



# Hipertiroidismo

¿Es tan fácil cómo parece?

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# El hipertiroidismo en 3 pasos: 1/3

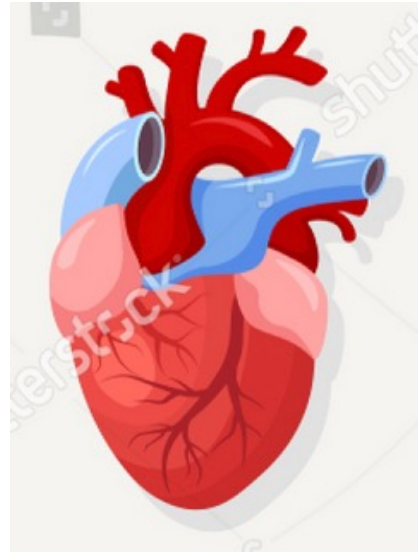
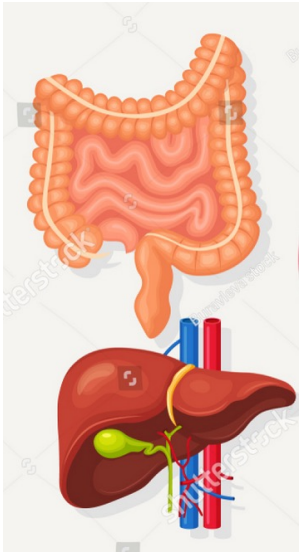
## Hallazgos clínicos

- Gato maduro/senior, PU/PD, anomalías pelaje
- Agitación (o apatía), ▲ vocalización
- ▼ condición corporal y muscular, (diarrea y vómitos)
- Taquicardia (CMH 2<sup>ria</sup>), soplo
- Palpación de nódulo tiroideo
- Enzimas hepáticas elevadas
- (Signos derivados de hipertensión sistémica)
- (Tormenta tiroidea)



# El hipertiroidismo en 3 pasos: 2/3

## A systematic and categorical approach to diagnosis



### Diagnóstico: ▲ tT4

- Otras enfermedades pueden ▼ tT4
- Variación entre tests y momentos del día
- Dudas: Repetir tT4 al cabo de algunas semanas +/- fT4ed  
( > supresión con T3, TSH con T4 & fT4ed, gammagrafía)

### Excluir comorbilidades

- ¿Es la cardiomiopatía 1<sup>ria</sup> o 2<sup>ria</sup> ?
- ¿Es la enfermedad hepática 1<sup>ria</sup> o 2<sup>ria</sup> ?
- ¿Es el desorden digestivo 1<sup>rio</sup> o 2<sup>rio</sup> ?
- ¿Es la hipertensión 1<sup>ria</sup> o 2<sup>ria</sup>?
- ¿Existe azotemia?

# El hipertiroidismo en 3 pasos: 3/3

## Tratamiento

- Iodo radiactivo: curativo, efectivo a las 2-12 semanas, efectivo en carcinomas
- Cirugía: potencialmente curativa
- Medicación oral o transdérmica: respuesta 95%, reversible
- Dieta: respuesta 85%, puede tardar hasta 6m, reversible.

TREATMENT	ADVANTAGES	DISADVANTAGES
<b>Radioactive iodine</b>	<ul style="list-style-type: none"><li>❖ Kills abnormal cells in any location</li><li>❖ Cure rate <math>\geq 95\%</math>; most successful treatment for carcinoma</li><li>❖ Relapse rate 5%</li><li>❖ Simple treatment – one injection or oral capsule</li><li>❖ Serious side effects are rare</li><li>❖ Limited testing needed after successful treatment</li><li>❖ Minimal risk of permanent hypothyroidism</li><li>❖ Preferred treatment for humans</li></ul>	<ul style="list-style-type: none"><li>❖ Requires special license and facility</li><li>❖ Hospitalization varies from 3 days to 4 weeks depending on dose cat receives and regional regulations</li><li>❖ Owner cannot visit</li><li>❖ Cat is under 'house arrest' for 2 weeks after discharge</li><li>❖ Owner must collect wastes for 2 weeks after discharge</li><li>❖ Owner cannot cuddle cat for long intervals for 2 weeks after discharge</li><li>❖ Not reversible</li></ul>
<b>Oral or transdermal medication</b>	<ul style="list-style-type: none"><li>❖ Response rate <math>\geq 95\%</math> while on medication</li><li>❖ Small pills, liquid or topical gel</li><li>❖ Requires no hospitalization</li><li>❖ No risk of permanent hypothyroidism</li><li>❖ Reversible if kidney function declines</li></ul>	<ul style="list-style-type: none"><li>❖ Relapse rate 100% when off medication</li><li>❖ Daily medication (usually twice daily) for the rest of the cat's life</li><li>❖ Frequent lab tests to monitor effectiveness and safety</li><li>❖ Drug reactions occur in up to 25% of cats; facial itching, vomiting, liver failure, abnormal blood cell levels and bleeding episodes may occur</li><li>❖ Tumor continues to grow and may become malignant</li></ul>
<b>Surgical thyroidectomy</b>	<ul style="list-style-type: none"><li>❖ <math>\geq 90\%</math> cure rate if both glands are removed</li><li>❖ 35–60% cure rate if one gland is removed</li><li>❖ Cures disease within 1–2 days</li><li>❖ Relapse rate 5% if bilateral procedure; <math>\leq 30\%</math> if unilateral</li><li>❖ Requires no special equipment</li><li>❖ Most general surgeons can perform</li></ul>	<ul style="list-style-type: none"><li>❖ General anesthesia in a cat with a compromised cardiovascular system is risky</li><li>❖ May damage parathyroid gland and cause a transient or permanent calcium crisis</li><li>❖ Requires hospitalization</li><li>❖ Not reversible</li><li>❖ Most cats require stabilization first with medication</li><li>❖ Voice or purr may change</li></ul>
<b>Dietary therapy</b>	<ul style="list-style-type: none"><li>❖ Only a change in diet is required</li><li>❖ Response rate <math>\geq 82\%</math> while on diet</li><li>❖ Safe in cats with renal insufficiency</li></ul>	<ul style="list-style-type: none"><li>❖ Absolutely the only food the cat can eat for the rest of its life</li><li>❖ Only low-iodine treats and water can be used</li><li>❖ Relapse rate 100% when off diet</li></ul>

Over the life of the cat, the cost of treating uncomplicated FHT is similar whether radioactive iodine, medication or surgery is chosen. The cost of feeding y/d each year is approximately the same as the total cost for any of the other three treatments. The cost of radiiodine or surgery is borne up front, while the costs of oral antithyroid drug therapy and food are separated over time. Owners should be encouraged to discuss any financial concerns with their family veterinarian.

The advantages/disadvantages chart may be downloaded from [www.catvets.com/hyperthyroidism](http://www.catvets.com/hyperthyroidism) for use with clients, and is also available as supplementary material at <http://j.fms.com>. DOI: 10.1177/1098612X18643252

# ¿Cómo averiguo si habrá enfermedad renal antes del tto curativo?

El hipertiroidismo puede aumentar la TFG enmascarando la ERC

No es posible determinar si un gato hipertiroidico tiene ERC concurrente, a menos que

- Sea azotémico a pesar de ▲ tT4
- Haya sido diagnosticado con ERC antes de detectar el hipertiroidismo

*Journal of Feline Medicine and Surgery* 1–10

CLINICAL REVIEW

## FELINE COMORBIDITIES Balancing hyperthyroidism and concurrent chronic kidney disease



Rebecca Geddes and Joana Aguiar

## ¿Cómo diagnostico la ERC?

- Azotemia +  $du < 1035$  +/- ▲ SDMA x 2 veces
- Aumento gradual de CREA o SDMA
- Imagen anormal
- Proteinuria persistente (después de excluir otras causas)



# ¿Qué hago con el tratamiento si hay enfermedad renal?

El tratamiento contribuye a enlentecer el deterioro renal.

El hipotiroidismo iatrogénico lo acelera

El tratamiento curativo puede precipitar una enfermedad renal aguda, aunque la dosificación adecuada de I131 reduce el riesgo de ERC e hipotiroidismo.

Received: 5 April 2021 | Accepted: 13 July 2021  
DOI: 10.1111/jvim.16228

**STANDARD ARTICLE**

Journal of Veterinary Internal Medicine **ACVIM**  
American College of  
Veterinary Internal Medicine

## A dosing algorithm for individualized radioiodine treatment of cats with hyperthyroidism

Mark E. Peterson<sup>1,2</sup>  | Mark Rishniw<sup>2,3</sup> 

# ¿Debo permitir una tT4 elevada en ERC?

- La ERC progresará igualmente

Peterson et al Prevalence and degree of thyroid pathology in hyperthyroid cats increases with disease duration: JFMS. 2016 Feb;18(2):92-103

- El estado hipermetabólico afectará negativamente al riñón y a otros órganos



## ¿Cómo afecta la severidad del hipertiroidismo a otros órganos?

- Anomalías cardíacas y disnea: prevalencia ▲ en enfermedad grave vs leve/moderada.
- Probabilidad de enfermedad renal o hipertensión: no hubo diferencia significativa

Original Article



**jfms**  
Journal of Feline  
Medicine and Surgery

### Clinicopathological features and comorbidities of cats with mild, moderate or severe hyperthyroidism: a radioiodine referral population

Natalie Watson<sup>1</sup>, Jane K Murray<sup>1,2</sup>, Sonja Fonfara<sup>3</sup> and Angie Hibbert<sup>4</sup>

Journal of Feline Medicine and Surgery  
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**Table 4** Prevalence of major comorbidities (cardiac abnormalities, hypertension, renal disease and dyspnoea) in mildly, moderately and severely hyperthyroid cats at referral for radioiodine treatment

Comorbidity	Mildly hyperthyroid group (n = 46)	Moderately hyperthyroid group (n = 63)	Severely hyperthyroid group (n = 31)
Cardiac abnormalities	37*	51*	71*
Hypertension	37	29	48
Renal disease	33	30	39
Dyspnoea	0*	11*	16*

Data are %

\*Significant differences between the groups (mild, moderate and severe hyperthyroidism)

# ¿Debo interrumpir el tto médico antes del tto curativo?

## NO antes de la cirugía

- Tiroidectomía extracapsular modificada
- Gammagrafía
  - Unilateral vs bilateral
  - Tejido ectópico
  - Extensión a cavidad torácica y mediastino


## SÍ antes de I131 (7-10d consultar con el centro)

- Monitorizar hipotiroidismo 3-6 meses
- Gammagrafía
  - Ayuda a dosificar adecuadamente



# ¿Qué otros factores influyen en el desenlace tras el tto con I131?

- Hipotiroidismo iatrogénico más probable en gatos
  - de mayor edad
  - hembras
  - con nódulos bilaterales
  - ▼ severidad (▲ absorción de I131)
- Hipertiroidismo persistente más probable
  - Jóvenes
  - ▲ severidad



**+**  
What is IODOCAT?

ODOCAT is Spain's first and original specialist veterinary center for the diagnosis and treatment of feline hyperthyroidism with radioactive iodine – a simple, highly effective and safe treatment for cats with hyperthyroidism.

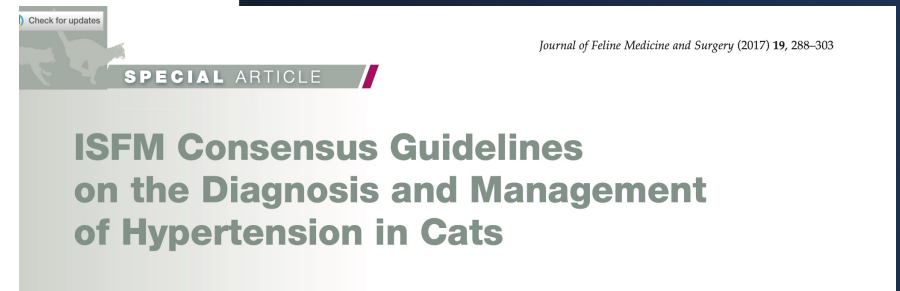
We are the only center in Europe to offer an advanced integral diagnosis with precise tests and thyroid scintigraphy to determine individualized doses of radioiodine adjusted to the needs of each patient.

In fact, our patients come from all across Europe, Asia and beyond to receive our treatment protocol established by the originator of radioactive iodine treatment for cats with hyperthyroidism, Dr Mark E. Peterson.

[+ Staff](#)

# ¿Cuándo trato la hipertensión?

- Efecto bata blanca (HT situacional) ▲ en hipertiroides
- Si hay evidencia de daño orgánico por hipertensión (p.ej. retinopatía), tratar inmediatamente



# ¿Es la gabapentina efectiva y segura en gatos hipertiroideos?

- 20 mg/kg una hora antes del transporte
- Efectivo en gatos hipertiroideos 9% vs 24% necesitaron sedación
- La concentración sérica de gabapentina en gatos con ERC >> gatos sanos. Reducir dosis.

Original Article



**jfms**  
Journal of Feline  
Medicine and Surgery

## Serum concentrations of gabapentin in cats with chronic kidney disease

Jessica M Quimby<sup>1</sup>, Sarah K Lorbach<sup>1</sup>, Ashlie Saffire<sup>2</sup>, Amanda Kennedy<sup>2</sup>, Luke A Wittenburg<sup>3</sup>, Turi K Aarnes<sup>1</sup>, Karina J Creighton<sup>1\*</sup>, Sarah E Jones<sup>1</sup>, Rene E Paschall<sup>1</sup>, Emily M King<sup>1</sup>, Clara E Bruner<sup>1†</sup>, Jessica N Wallinger<sup>1</sup> and Karen A van Haften<sup>4</sup>

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Original Article



**jfms**  
Journal of Feline  
Medicine and Surgery

## Randomised clinical trial evaluating the effect of a single preappointment dose of gabapentin on signs of stress in hyperthyroid cats

Matthew Gurney<sup>1</sup> and Lou Gower

Journal of Feline Medicine and Surgery

1-5

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# El tamaño... ¿importa?

- La glándula tiroidea puede palparse en gatos sanos (20%) y en gatos con enfermedades no tiroideas (16%)
- En hipertiroidismo el 80-90% muestra un aumento de tamaño
- No se encontró correlación entre el tamaño de la glándula y la concentración de T4

Original Article



**jfms**  
Journal of Feline Medicine and Surgery

**Relationship between total thyroxine, thyroid palpation and a clinical index in hyperthyroid and healthy cats and cats with other diseases**

Journal of Feline Medicine and Surgery  
2019, Vol. 21(8) 741-749  
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Astrid Wehner<sup>✉</sup>, Ines Koehler, Sabine Ramspott  
and Katrin Hartmann

