



Obesidad y Cáncer



Dr. Gaspar Pérez-Jiménez, FACP

Medicina Interna

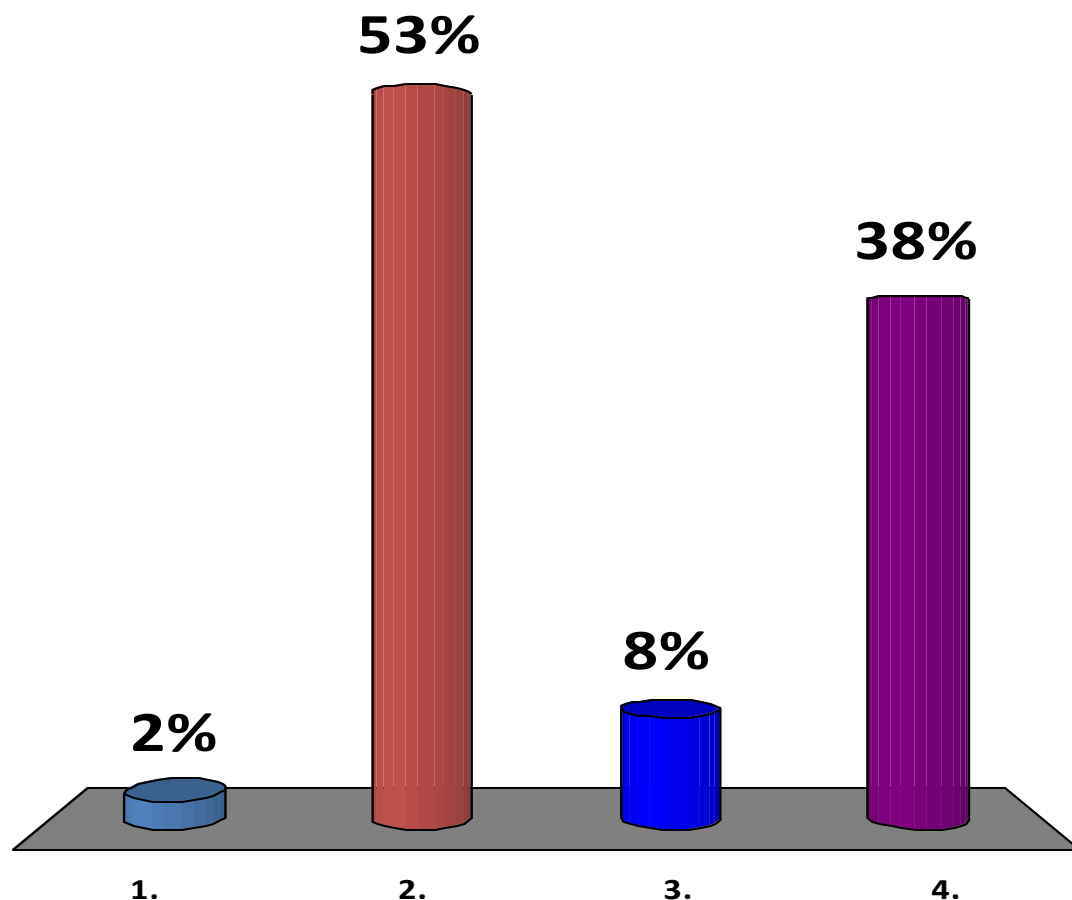
Radio-Oncología

Instituto Oncológico Nacional

Centro Oncológico Paitilla

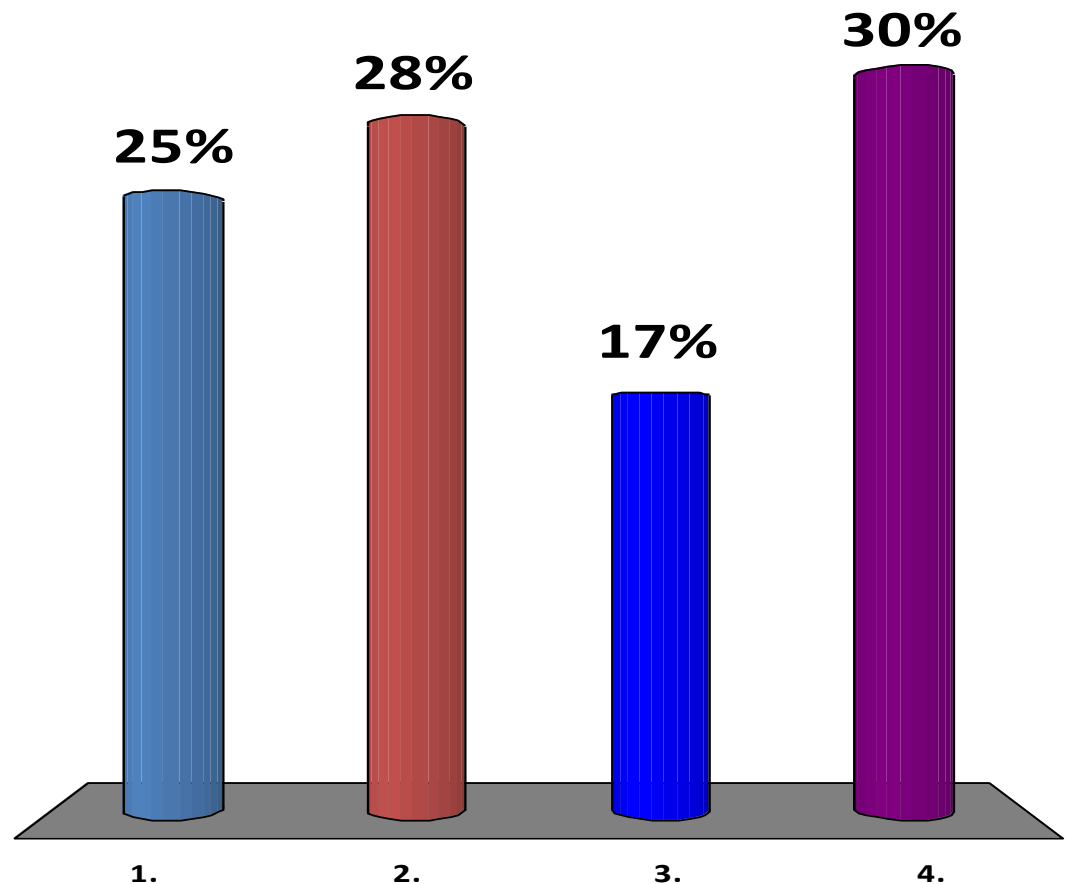
Provincia de la República de Panamá con mayor tasa de prevalencia de obesidad en población adulta

1. Chiriquí
2. Panamá
3. Bocas del Toro
4. Colón



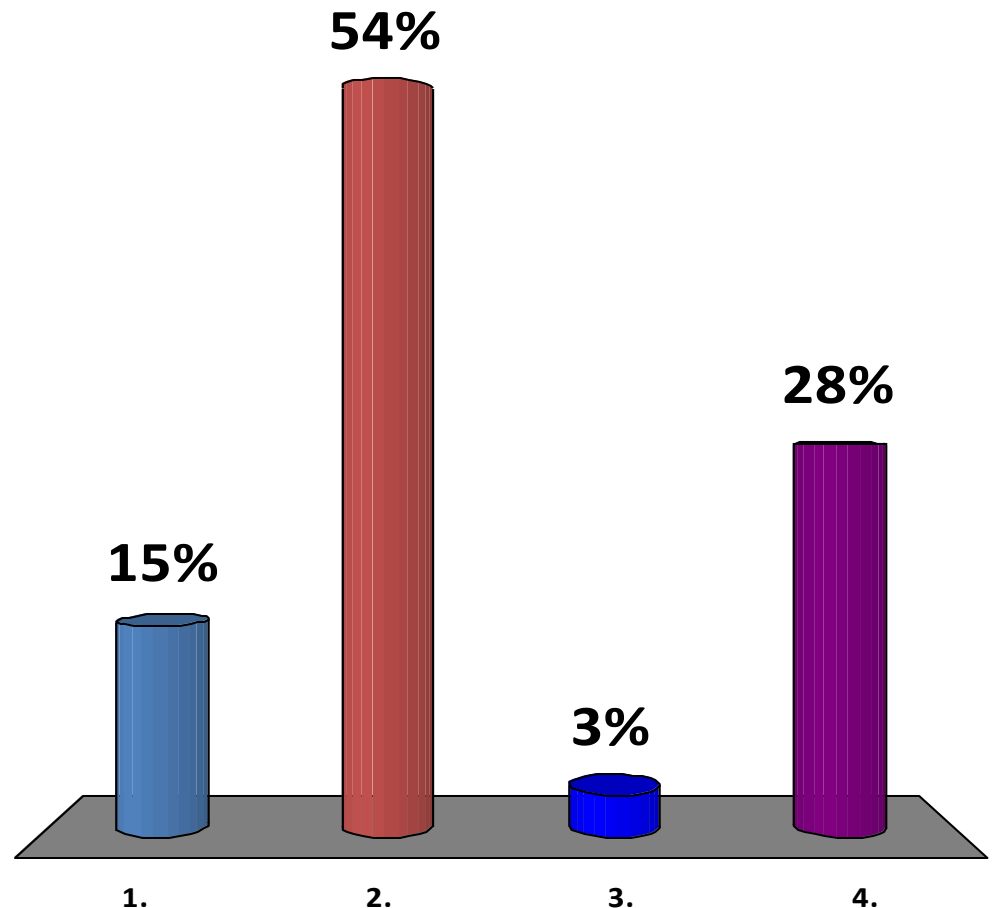
¿Cuál de las siguientes adipoquinas se encuentra aumentada en pacientes obesos e influye en los procesos carcinogénicos?

1. Adiponectina
2. Leptina
3. IL-6
4. TNF α



Existe evidencia que apoya la relación: Obesidad / Cáncer en los siguientes tumores, Excepto

1. Ca de mama en mujeres pre-menopáusicas
2. Cáncer de Esófago
3. Cáncer Colorectal
4. Cáncer de Endometrio



Conflictos de Interés

- **NINGUNO**

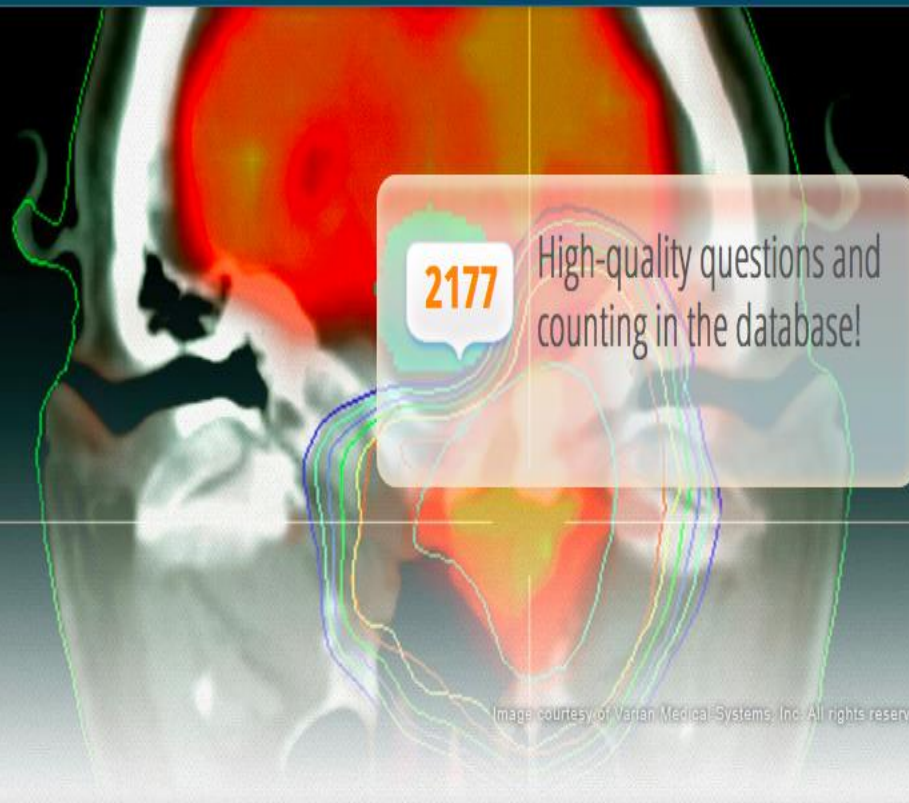


Image courtesy of Varian Medical Systems, Inc. All rights reserved

[Getting Started](#)[Why RadOncQuestions?](#)[FAQ](#)[Pricing](#)[Product Demo](#)[Testimonials](#)[Pass Rate Statistics](#)

Welcome to RadOncQuestions!



Here you will find questions and answer explanations designed to prepare you to be a superb radiation oncologist. This Product Demo will give you a small "taste" of what the RadOncQuestions testing engine is like.

[Free product demo](#)

The ultimate goal of RadOncQuestions is to help you increase your knowledge, allowing you to provide your patients with the highest quality radiation oncology care.

[Sign up now](#)

📢 Announcements

🏥 Clinical **134**

(5/11/14) RadOncQuestions wishes the best to everyone taking their oral boards next week!

If you have any feedback whatsoever, please [contact us](#). Happy studying!

Follow us on [Twitter](#) @RadOncQuestions or like us on [Facebook](#).

[All announcements →](#)

Active Subscription: Clinical

Paused Tests Click on test name to resume it

Test Name	Answered Questions	Time Left	Date Created
-----------	--------------------	-----------	--------------

You don't currently have any paused tests.

Recent Completed Tests Click on test name to review it

Test Name	Answered Questions	Time Left	Date Created
-----------	--------------------	-----------	--------------

You don't currently have any completed tests.

Questions Available Hover over the chart segment to see the details

Currently 1869 of 1869 available questions remaining in your database!

Benign Diseases 60

100%

Breast 135

100%

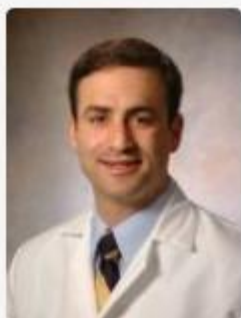
Central Nervous System 172

100%

Dose constraints 20

Contributors

Click on the contributor photo or name to show/hide the personal details.



**Daniel W.
Golden, M.D.**



Ryan Bair, M.D.



**Onyi Balogun,
MD**



**Abigail Berman,
MD**



**Shripal Bhavsar,
MD MBA**



**Ahmed
Chaudhary, MD**



Zain Husain, MD



**Gaspar Perez
Jimenez, MD**



**Aparna
Kesarwala, MD
PhD**



Mark Ranck, MD



**Sonali Rudra,
MD**



**Chris Stepaniak,
PhD**



Gaspar Perez Jimenez, MD
Instituto Oncológico Nacional, Panama
Sarcoma and Prostate Editor

Contributors Click on the contributor photo or name to show/hide the personal details.



**Daniel W.
Golden, MD**



Ryan Bair, MD



**Onyi Balogun,
MD**



CNS Editor



**Steve
Braunstein, MD
PhD**



**Abigail Berman,
MD**



**Shripal Bhavsar,
MD MBA**



**Ahmed
Chaudhary, MD**



**Lauren Hertan,
MD**



Zain Husain, MD



**Gaspar Perez
Jimenez, MD**



**Aparna
Kesarwala, MD
PhD**



**Pretesh Patel,
MD**



Mark Ranck, MD



**Sonali Rudra,
MD**



**Terence Sio, MD
MS**



**Natalya
Morrow, PhD**



Gita Suneja, MD

Gaspar Perez Jimenez, MD
Instituto Oncológico Nacional, Panama
Sarcoma and Prostate Editor

Introducción

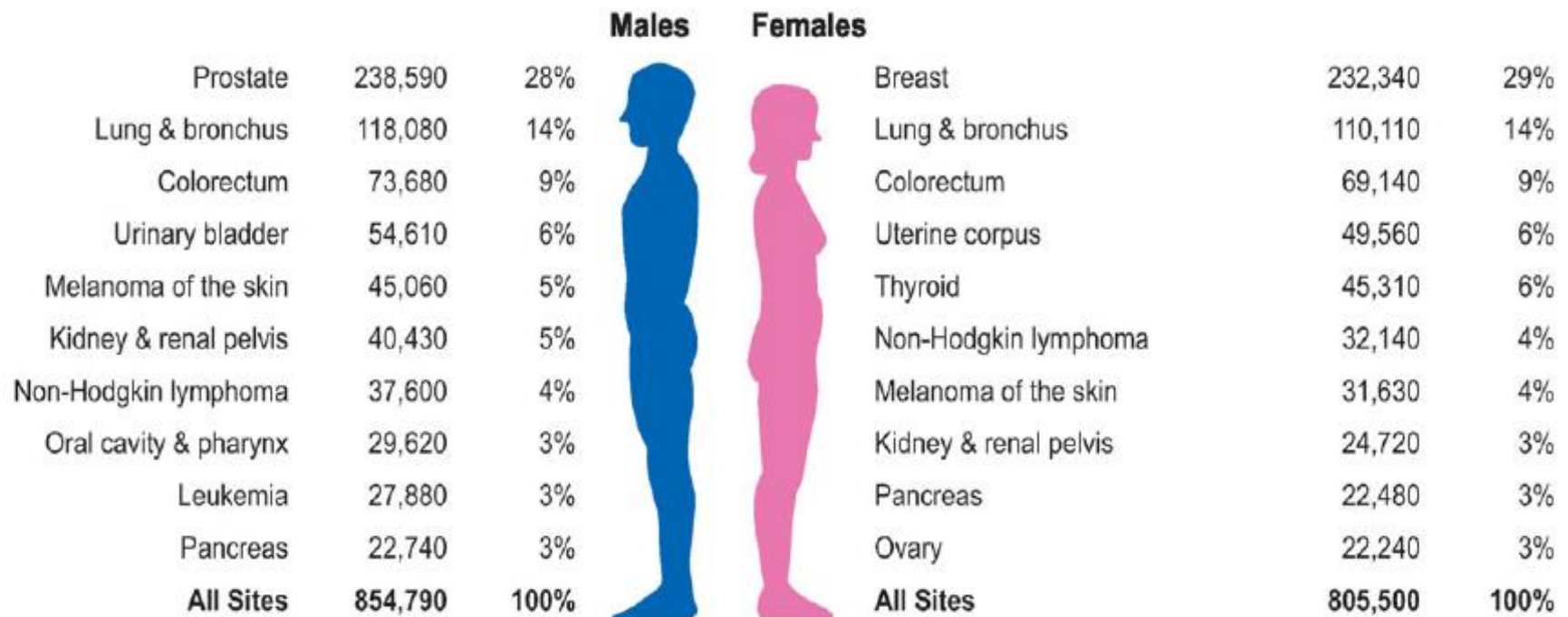
- **CÁNCER: situación mundial**



- 20 millones personas viven con cáncer
- 10 millones casos nuevos anuales
- 6 millones muertes anuales
- Incremento casos 2020-2040
 - 60% países pobres

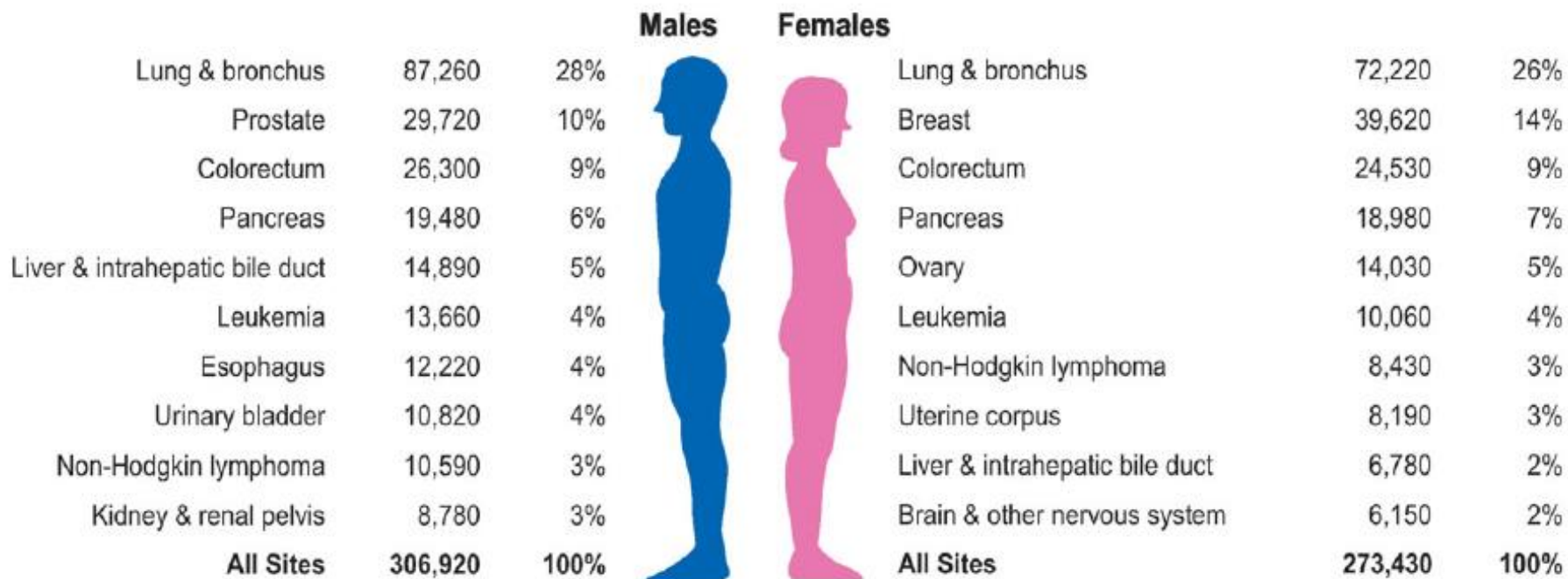
Casos nuevos estimados por año según sexo

Estimated New Cases*



Muertes estimadas por año según sexo

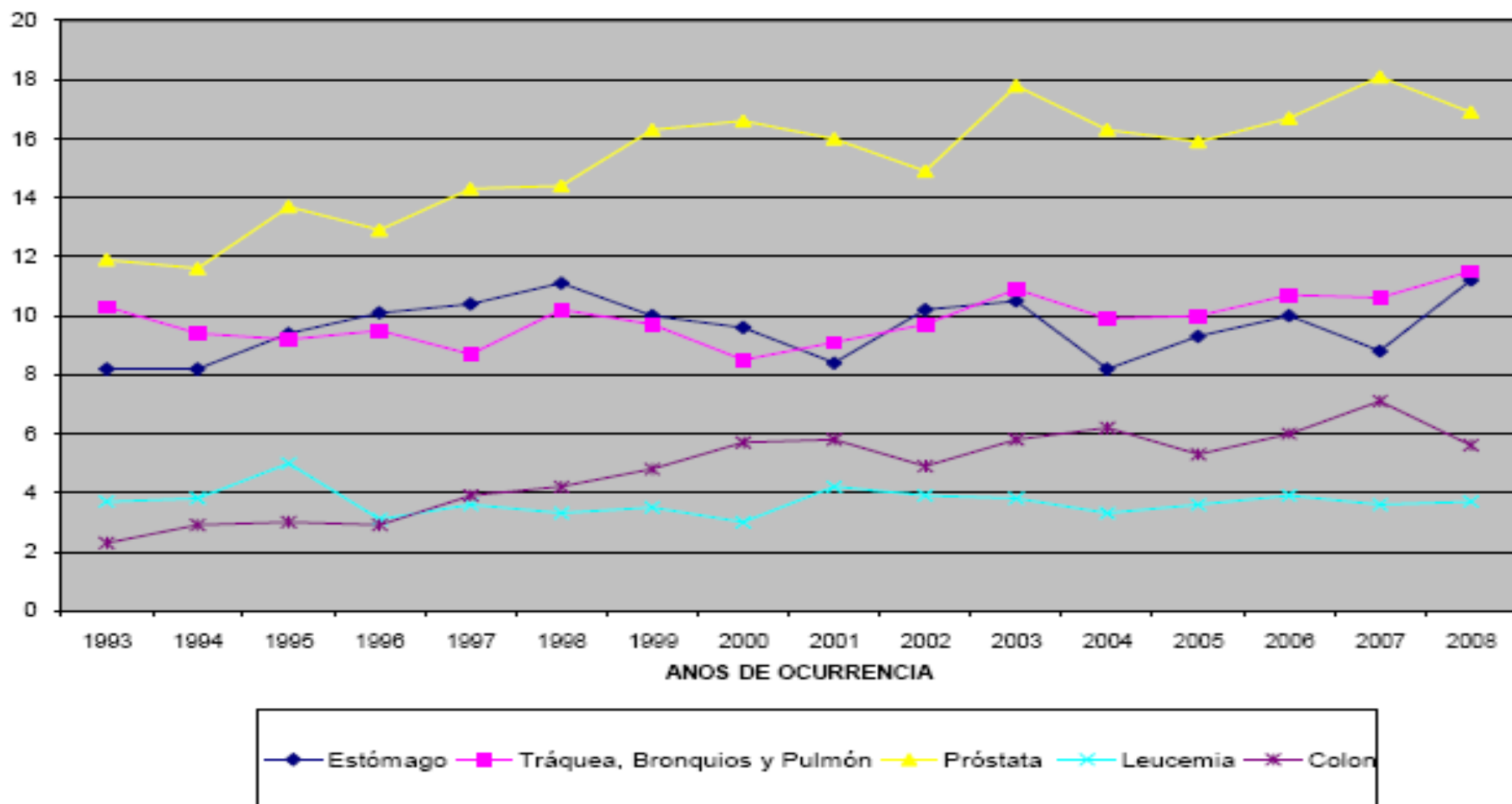
Estimated Deaths





CINCO PRINCIPALES CAUSAS DE DEFUNCION POR
TUMORES MALIGNOS, EN EL SEXO MASCULINO,
ANIOS: 1993-2008

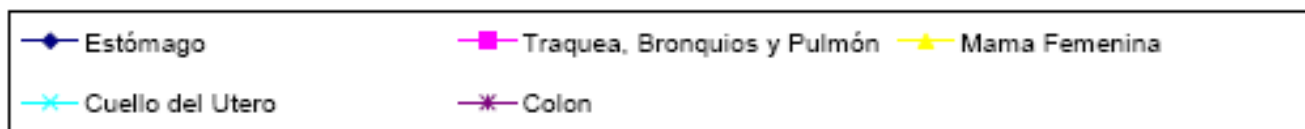
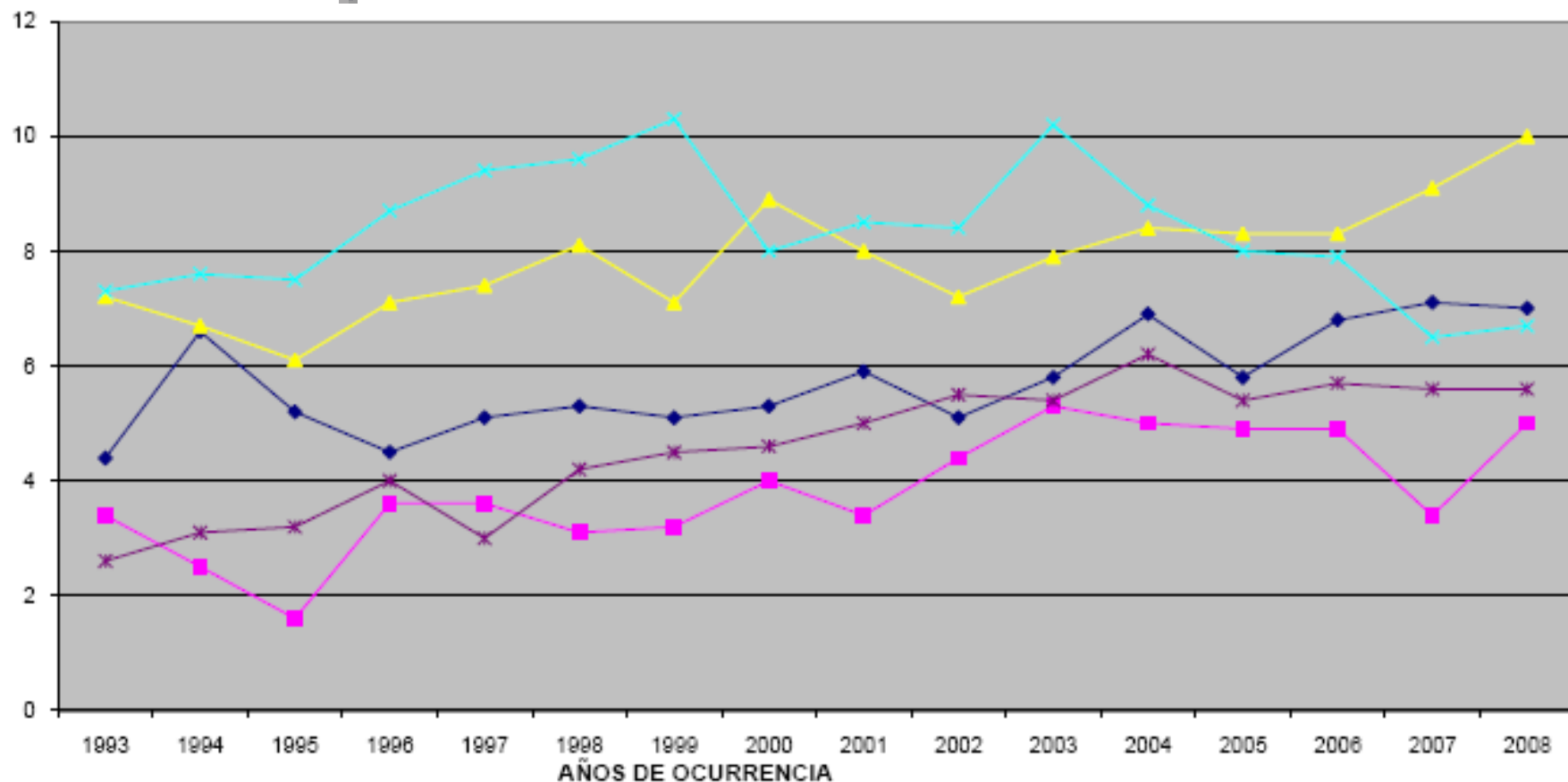
TASAS POR 100
MIL HAB MASC



TASAS POR 100,000 HAB FEM



CINCO PRINCIPALES CAUSAS DE DEFUNCIÓN
POR TUMORES MALIGNOS EN EL SEXO FEMENINO,
AÑOS 1993 -2008



Instituto Oncológico Nacional

Registro Hospitalario de Cáncer

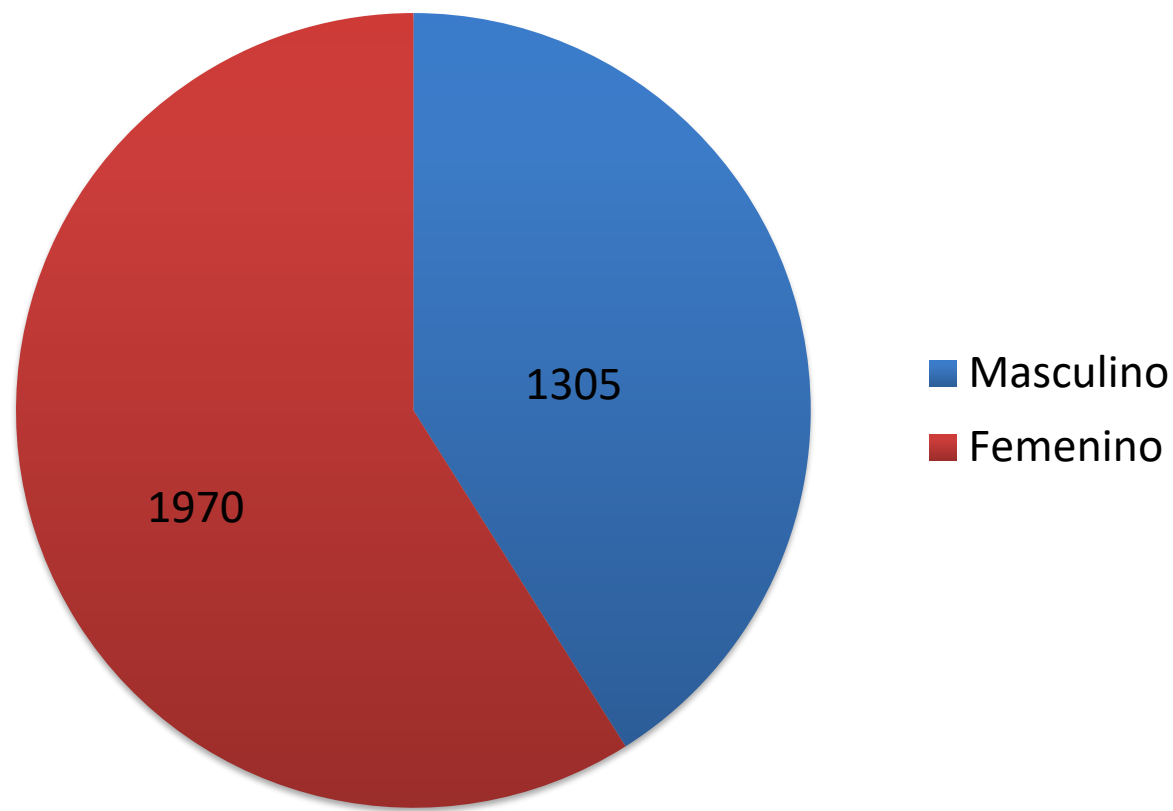
Desde 01/01/2014 hasta 31/12/2014

Mes	No.	%
Enero	274	8.3
Febrero	270	8.2
Marzo	237	7.2
Abril	290	8.8
Mayo	283	8.6
Junio	309	9.4
Julio	322	9.8
Agosto	262	8.0
Septiembre	292	8.9
Octubre	328	10.0
Noviembre	180	5.5
Diciembre	245	7.4
Total	3275	100.0

Fuente: Base de datos RHC-ION

Distribución de casos por sexo

Año: 2014



Fuente: Base de datos RHC-ION

Instituto Oncológico Nacional

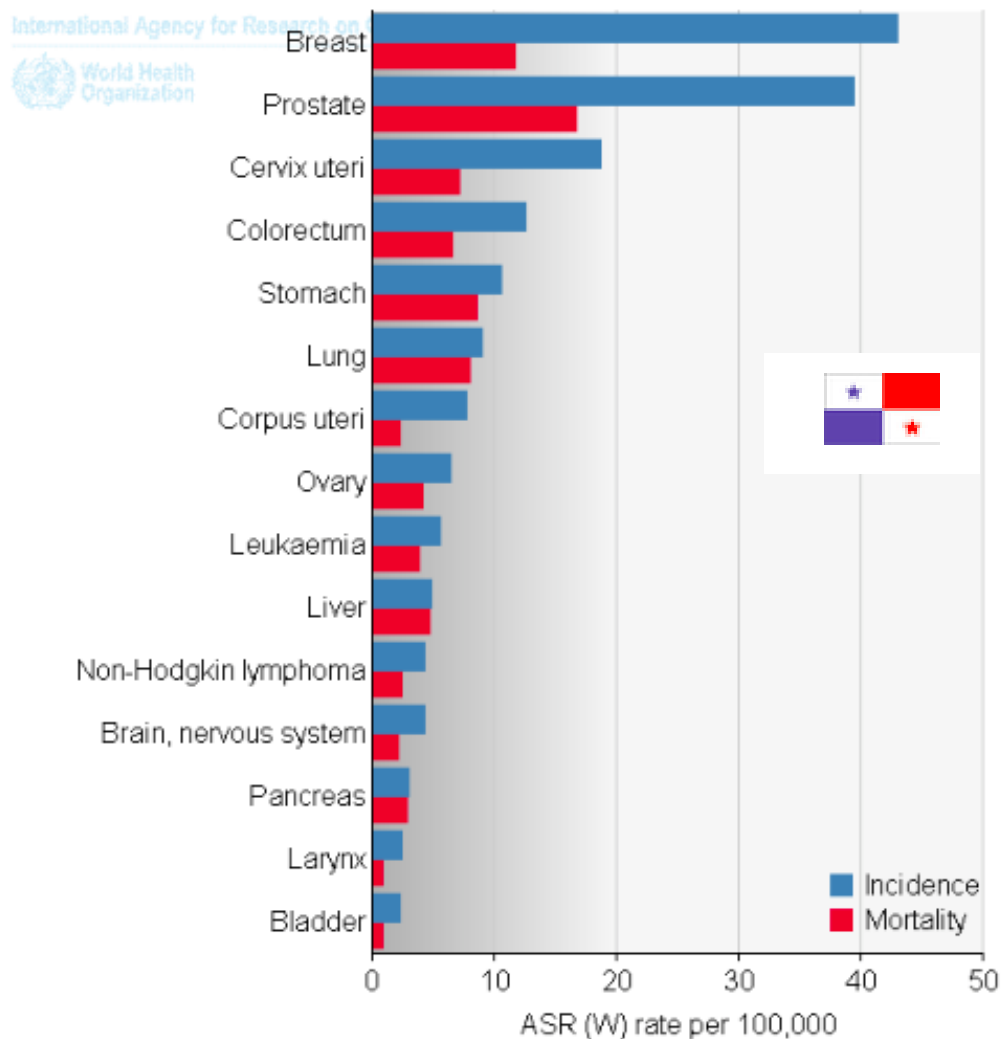
Registro Hospitalario de Cáncer

Desde 01/01/2014 hasta 31/12/2014

Lugar	CIE-10	Localización topográfica	No	%
1	C50	Mama	587	17.9
2	C53	Cérvix	319	9.7
3	C61	Próstata	266	8.1
4	C16	Estómago	239	7.3
5	C18	Colon	216	6.6
6	C44	Piel	177	5.4
7	C54	Cuerpo Uterino	174	5.3
8	C34	Pulmón	165	5.0
9	C73	Tiroides	121	3.7
10	C20	Recto	100	3.1
		Otras	911	27.8
		Todas	3275	100

Fuente: Base de datos RHC-ION

Mortalidad



Estimated age-standardised incidence and mortality rates: both sexes

OBESIDAD



Obesidad

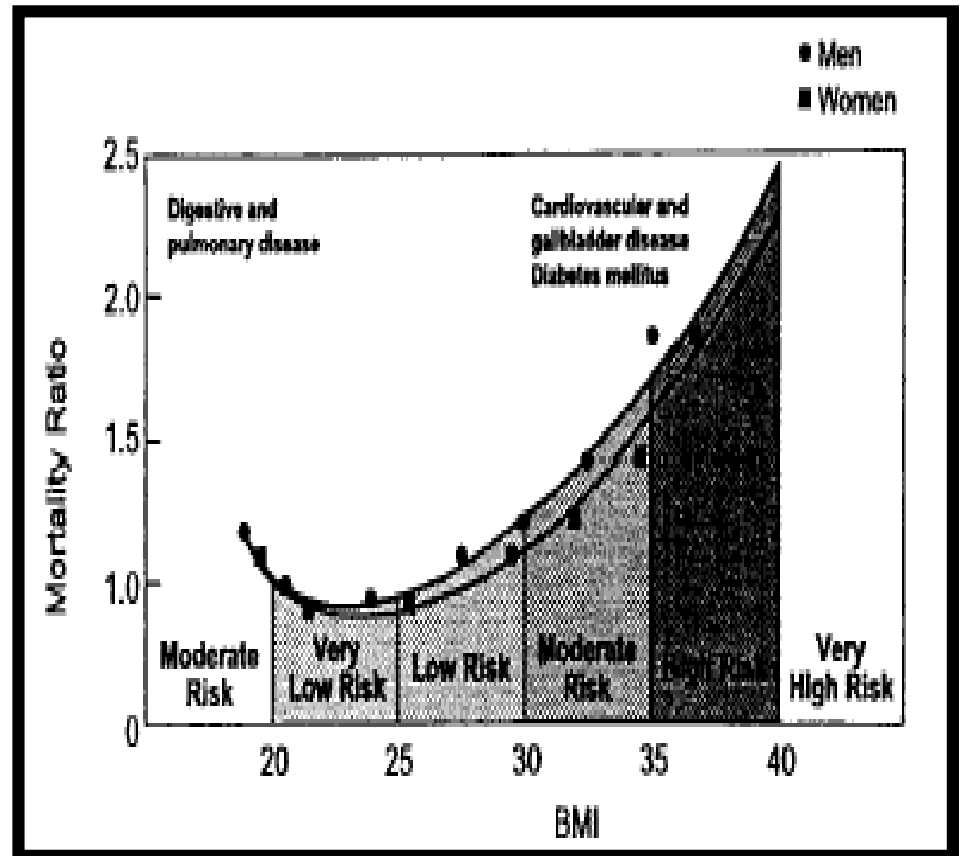
“un estado de aumento del peso corporal, mas específicamente del tejido adiposo, en una magnitud tal que produce consecuencias adversas para la salud”

(Spiegelman and Flier, 2001)



Obesidad: Definición

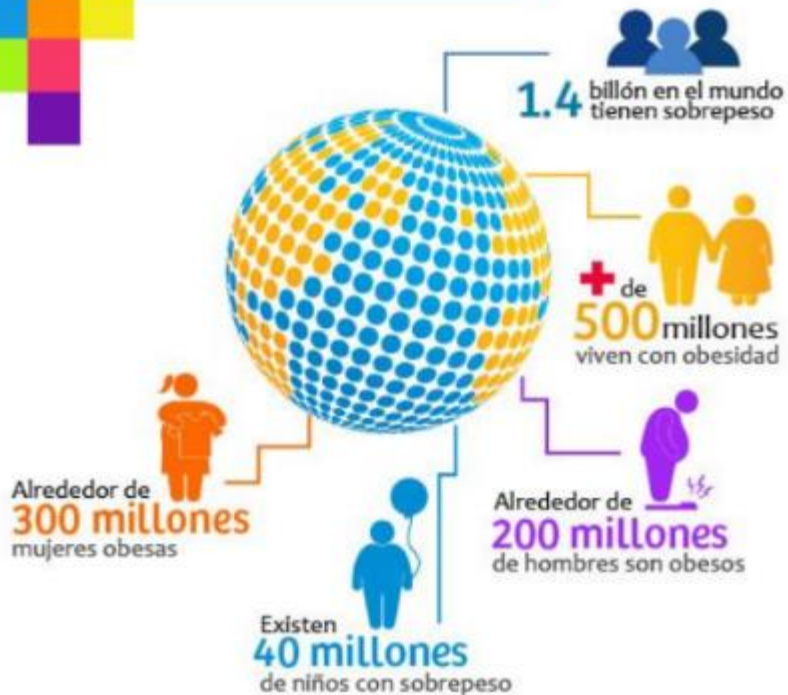
- Es un síndrome caracterizado por un aumento generalizado de la grasa corporal que compromete la salud por su alta asociación a comorbilidades
- Resultado de un balance energético positivo
- Evolución crónica
- Reduce la calidad y expectativas de vida



Malnutrición por Exceso

LA OBESIDAD

EN EL MUNDO



Año 2025

- *Global Health Promotion 2013 20: 80.*
- *Datos de la OMS y UNICEF. 2012*

Prevalencia de Obesidad

- **NHANES 2013-2014, adultos de USA:**
 - **SP u OB ($IMC \geq 25$):** **70.7%**
 - **OB ($IMC \geq 30$):** **37.9%**
 - **OB mórbida ($IMC \geq 40$):** **6.9%**
- **ENV 2008, adultos en Panamá:**
 - **SP ($IMC \geq 25$):** **36.4%**
 - **OB ($IMC \geq 30$):** **20.4%**
 - **SP + OB:** **56.8%**

RESEARCH ARTICLE

Open Access

Prevalence of obesity in panama: some risk factors and associated diseases



Anselmo Mc Donald^{1*}, Ryan A. Bradshaw¹, Flavia Fontes², Enrique A. Mendoza¹, Jorge A. Motta³, Alberto Cumbreira¹ and Clara Cruz⁴

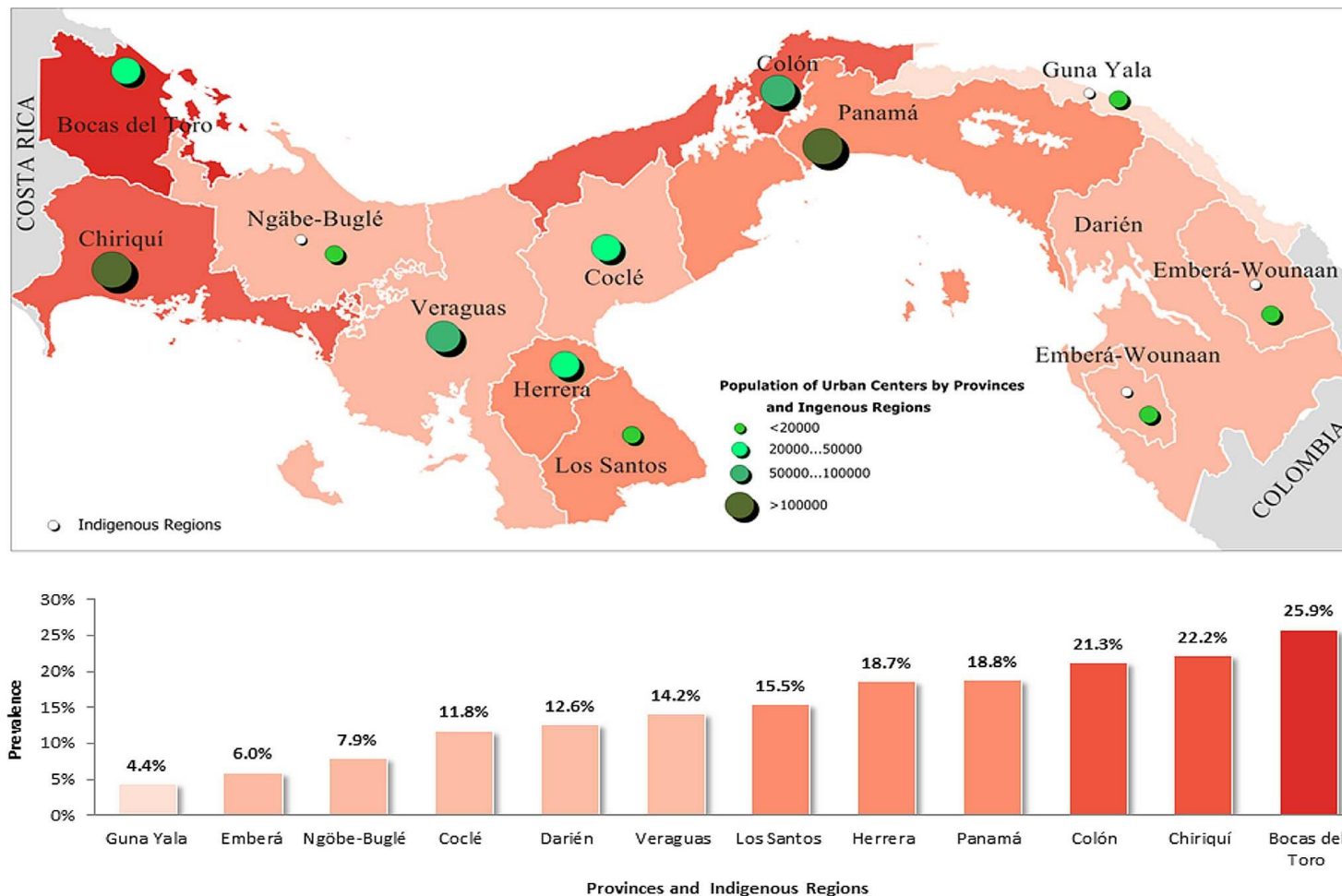


Figure 3. Mean prevalence rate of obesity in Panamanian adults by province and indigenous regions, according to the study ENV II - 2003. Population of urban centers and indigenous regions are identified.
doi:10.1371/journal.pone.0091689.g003

Obesidad/Cáncer

Tabla 2. Aumento del riesgo de cáncer, según tumor y sexo, con incrementos de peso entre 5 y 10 kg/m²

Tumor	RR Hombres	RR Mujeres	Mecanismo
Mama pre-menopáusicas	-	0,92	Hormonal
Mama postmenopáusicas	-	1,12-1,40	Hormonal
Endometrio	-	1,59-2,89	Hormonal
Colon	1,24-1,45	1,09-1,19	Insulina
Esófago	1,52-2,31	1,51-2,28	Reflujo, inflamación
Próstata	1,03	-	No claro
Páncreas	1,07	1,12-1,25	Insulina

RR: riesgo relativo.

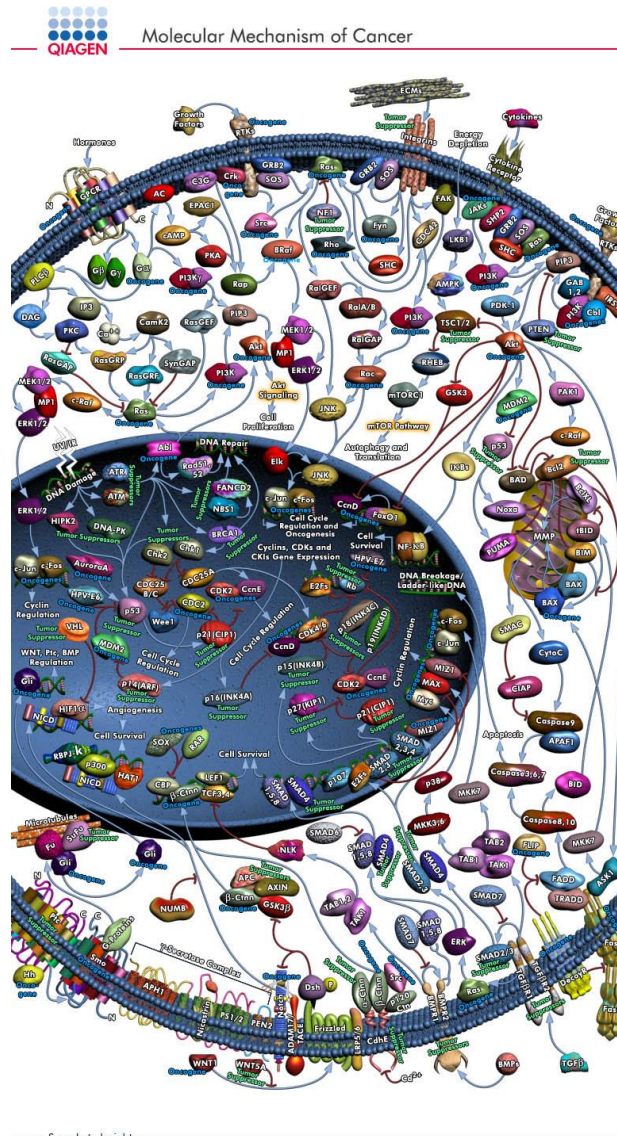
Obesidad/Cáncer

Table 1 | Summary of increased relative risk* of different cancers in obesity

Cancer type	Men (95% CI)	Women (95% CI)
Breast	ND	1.12 (1.08–1.16)
Colon	1.24 (1.20–1.28)	1.09 (1.05–1.13)
Endometrial	NA	1.59 (1.50–1.68)
Oesophageal	1.52 (1.33–1.74)	1.51 (1.31–1.74)
Kidney	1.24 (1.15–1.34)	1.34 (1.25–1.43)
Leukaemia	1.08 (1.02–1.14)	1.17 (1.04–1.32)
Melanoma	1.17 (1.05–1.30)	0.96 (0.92–1.01)
Myeloma	1.11 (1.05–1.18)	1.11 (1.07–1.15)
Non-Hodgkin's lymphoma	1.06 (1.03–1.09)	1.07 (1.00–1.14)
Pancreatic	1.07 (0.93–1.23)	1.12 (1.02–1.22)
Prostate	1.03 (1.00–1.07)	NA
Rectal	1.09 (1.06–1.12)	1.02 (1.00–1.05)
Thyroid	1.33 (1.04–1.70)	1.14 (1.06–1.23)

CI, confidence interval; NA, not applicable; ND, not determined. *Relative risks are taken from a meta-analysis of data as reported in Renehan *et al.*³ and Roberts *et al.*¹⁷². The relative risk per 5 kg per m² increase in body mass index is reported for each site and sex.

Mejor Evidencia



PubMed Clinical Queries

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches, use [PubMed](#) directly.

("Obesity, Abdominal"[Mesh]) AND "Neoplasms"[Mesh]



Search

Clinical Study Categories

Category: Therapy

Scope: Broad

Results: 5 of 40

Effect of sarcopenia and visceral obesity on mortality and pancreatic fistula following pancreatic cancer surgery.

Pecorelli N, Carrara G, De Cobelli F, Cristel G, Damascelli A, Balzano G, Beretta L, Braga M.
Br J Surg. 2016 Mar; 103(4):434-42. Epub 2016 Jan 18.

Metabolic syndrome and prostate cancer risk in a population-based case-control study in Montreal, Canada.

Blanc-Lapierre A, Spence A, Karakiewicz PI, Aprikian A, Saad F, Parent ME.
BMC Public Health. 2015 Sep 18; 15:913. Epub 2015 Sep 18.

Subclinical hypercortisolism: a state, a syndrome, or a disease?

Di Dalmazi G, Pasquali R, Beuschlein F, Reincke M.
Eur J Endocrinol. 2015 Oct; 173(4):M61-71. Epub 2015 Aug 17.

Effect of Visceral Obesity on Surgical Outcomes of Patients Undergoing Laparoscopic Colorectal Surgery.

Park BK, Park JW, Ryoo SB, Jeong SY, Park KJ, Park JG.

Systematic Reviews

Results: 5 of 11

Central adiposity, obesity during early adulthood, and pancreatic cancer mortality in a pooled analysis of cohort studies.

Genkinger JM, Kitahara CM, Bernstein L, Berrington de Gonzalez A, Brotzman M, Elena JW, Giles GG, Hartge P, Singh PN, Stolzenberg-Solomon RZ, et al.
Ann Oncol. 2015 Nov; 26(11):2257-66. Epub 2015 Sep 7.

Anthropometric factors and endometrial cancer risk: a systematic review and dose-response meta-analysis of prospective studies.

Aune D, Navarro Rosenblatt DA, Chan DS, Vingeliene S, Abar L, Vieira AR, Greenwood DC, Bandera EV, Norat T.
Ann Oncol. 2015 Aug; 26(8):1635-48. Epub 2015 Mar 19.

Visceral adipose tissue and the risk of colorectal adenomas: a meta-analysis of observational studies.

Hu H, Cai Y, Huang J, Zhang J, Deng Y.
Eur J Cancer Prev. 2015 Nov; 24(6):462-9.

Colon epithelial proliferation and carcinogenesis in diet-induced obesity.

Takahashi H, Hosono K, Endo H, Nakajima A.
J Gastroenterol Hepatol. 2013 Dec; 28 Suppl 4:41-7.

Medical Genetics

Topic: All

Results: 5 of 16

Post-diagnosis adiposity and survival among breast cancer patients: influence of breast cancer subtype.

Sun X, Nichols HB, Robinson W, Sherman ME, Olshan AF, Troester MA.
Cancer Causes Control. 2015 Dec; 26(12):1803-11. Epub 2015 Oct 1.

Central adiposity, obesity during early adulthood, and pancreatic cancer mortality in a pooled analysis of cohort studies.

Genkinger JM, Kitahara CM, Bernstein L, Berrington de Gonzalez A, Brotzman M, Elena JW, Giles GG, Hartge P, Singh PN, Stolzenberg-Solomon RZ, et al.
Ann Oncol. 2015 Nov; 26(11):2257-66. Epub 2015 Sep 7.

General and abdominal obesity and risk of esophageal and gastric adenocarcinoma in the European Prospective Investigation into Cancer and Nutrition.

Steffen A, Huerta JM, Weiderpass E, Bueno-de-Mesquita HB, May AM, Siersema PD, Kaaks R, Neamat-Allah J, Pala V, Panico S, et al.
Int J Cancer. 2015 Aug 1; 137(3):646-57. Epub 2015 Feb 9.



American Journal of Epidemiology

© The Author 2011. Published by Oxford University Press on behalf of the Johns Hopkins Bloomberg School of Public Health. All rights reserved. For permissions, please e-mail: journals.permissions@oup.com.

Vol. 174, No. 8

DOI: 10.1093/aje/kwr192

Advance Access publication:

August 29, 2011

Original Contribution

Interaction Between Smoking and Obesity and the Risk of Developing Breast Cancer Among Postmenopausal Women

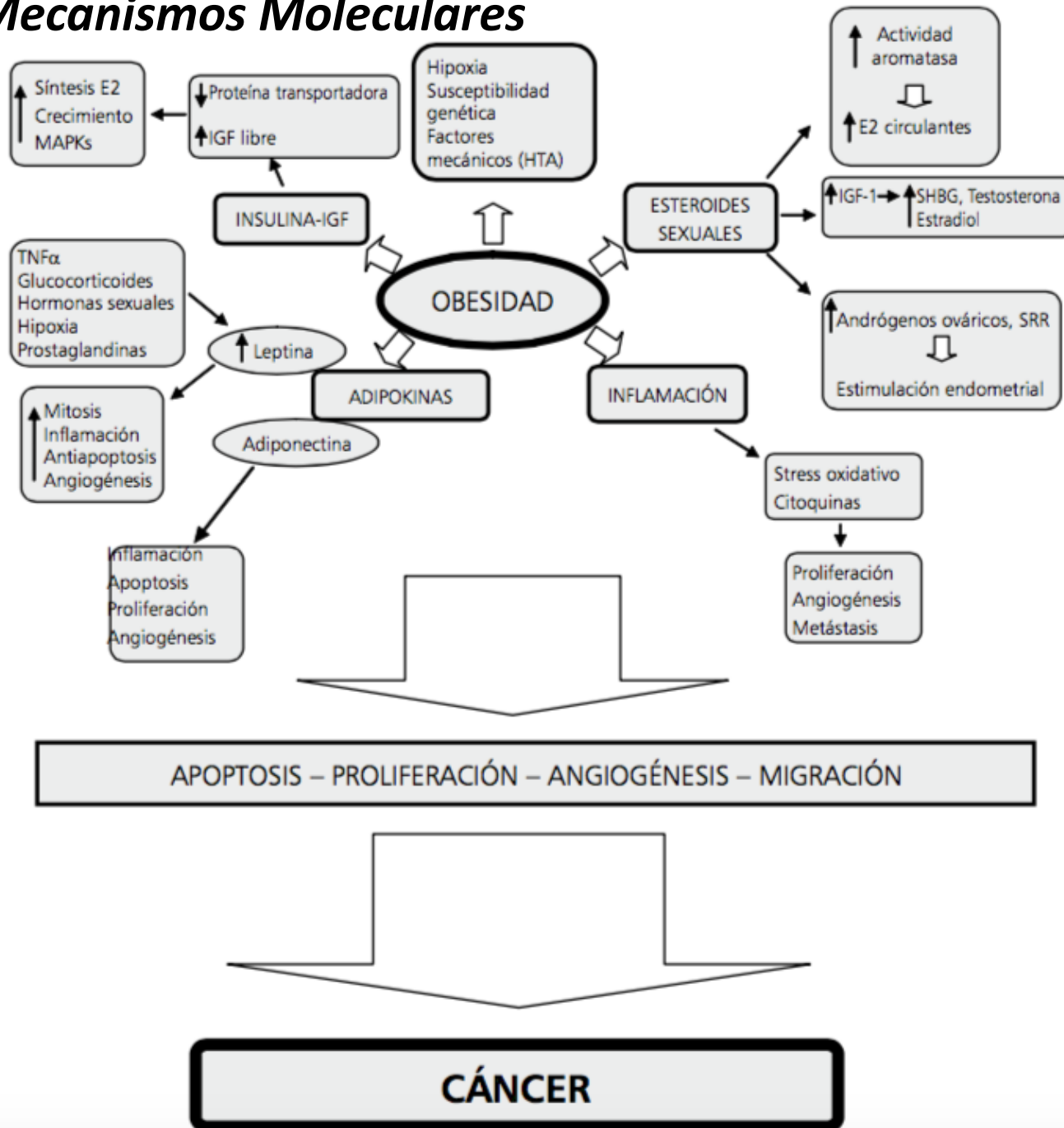
The Women's Health Initiative Observational Study

Juhua Luo*, Kimberly Horn, Judith K. Ockene, Michael S. Simon, Marcia L. Stefanick, Elisa Tong, and Karen L. Margolis

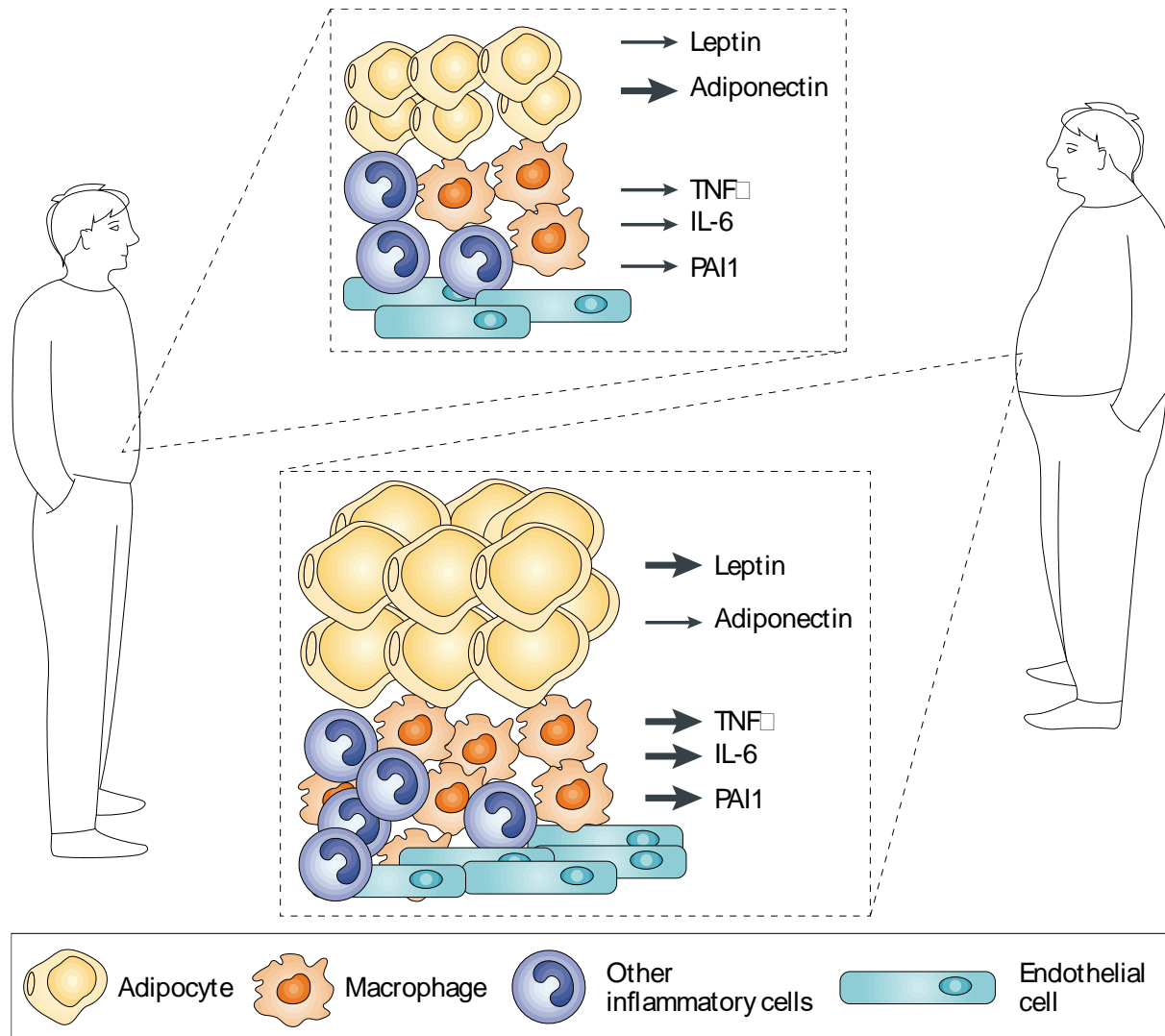
* Correspondence to Dr. Juhua Luo, Department of Community Medicine, School of Medicine, West Virginia University, Mary Babb Randolph Cancer Center, P.O. Box 9190, Morgantown, WV 26506 (e-mail: jl原因2@hsc.wvu.edu).

Initially submitted February 28, 2011; accepted for publication May 17, 2011.

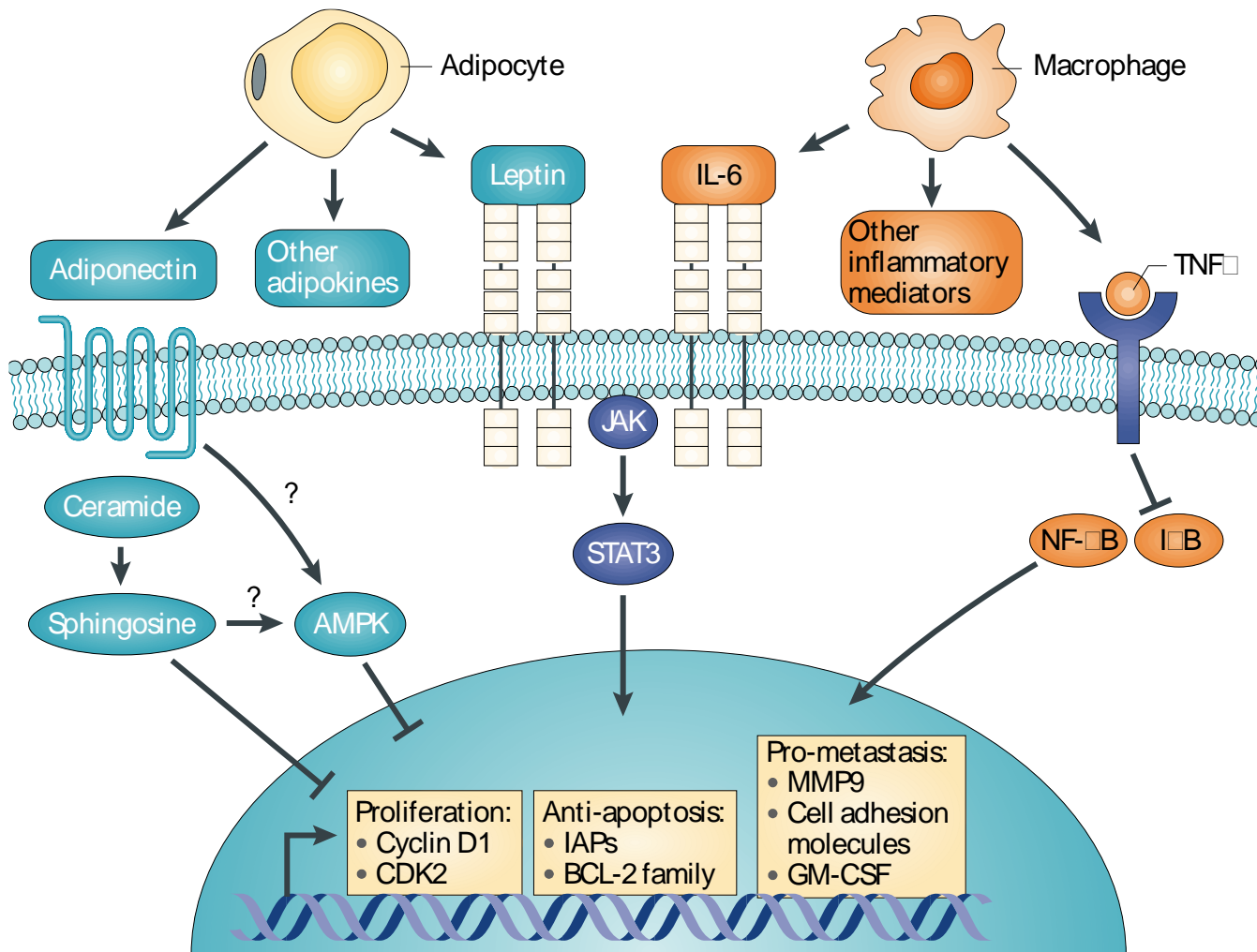
Mecanismos Moleculares



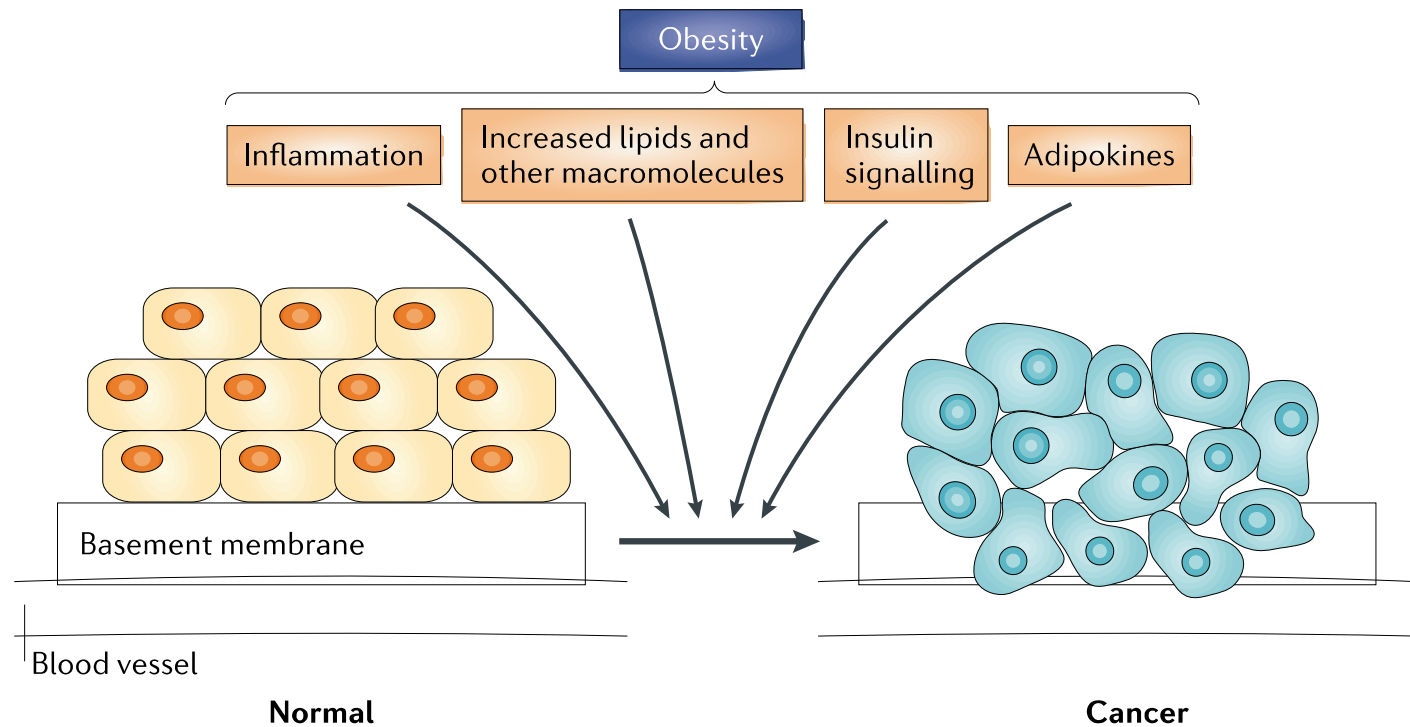
OBESIDAD/CANCER



OBESIDAD/CANCER



OBESIDAD/CANCER



Factores Pronósticos

Influence of Obesity on Biochemical and Clinical Failure After External-Beam Radiotherapy for Localized Prostate Cancer

Sara S. Strom, PhD¹
Ashish M. Kamat, MD²
Stephen K. Gruschkus, MPH¹
Yun Gu, PhD¹
Sijin Wen, MS³
Min Rex Cheung, MD, PhD⁴
Louis L. Pisters, MD²
Andrew K. Lee, MD⁴
Charles J. Rosser, MD²
Deborah A. Kuban, MD⁴

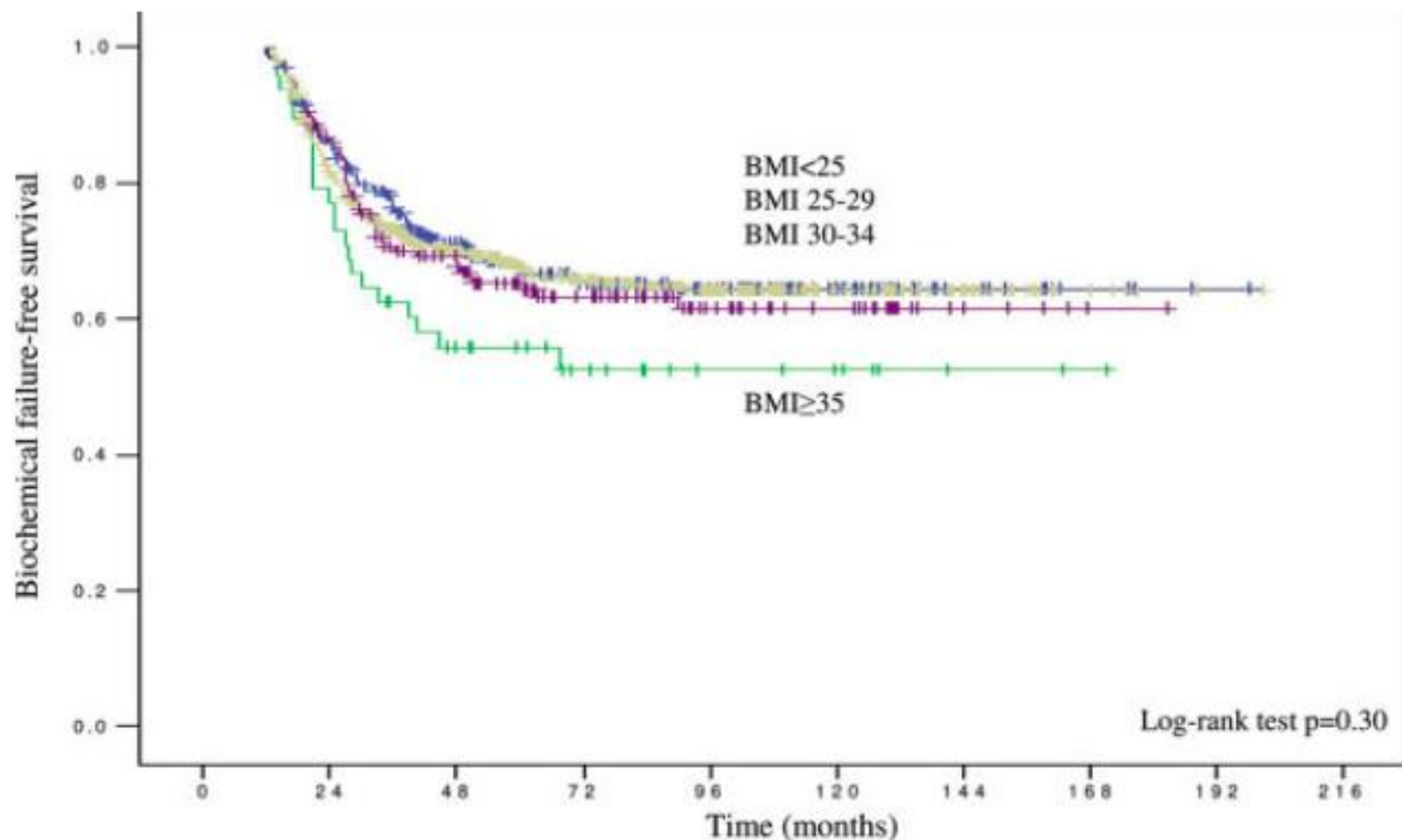
CANCER August 1, 2006 / Volume 107 / Number 3

¹ Department of Epidemiology, The University of Texas M. D. Anderson Cancer Center, Houston, Texas.

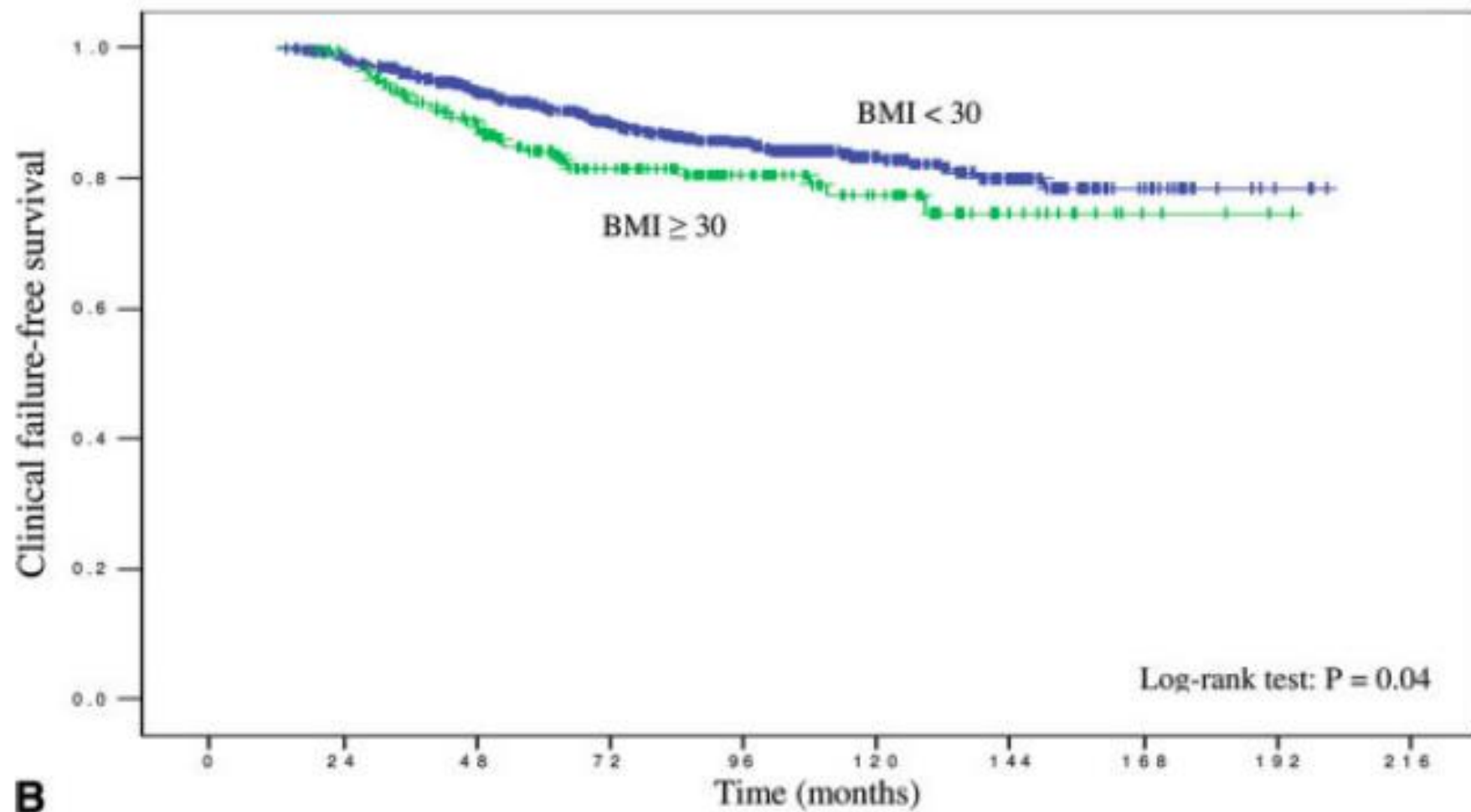
² Department of Urology, The University of Texas M. D. Anderson Cancer Center, Houston, Texas.

³ Department of Biomathematics, The University of Texas M. D. Anderson Cancer Center, Houston, Texas.

⁴ Department of Radiation Oncology, The University of Texas M. D. Anderson Cancer Center, Houston, Texas.



Log-rank test: BMI 25-29 vs. < 25 ($P = 0.76$); 30-34 vs. < 25 ($P = 0.52$); ≥ 35 vs. < 25 ($P = 0.06$)



Dificultades Diagnósticas

- Tamizaje
 - Dificultad técnica en el examen físico
 - Equipamiento inadecuado
 - Negación y rechazo por el paciente

Obesidad/Cáncer

- Cómo tratar un paciente obeso con cáncer??
- Tiene la reducción programada de peso efectos sobre la incidencia y el pronóstico del cáncer??

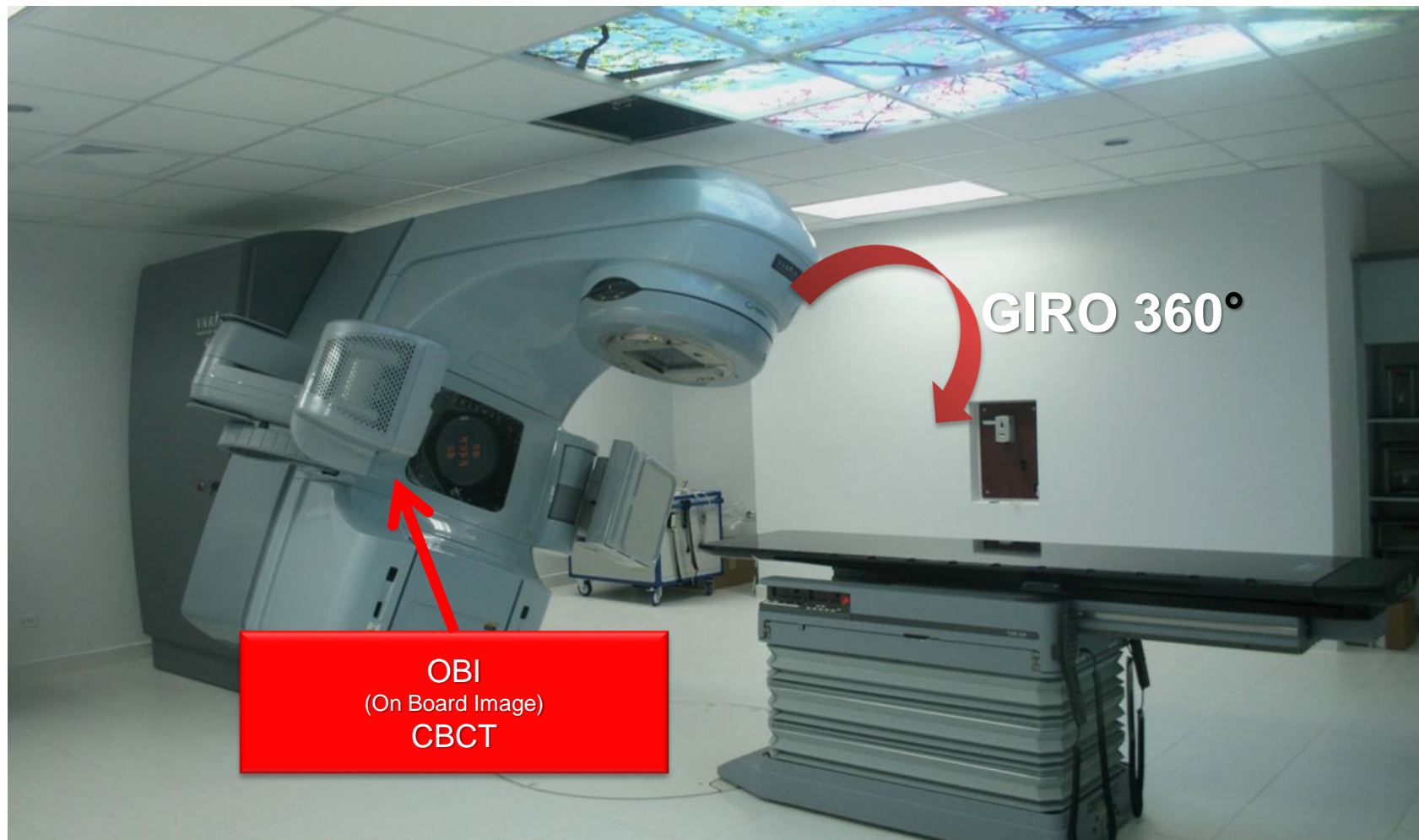
Cirugía

- Mayor tasa de complicaciones (RR 1.5)
 - Cicatrización lenta
 - Eventos trombo-embolico
 - Tiempos operatorios
 - Estadías hospitalarias prolongadas
 - Dificultad en la estadificación

Quimioterapia

- Área de superficie corporal
 - “Peso ideal”
 - Toxicidad
- ↓ Sobrevida libre de enfermedad

Radioterapia



IMRT: Intensity Modulated Radiation Therapy.

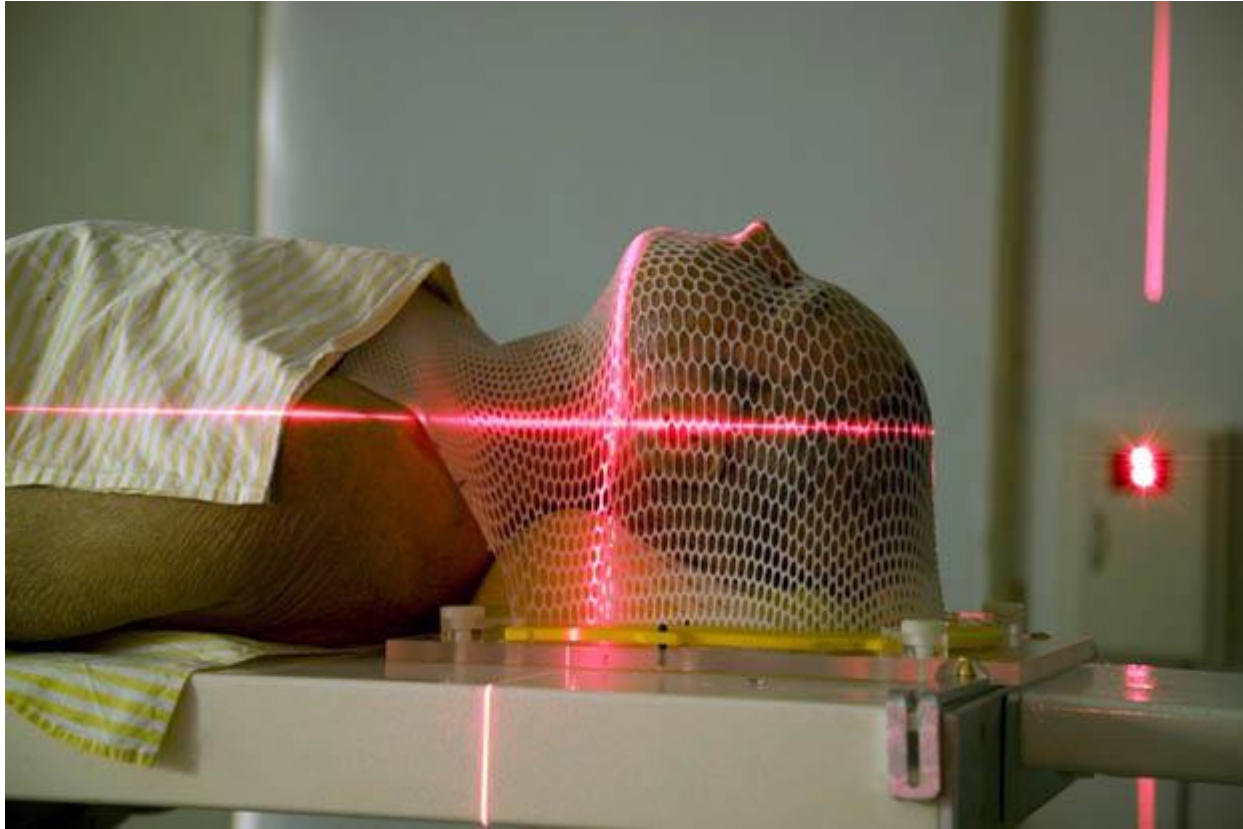
Colimadores Multihojas



Acelerador Lineal



COPYRIGHT ©2000 VARIAN MEDICAL SYSTEMS
Millennium MLC: Clinac® EX with MLC-120



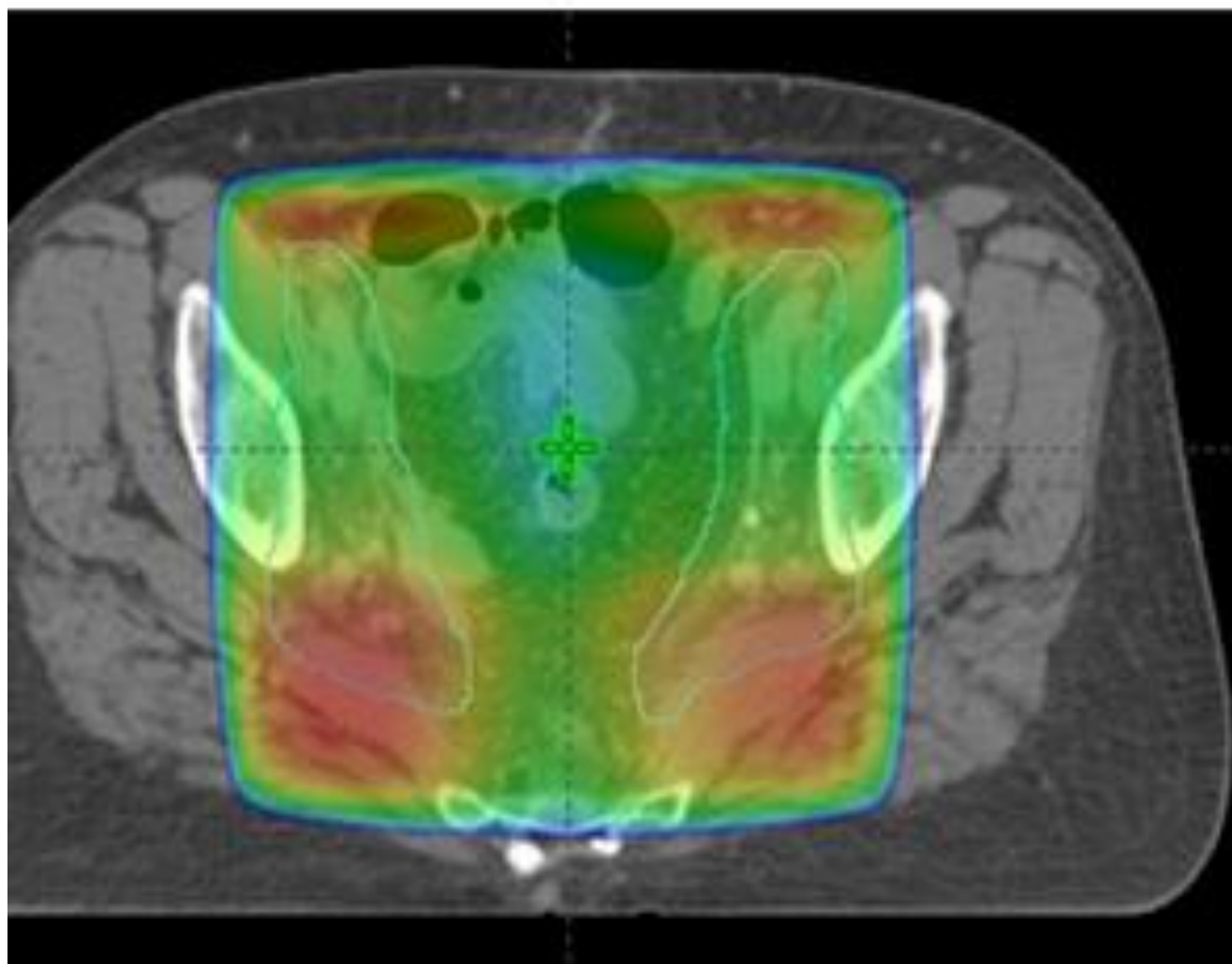




Figure 1: Radiation Dermatitis—Patient's breast radiation dermatitis in the 6th week of treatment.



22 JUL 2008 10 18

RADIODERMITIS GRADO 4

Clinical Investigation: Gynecologic Cancer

Effect of Body Mass Index on Magnitude of Setup Errors in Patients Treated With Adjuvant Radiotherapy for Endometrial Cancer With Daily Image Guidance

**Lilie L. Lin, M.D., Lauren Hertan, M.D., Ramesh Rengan, M.D., Ph.D.,
and Boon-Keng Kevin Teo, Ph.D.**

Department of Radiation Oncology, University of Pennsylvania School of Medicine, Philadelphia, PA

Received Dec 15, 2010, and in revised form Apr 6, 2011. Accepted for publication Jul 10, 2011

Qué hacer?

- Prevención

Tabla 5. Recomendaciones nutricionales y cáncer

A. Prevención. Estrategias de prevención de cáncer y nutrición

Mantener peso saludable
Consumir ≥ 5 frutas, vegetales/día
Disminuir hidratos de carbono refinados
Disminuir consumo de carnes rojas
Limitar consumo de alcohol
Actividad física moderada por 30 min ≥ 5 veces semanales

B. Tratamiento. Tratamiento de la obesidad en pacientes con cáncer

Manejo multidisciplinario
Pauta de alimentación hipocalórica-balanceada*
Actividad física aeróbica programada
Terapia conductual
En evaluación
Cirugía bariátrica (Tabla 6)
Metformina (Figura 3)

*Aporte adecuado de macro-nutrientes, restricción calórica individualizada.

Qué hacer?

Tabla 6. Cirugía bariátrica y cáncer. Resultados de algunos estudios clínicos

Autor/ año	Grupo cirugía (n)	Grupo control (n)	Objetivo evaluado	Eventos (Qx/noQx*)	Riesgo	Seguimiento (años)
Adams/ 2009	6.596	9.442	Incidencia de cáncer Mortalidad por cáncer	254/477 41/107	HR = 0,76 P = 0,0006 HR = 0,54 P = 0,001	12,3
Sjöström/ 2009	2.020	2.037	Incidencia cáncer	117/169	HR = 0,67 P = 0,009	10,9
Christou/ 2008	1.035	5.746	Visitas relacionadas a cáncer	21/487	RR = 22,9 P = 0,001	5

*Qx/no Qx: grupo cirugía/grupo control. n: Número de pacientes. HR: Hazard ratio. RR: Riesgo relativo.

BUSH'S
MILITARY RECORDS
IS DISNEY MOUSETRAPPED?

TIME

THE SECRET KILLER

- The surprising link between **INFLAMMATION** and **HEART ATTACKS, CANCER, ALZHEIMER'S** and other diseases
- What you can do to fight it

???





Obesidad y Cáncer



GRACIAS...

Dr. Gaspar Pérez-Jiménez, FACP

Medicina Interna

Radio-Oncología

Instituto Oncológico Nacional

Centro Oncológico Paitilla