13.9% (3.7-24.1)	15.4% (10.1-20.7)
7 years	18.3% (13.0-23.6)	13.9% (3.7-24.1)	19.6% (13.1-26.1)
	Total	**<5 mm[b]**	**≥5 mm[b]**
Cumulative probability of tumour reduction (95% CI)			
1 year	3.0% (1.2-4.8)	4.7% (0.8-8.6)	2.3% (0.5-4.1)
2 years	9.6% (6.5-11.2)	9.4% (3.5-15.3)	10.2% (6.5-13.9)
3 years	14.1% (10.4-17.8)	15.4% (7.4-23.4)	14.8% (10.1-18.6)
5 years	21.3% (16.4-26.2)	28.8% (17.4-40.2)	20.6% (14.9-26.3)
7 years	26.0% (20.1-31.9)	36.0% (21.9-50.1)	25.3% (18.2-32.4)

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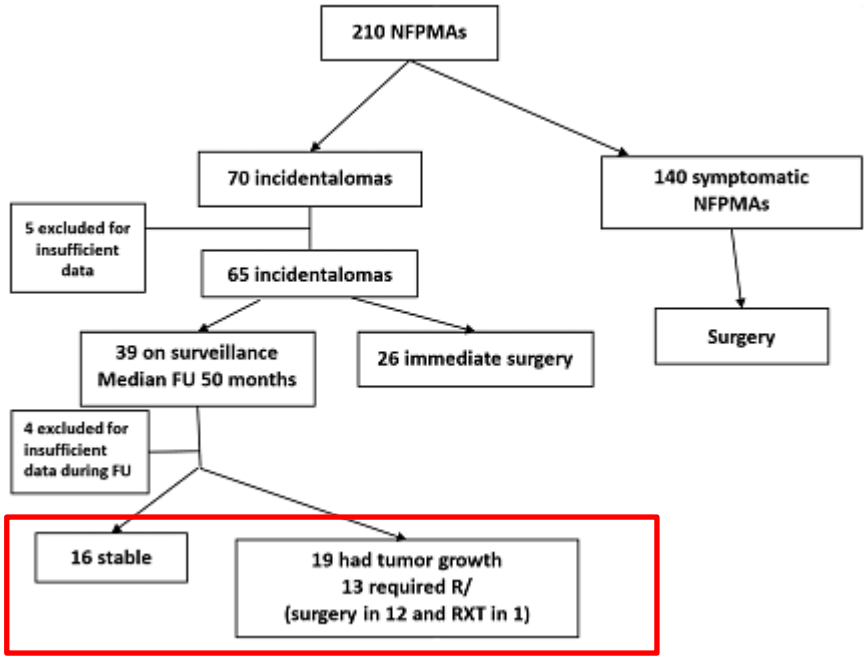
Historia Natural

Endocr Connect. 2023 Oct 27;12(12):e230224. doi: 10.1530/EC-23-0224. Print 2023 Dec 1.

Natural history and surgical outcome of incidentally discovered clinically nonfunctioning pituitary macroadenomas



	Total cohort ($n = 65$)
Radiological and visual evaluation	
Mean maximal diameter (mm)	20.0 ± 7.3
Cavernous sinus invasion	22/65 (31%)
Chiasmal contact	36/65 (55%)
Visual deficits	8/65 (12%)
Endocrine evaluation	
Any pituitary deficit	29/65 (44%)
LH/FSH deficit	27/65 (41%)
TSH deficit	19/65 (29%)
ACTH deficit	10/65 (15%)
PRL elevation	26/65 (40%)
PRL (×ULN) if PRL elevation present	1.53 (1.1–3.1)
Diabetes insipidus	0/65 (0%)

IQ precoz macroincidentalomas

Non-functioning pituitary macro-incidentalomas benefit from early surgery before becoming symptomatic

Mahmoud Messerer[a,*,1], Julie Dubourg[b,c,1], Gérald Raverot[b,c,d], David Bervini[a], Moncef Berhouma[c,e], Ipe George[f], Ari George Chacko[f], Gilles Perrin[c,e], Marc Levivier[a], Roy Thomas Daniel[a], Jacqueline Trouillas[c,d,g,h], Emmanuel Jouanneau[d,e,i]

-GTR higher in asymptomatic.
-Postoperative visual and endocrinological impairment were 49/78% (symptomatic) and 0/14% (asymptomatic)

Quality of life and surgical outcomes in incidental pituitary adenomas undergoing endoscopic endonasal resection

Mendel Castle-Kirszbaum, MBBS, PhD,[1,4] Yi Yuen Wang, MD, FRACS,[2] James King, PhD, FRACS,[3] Jeremy Kam, MBBS, FRACS,[1,3] and Tony Goldschlager, PhD, FRACS[1,4]

-Vision improved (100%) and GTR (84.6%) incidental.
-No perioperative complications and no CSF leakage.
-QOL improved to above baseline levels by 3 months (p=0.03) and one year (p=0.03).

A survey of surgically resected pituitary incidentalomas and a comparison of the clinical features and surgical outcomes of non-functioning pituitary adenomas discovered incidentally *versus* symptomatically

Mayo Ono[1)], Izumi Fukuda[1)], Akimi Soga[1)], Shigeyuki Tahara[2)], Akio Morita[2)] and Hitoshi Sugihara[1)]

-Post-IQ pituitary function better in the incidentaloma than symptomatic.
-No difference in postoperative complications between groups.

Coste sanitario incidentalomas

Pituitary (2010) 13:383–384
DOI 10.1007/s11102-010-0241-8

Cost of evaluation of patients with pituitary incidentaloma

Benjamin R. Randall · Kristin L. Kraus · Marie F. Simard · William T. Couldwell

Pituitary tumors discovered incidentally 15% of the total referred patients

	Service	Cost (US $)
Endocrine serum tests	Morning fasting cortisol	86.10
	Estradiol	90.00
	Leuteinizing hormone (female patients)	87.00
	Total testosterone (male patients)	140.90
	Free testosterone (male patients)	99.60
	Free thyroxine	78.20
	Thyroid-stimulating hormone	74.10
	Growth hormone	84.40
	IGF-1	131.70
	Prolactin	105.90
Imaging	MRI brain with and without contrast enhancement ($1,710 × 2)	3,420.00
Physicians	Neurosurgeon (40-min initial consultation, 15-min follow-up, facility charge)	676.93
	Endocrinologist (40-min initial consultation, 15-min follow-up, facility charge)	509.45
	Radiologist ($359 × 2)	718.00
Total		$6,215.28 male patient
		$6,061.78 female patient

Cost for the U.S. healthcare system was almost $ 7 million in 2005

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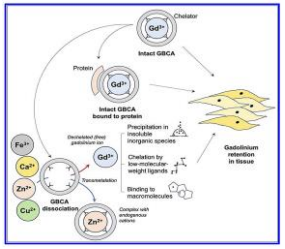
Seguridad seguimiento radiológico

AJR American Journal of Roentgenology

Update on Gadolinium-Based Contrast Agent Safety, From the *AJR* Special Series on Contrast Media



Gadolinium-based contrast agents safe
1-Acute allergiclike reactions
2-Nephrogenic systemic fibrosis (NSF)
3-Symptoms associated with gadolinium exposure.

FDA Drug Safety Communication: FDA warns that gadolinium-based contrast agents (GBCAs) are retained in the body; requires new class warnings

Clasificación De Medios De Contraste Con Gadolinio

	Grupo	Ejemplos	Estructura Química
1	I - Alto Riesgo	Gadodiamida, Gadopentetato de dimeglumina, Gadoversetamida	Lineales y no iónicos
2	II - Bajo Riesgo	Gadoteridol, Gadobutrol, Gadoterato de meglumina, Gadoxetato	Macrocíclicos (iónicos y no iónicos)
3	III - Riesgo Intermedio	Gadofosveset trisódico	Lineal (más estable que los del Grupo I)

Highlights

- *The most common risk of GBCA administration is acute allergiclike reaction. However, the risk of such reactions is much lower than for iodinated contrast agents.*
- *NSF is usually temporally related to group I GBCA administration in patients with kidney impairment. Use of group II and III GBCAs has largely eliminated NSF.*
- *Gadolinium retention has been observed after administration of all GBCAs, including macrocyclic GBCAs. No scientific evidence has linked gadolinium deposition to any adverse clinical outcomes.*

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3 ideas finales y termino…

Microincidentalomas

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Moltes gracies...

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