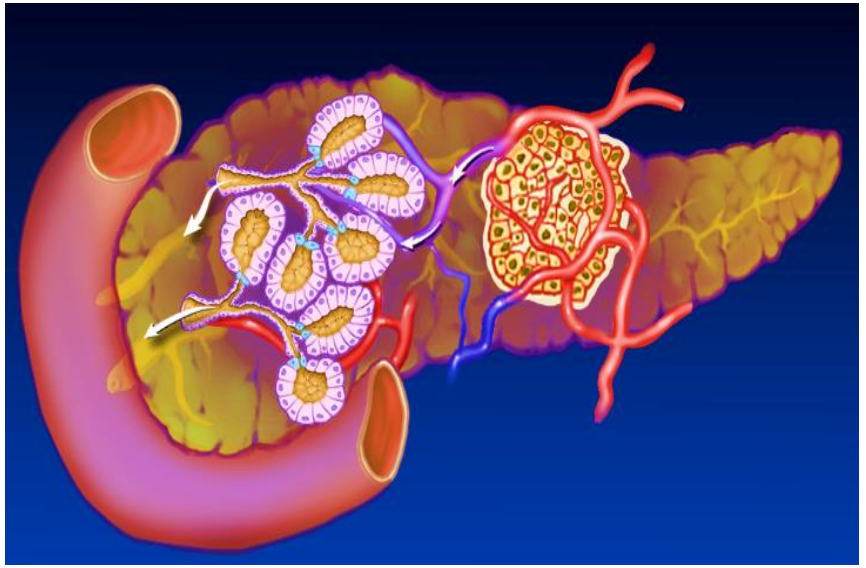
Manejo actual de la insuficiencia Pancreática exocrina.

William Otero MD, FASGE, FAGA, FACP
Profesor Titular de Medicina
Universidad Nacional de Colombia
Hospital Universitario Nacional



Liberación de enzimas pancreáticas
Por debajo del umbral necesario
Para la digestión

No es infrecuente
Sub-diagnosticada
Sub-tratada

Consensus for the management of pancreatic exocrine insufficiency: UK practical guidelines

Phillips ME, et al. BMJ Open Gastro 2021;8:e000643

Mary E Phillips ,[1] Andrew D Hopper,[2] John S Leeds ,[3] Keith J Roberts
Laura McGeeney,[5] Sinead N Duggan,[6] Rajesh Kumar[7]

AGA-PancreasFest Joint Symposium on Exocrine Pancreatic Insufficiency

David C. Whitcomb,[1,2,3] Sinead N. Duggan,[4] Robert Martindale,[5] Mark Lowe,[6]
Virginia A. Stallings,[7] Darwin Conwell,[8] Jodie A. Barkin,[9]
Georgios I. Papachristou,[10] Sohail Z. Husain,[11] Christopher E. Forsmark,[12] and
Vivek Kaul[13]

Whitcomb DC, Gastro Hep Advances 2023;2:395–411

AGA Clinical Practice Update on the Epidemiology, Evaluation, and Management of Exocrine Pancreatic Insufficiency: Expert Review

David C. Whitcomb,[1] Anna M. Buchner,[2] and Chris E. Forsmark[3]

Whitcomb DC,Gastroenterology. 2023;165:1292-1301.

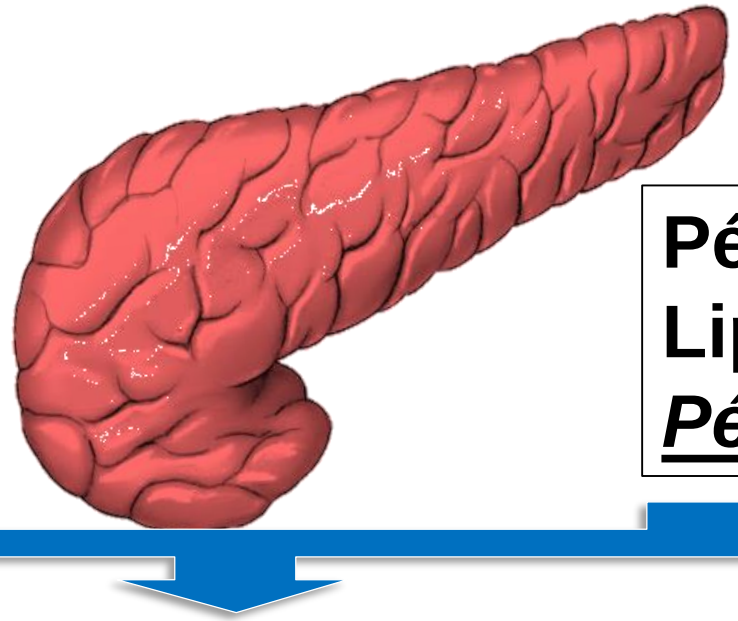
IPE, Agenda

Definición
Síntomas
Diagnostico
Tratamiento
Beneficios del tratamiento
Mensajes para la casa

IPE, Agenda

Definición
Síntomas
Diagnostico
Etiología
Tratamiento
Beneficios del tratamiento
Mensajes para la casa

IPE



Amilasa salival
Enzimas borde en cepillo
Lipólisis extra pancreática
Lipasa gástrica

Pérdida >90%
Lipasa IPE
Pérdida < 90%

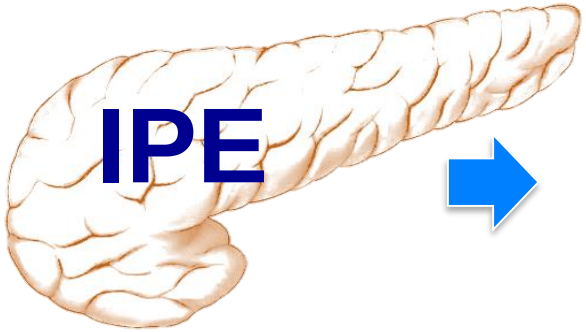
Mala digestión de los alimentos
Deterioro nutricional del paciente
Disminución calidad de vida

Löhr JM, et al. Unit Eur Gastroenterol J 2017;5: 153-99
Othman MO, Int J Clin Pract 2018;72:e13066.

Disfunción pancreática exocrina es diferente a IPE

	Descriptive terminology	FE-1 levels (μg/g)	Coefficient of fat absorption (%)	Symptoms	Serum vitamin A and E levels	PERT indicated?
Stage I	Mild exocrine pancreatic dysfunction	100–200	≥93	None	Normal	No
Stage II	Moderate pancreatic exocrine dysfunction	<100	≥93[a]	None	Normal	No
Stage III	Severe pancreatic exocrine dysfunction (EPI without micronutrient deficiency)	<100 (usually <50)	<85[a]	Usually present	Normal/low normal	Yes
Stage IV	Severe pancreatic exocrine dysfunction (EPI with micronutrient deficiency)	<100 (usually <50)	<85	Usually present	Low	Yes and consider micronutrient supplementation

Khan A, et al Pancreatology 2022; 22:168–172



Malnutrición

Condición seria
➢Morbimortalidad

Infecciones osteoporosis
Muerte cardiovascular: OR 4-5
>> Arteriosclerosis fumadores O NO
<APO-A, <<<HDL, <<Lipoproteína A

Dominguez-Muñoz JE, JOP 2010 11:158-62
Pongprasobchai S, J Gastroenterol Hepatol 2013;28(Suppl.4):99-102
Tooli J, MJA 2010;193:461-7

IPE, Agenda

Definición
Etiología
Síntomas
Diagnostico
Tratamiento
Optimización tratamiento
Beneficios del tratamiento
Mensajes para la casa

Keller J, Gut 2005; 54 (Suppl. 6):vi1-vi28
Malfertheiner P, Digestion 1987;38:142-51

IPE

Primaria

Pérdida tejido Pancreático

- Tumores pancreáticos
- Pancreatectomías
- Pancreatitis crónica 35-50%
- 10-15 años
- IPMN, páncreas graso
- Fibrosis quística
- Diabetes Mellitus
- VIH

Secundaria

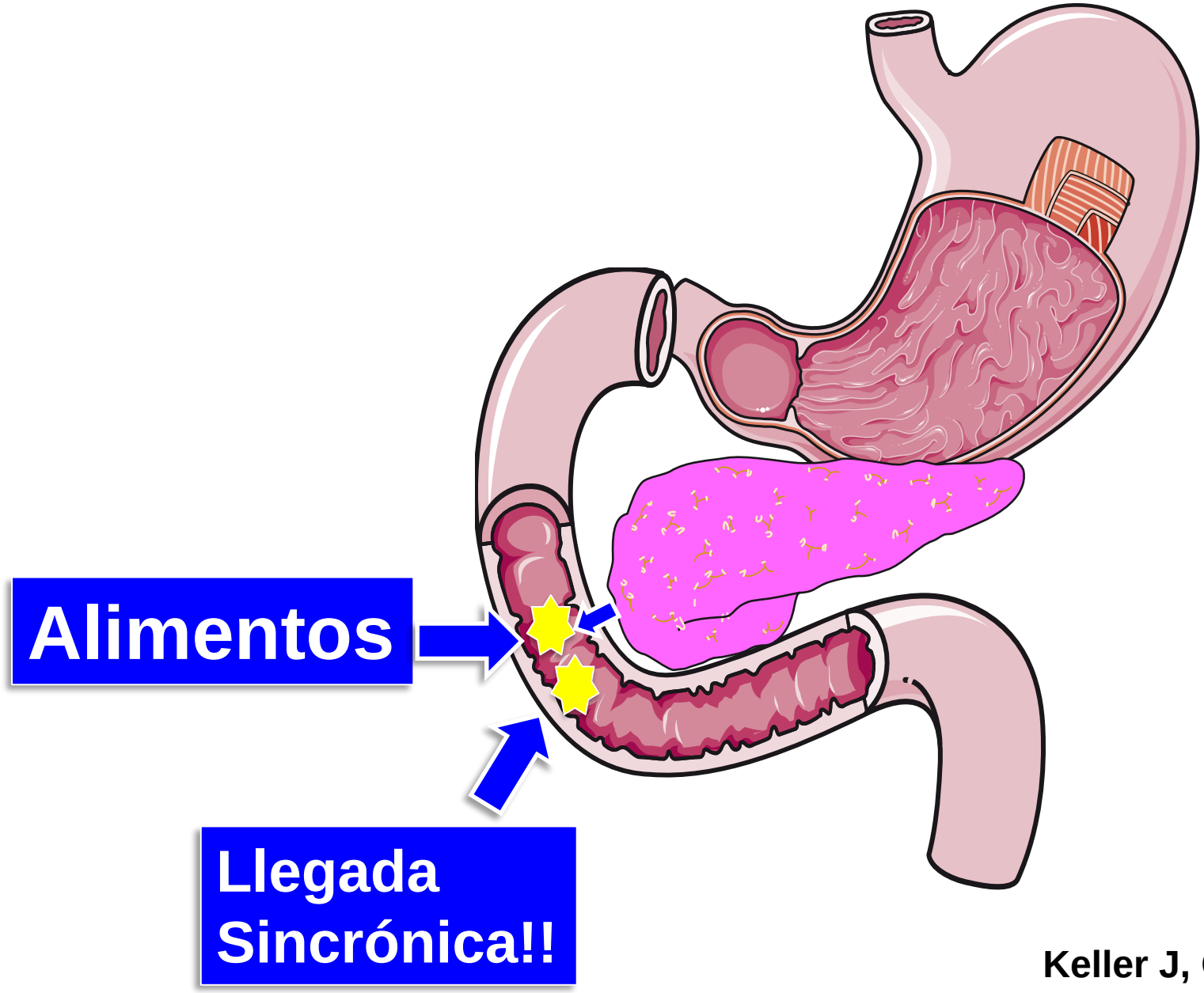
Disminución Secreción Pancreática

- Gastrectomías
- E.Crohn
- E. Celiaca
- Resección duodenal

Asincronía Pos Prandial

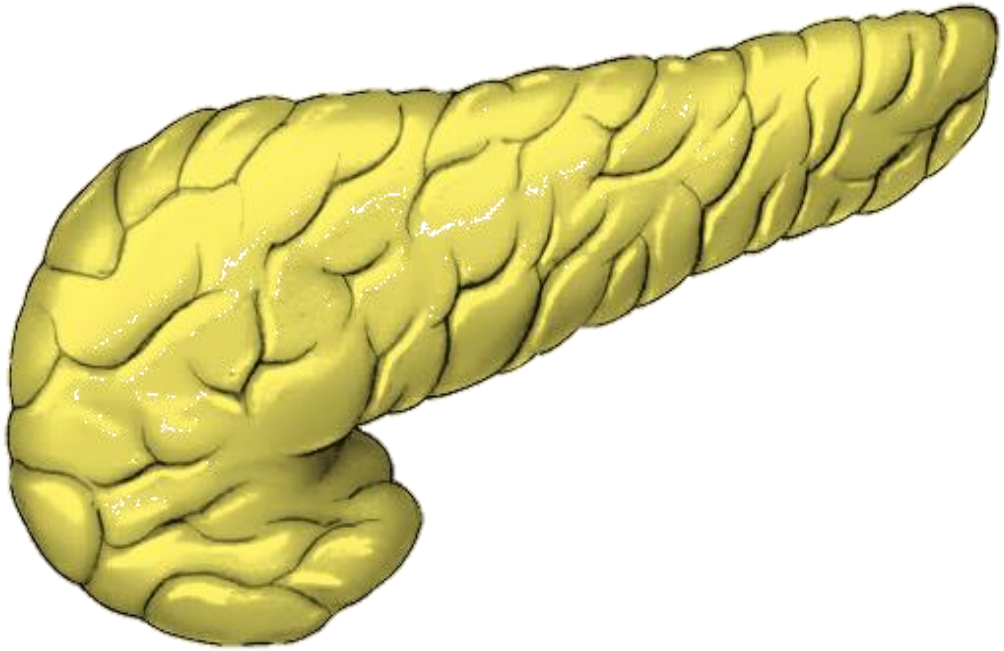
- Gastrectomías
- BI-BII
- Esofagectomía
- Bariátricas

Dominguez-Muñoz JE, Clínical Pancreatology 2th Edit 2021
de Rijk FEM, Pancreatology 2022;22:457-65



Keller J, Gut 2005;54 (Suppl.6):vi1-vi28
Domínguez-Muñoz JE 2020

Páncreas Graso



“IPE idiopática”

Miyake, H.; PLoS ONE 2018;13:e0209448.
Mari A, J. Clin. Med. 2022;11:5720 3 of 3
Shobassy M, et al. Gastroenterol. Res. Pract. 2019: Art. 5290642.

DDW 2019

PANCREATIC FUNCTIONAL AND STRUCTURAL EVALUATION WITH FECAL ELASTASE 1, ENDOSCOPIC ULTRASOUND WITH FINE NEEDLE BIOPSY IN PATIENTS WITH PANCREATIC STEATOSIS.

Mónica Caballero[1,2,4], Denisse Marriott[3,5], Mauro García[6], Guillermina Blum[4] , Javier Carrillo[1,2], Vanessa Vallejo[1,2,4], Ma. Luisa Jara[1,2], Andrés Serrano[1,2], Emilia Vera[1,2], Erika Villacis[1,2], Lenin Castro[2], Ana Ochoa[1,3], José Nieto[5], Eduardo Marriott[1,2,3].

1. Servicio de Gastroenterología Hospital Dr. Teodoro Maldonado Carbo
2. Universidad de Guayaquil
3. Universidad Espíritu Santo
4. Fundación Renal del Ecuador Iñigo Alvarez de Toledo
5. Borland Groover Clinic, Jacksonville
6. Servicio de laboratorio Hospital Dr. Teodoro Maldonado Carbo

Introduction:

Pancreatic steatosis (PS) is a frequently diagnosed pathologic entity, but the prognosis and disease natural history is unknown. Histologically, a periacinar and intra-acinar fat infiltrate is seen microscopically. Fecal Elastase 1 (FE-1) is a marker used to evaluate exocrine pancreatic insufficiency (EPI) and Endoscopic Ultrasound (EUS) with fine needle biopsy (FNB) is very useful in the structural and parenchymal evaluation of the pancreas.

Objective:

Functional and structured evaluation of Fatty Pancreas through study of Fecal Elastase 1 and EUS with FNB in patients with pancreaticsteatosis was evaluated in the Regional Hospital Teodoro Maldonado Carbo during the period 2017-2018.

Materials and methods:

50 patients with Pancreatic Steatosis were included and patients with PS with inflammatory bowel disease (IBD), celiac disease (CD), and/or metabolic surgery were excluded. Fecal Elastase was determined by means of an immunoenzymatic technique and the expected values: Normal ≥ 200 ug / g; Moderate insufficiency 100 to 200 ug / g and Severe Insufficiency ≤ 100 ug / g. The evaluation by EUS defined the PS as hyperechoic and focal; FNB was performed with EUS guidance. A linear array EUS scope and a 22g Boston Scientific core needle were used for pancreatic tissue sampling.

Results:

The study included 50 patients: 33 (64%) had EF-1 within normal limits; 16 (34%) presentation of moderate EPI and 1 (2%) with severe EPI. Of the 17 patients with EPI determined by EF-1, 12 (70.6%) presented a diffuse type of fat infiltration and 5 (29.4%) with focal fat infiltration described with EUS. The histological evaluation in patients with EPI determined by EF-1 showed that 14 (82.4%) presented with periacinar lipomatosis and 3 (17.6%) with normal parenchyma.

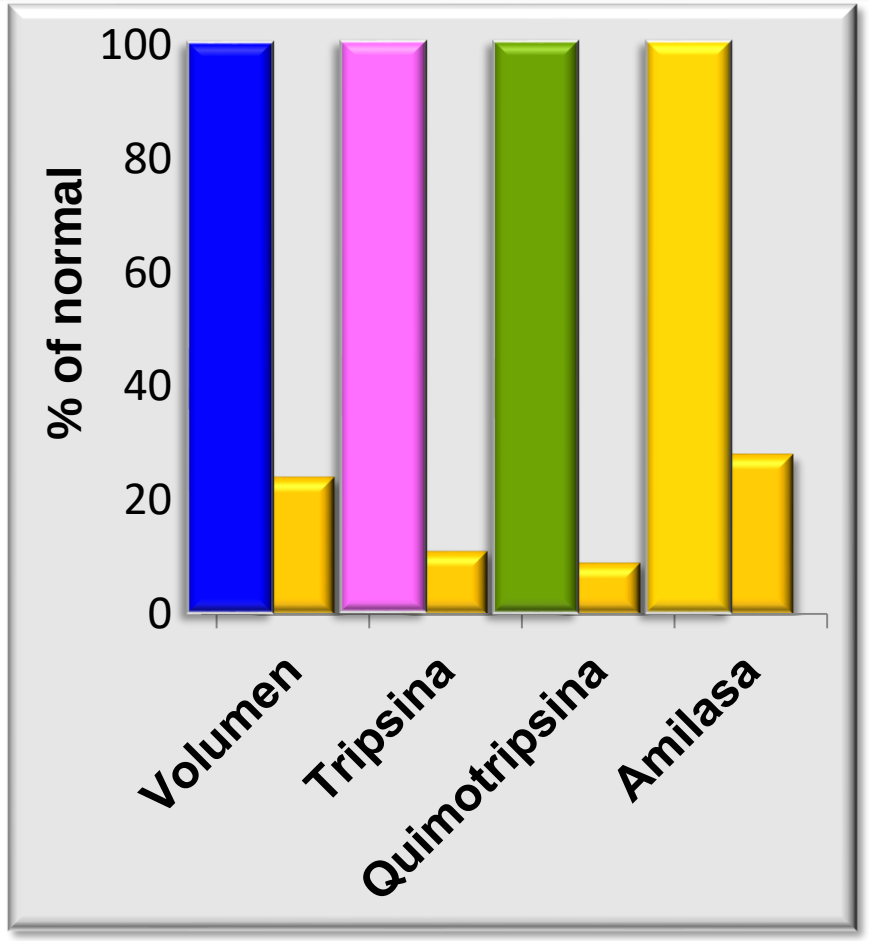
Conclusion:

This study reveals that 36% of patients with PS have abnormal EF-1 levels.
Among patients with a normal EF-1, 70% had focal fatty infiltration and 30% had diffuse fatty infiltration.

These findings show that EPI is present in patients with diffuse and focal fatty infiltration of the pancreas.

Secreción pancreática pos gastrectomía

IPE 6 meses: Parcial 80%, Total 100%



Deficiente trituración de los alimentos.
Alteración del vaciamiento gástrico.
Asincronía posprandial.
Disminución estímulos secreción
Vaciamiento gástrico rápido, SIBO

Friess et al, Am J Gastroenterol 1996;91:341-7.
Keller J, Gut 2005;54 (Suppl.6):vi1-vi28,
Cortesía Profesor Domínguez-Muñoz JE.

Manga gástrica

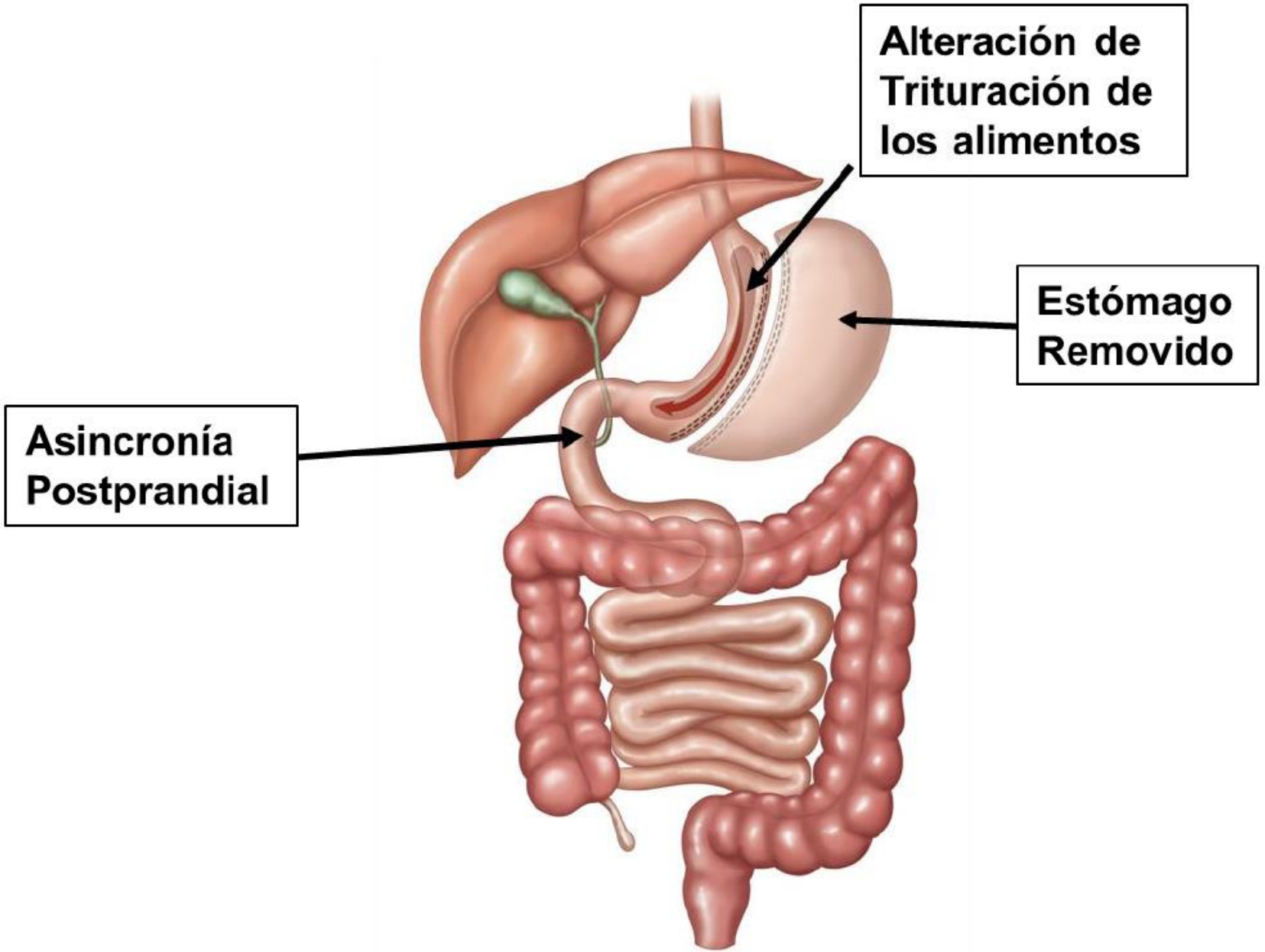
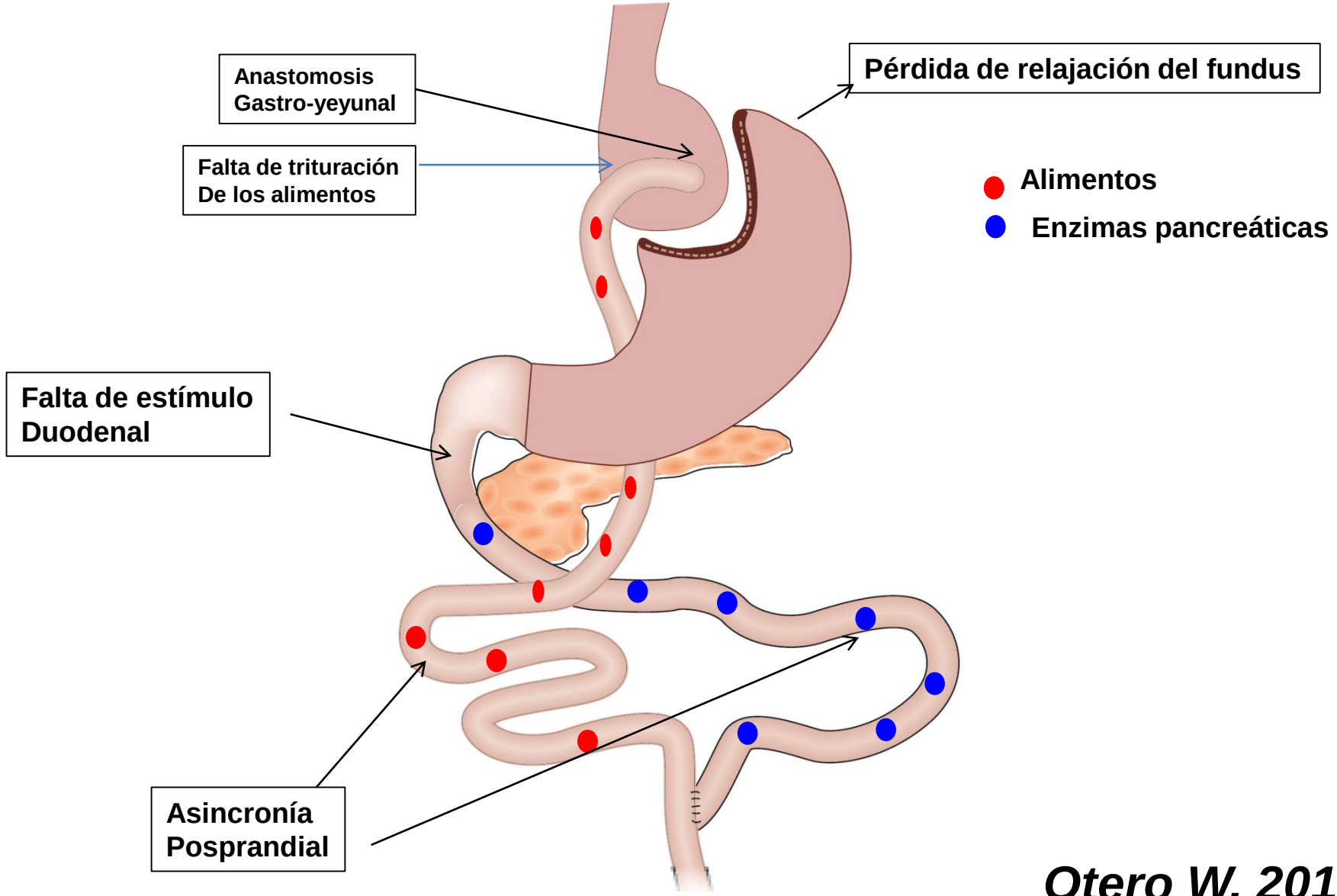


Figura 5. Alteración de la secreción pancreática en el *bypass*



Otero W, 2018

Pancreatic exocrine insufficiency following pancreatoduodenectomy: A prospective bi-center study

V.J. Kroon [a, 1], L.A. Daamen [a, b, 1], D.S.J. Tseng [a, 1], A. Roele- de Vreugd [a], L.J.H. Brada [a], O.R. Busch [c], T.C. Derksen [a], A. Gerritsen [a], S.J.E. Rombouts [a], F.J. Smits [a], M.S. Walma [a], R.A.W. Wennink [a], M.G. Besselink [c], H.C. van Santvoort [a, 2], I.Q. Molenaar [a, 2, *]

95 pacientes

3 meses — **IPE: 27/29 (93%)**

6 meses — **IPE: 100%**

< Vit D, K 48-79% — **Suplencia 0-50%**

Pancreatology 2022 Online Octubre 18

Diseases of the Esophagus (2013) **26**, 594–597
DOI: 10.1111/dote.12004

DISEASES OF THE ESOPHAGUS

Original article

Exocrine pancreatic insufficiency following esophagectomy

J. R. Huddy, F. M. S. Macharg, A. M. Lawn, S. R. Preston

Regional Oesophagogastric Unit, Royal Surrey County Hospital, Guildford, Surrey, UK

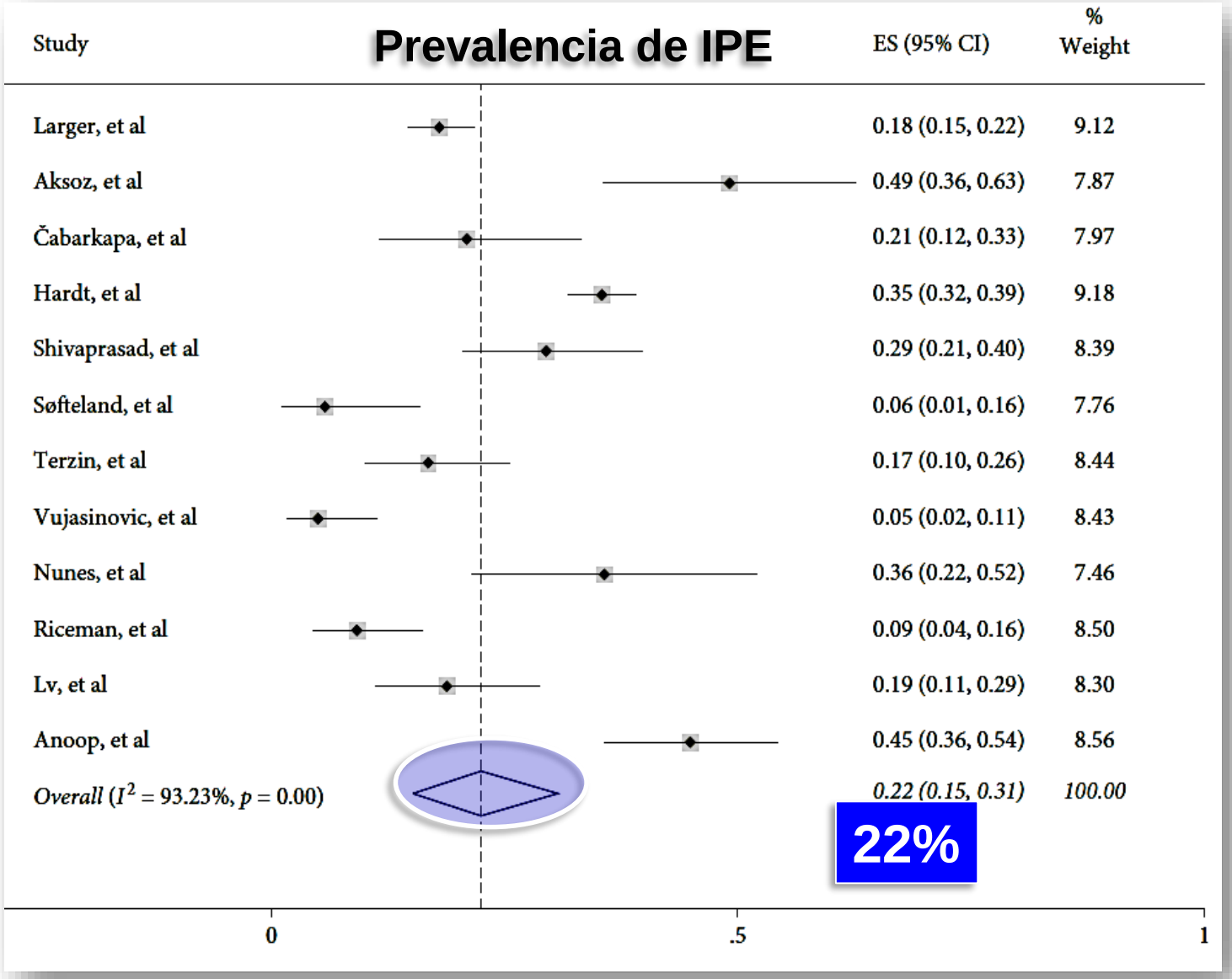
Fecal elastase-1 (µg/g)	*n* (%)
Less than 200	10 (16)
200–500	39 (62)
Greater than 500	14 (22)

Huddy JR, Dis Esophagus 2013;26: 594-7

Diabetes mellitus

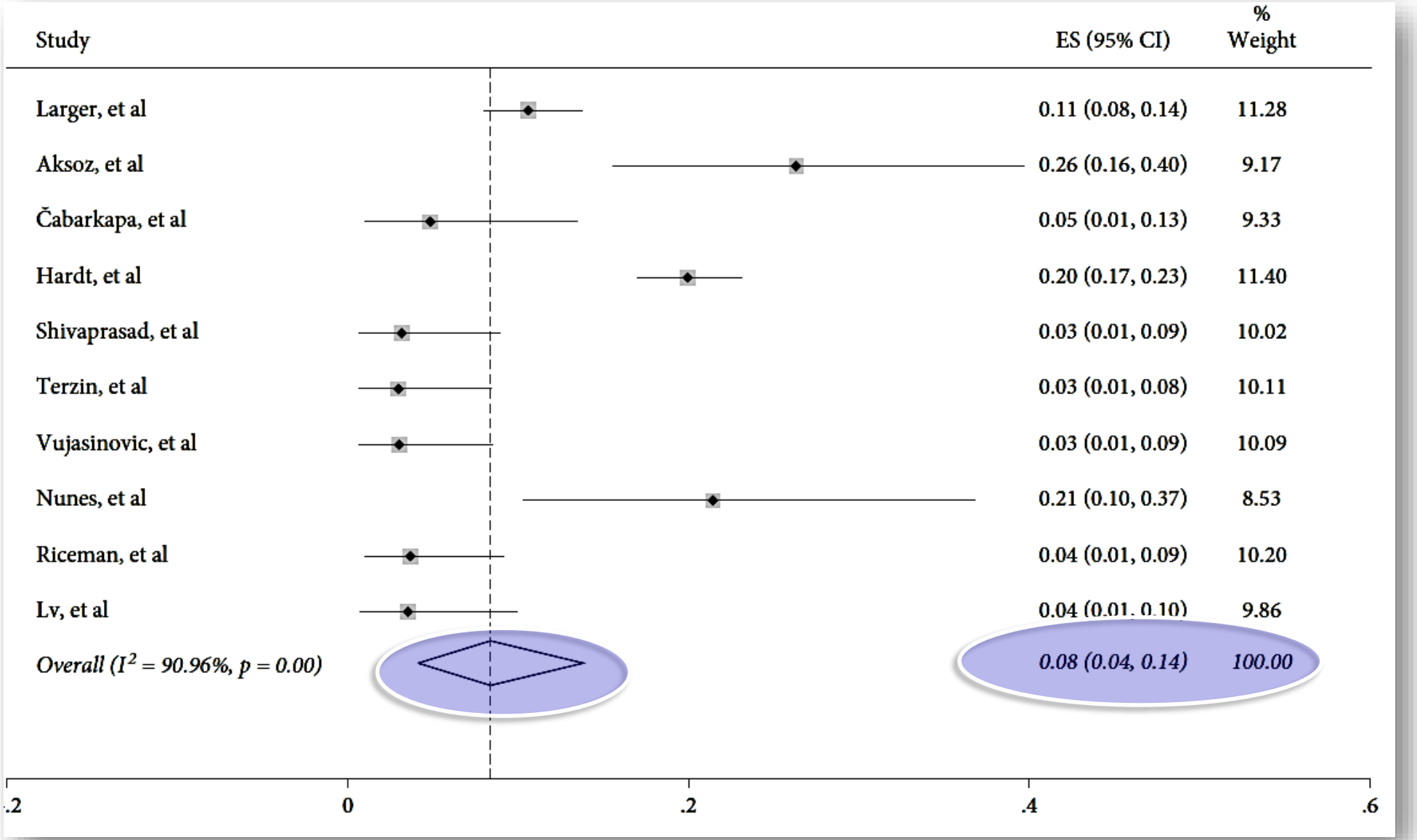
The Prevalence and Characteristics of Exocrine Pancreatic Insufficiency in Patients with Type 2 Diabetes: A Systematic Review and Meta-Analysis

Jun Zhang,[1,2] Jiaying Hou,[3] Dechen Liu,[1,2] Yingqi Lv,[1,2] Chi Zhang,[4] Xianghui Su,[3] and Ling Li[1,2]



Zhang J, Int J Endocrinol 2022; 2022, Art ID 7764963,

IPE severa

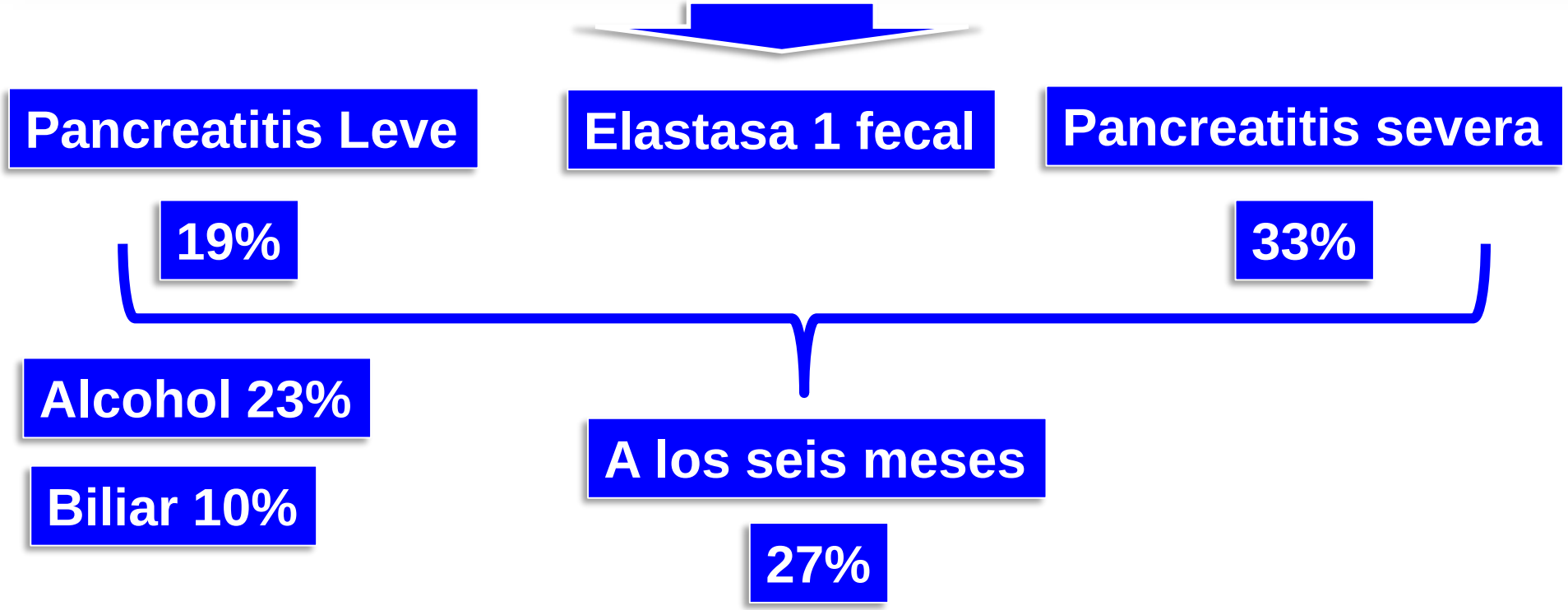


Zhang J, Int J Endocrinol 2022; 2022, Art ID 7764963,

IPE pospancreatitis aguda

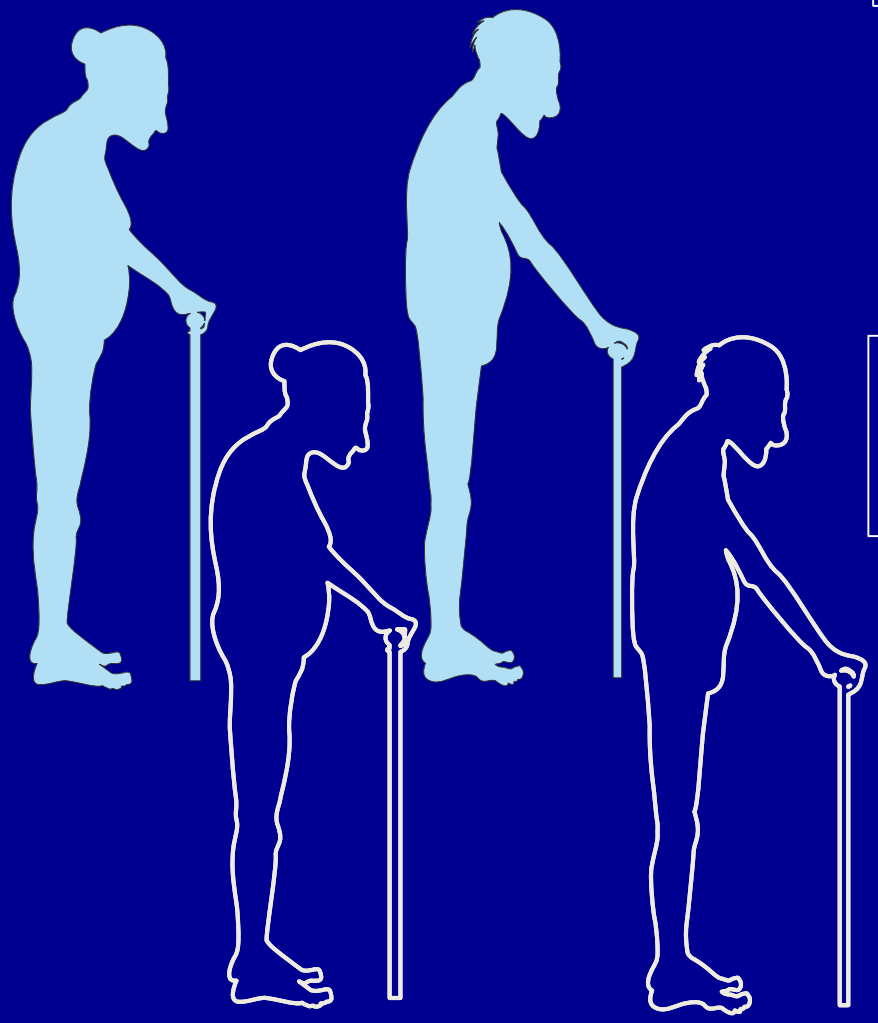
Pancreatic exocrine insufficiency following acute pancreatitis: Systematic review and study level meta-analysis

Robbert A. Hollemans [a, b], Nora D.L. Hallensleben [b, c], David J. Mager [d], Johannes C. Kelder [b], Marc G. Besselink [e], Marco J. Bruno [c], Robert C. Verdonk [f], Hjalmar C. van Santvoort [a, g, *], for the Dutch Pancreatitis Study Group



Hollemanns RA, Pancreatology 2018;18:253-62

IPE adultos mayores



1000 pacientes >70 años

↓

EF-1

↓

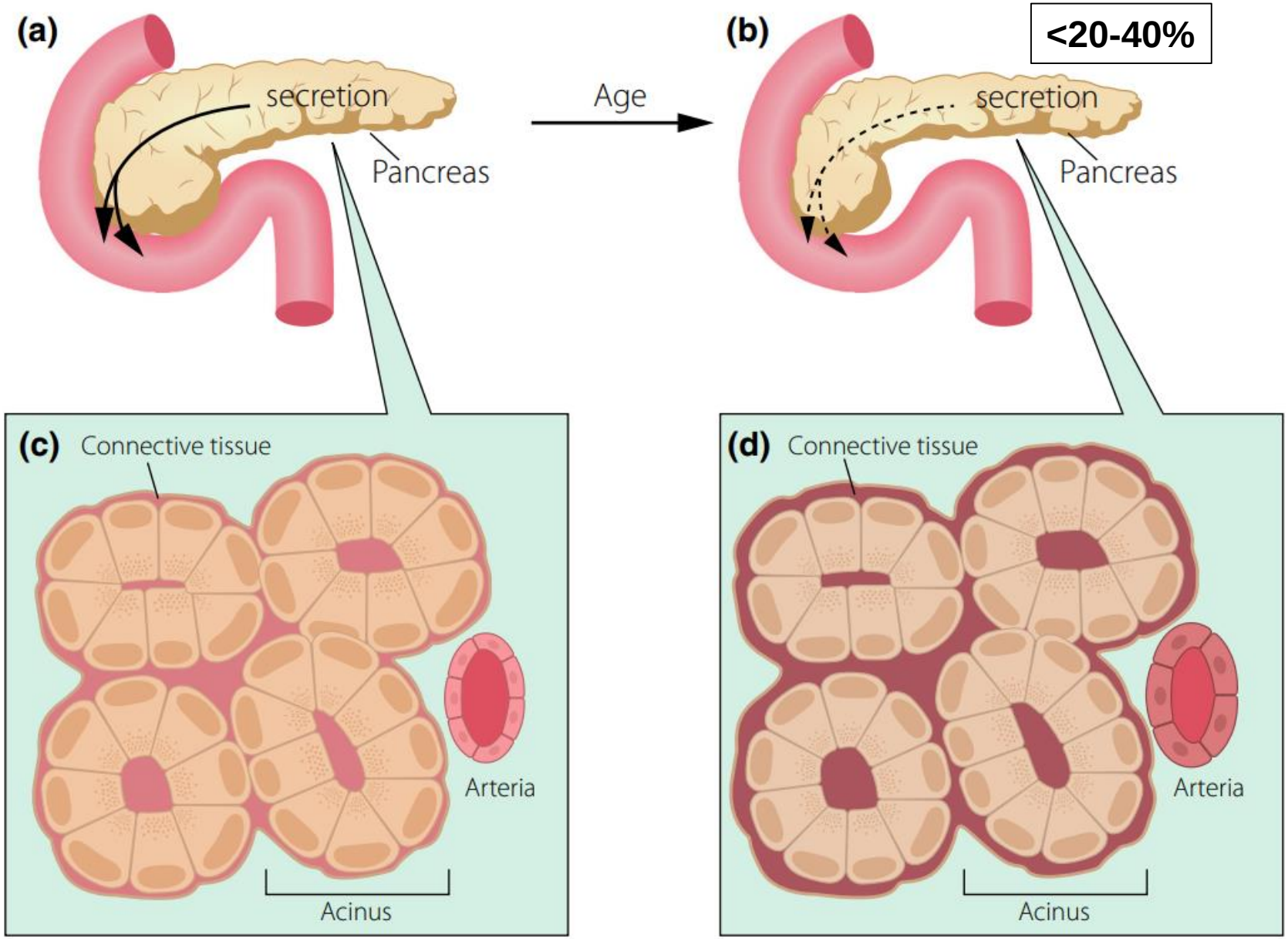
10% <200 mcg/gr
5% <100 mcg/gr

↓

Pocos síntomas

Hedstrom A, Pancreatology 2015; 15(3 Suppl.): S74

Envejecimiento y páncreas



Löhr JM, J Inter Med 2018;283: 446–60

New York State Department of Health AIDS Institute: http://www.hivguidelines.org 2016

TABLE 4
POSSIBLE HIV-RELATED ETIOLOGIC AGENTS OF DIARRHEA IN HIV-INFECTED PATIENTS

Small Intestine	Large Intestine	Miscellaneous
Cryptosporidium	CMV	Drugs
Microsporidia	*Cryptosporidium*	Alcohol
Isospora belli	MAC	Lactose intolerance
MAC	*Shigella*	Pancreatic insufficiency
Salmonella species	*Clostridium difficile*	
Campylobacter species	*Campylobacter jejuni*	
Giardia lamblia	*Histoplasma capsulatum*	
	Adenovirus	
	Herpes simplex (rare)	
	Pneumocystis carinii (rare)	

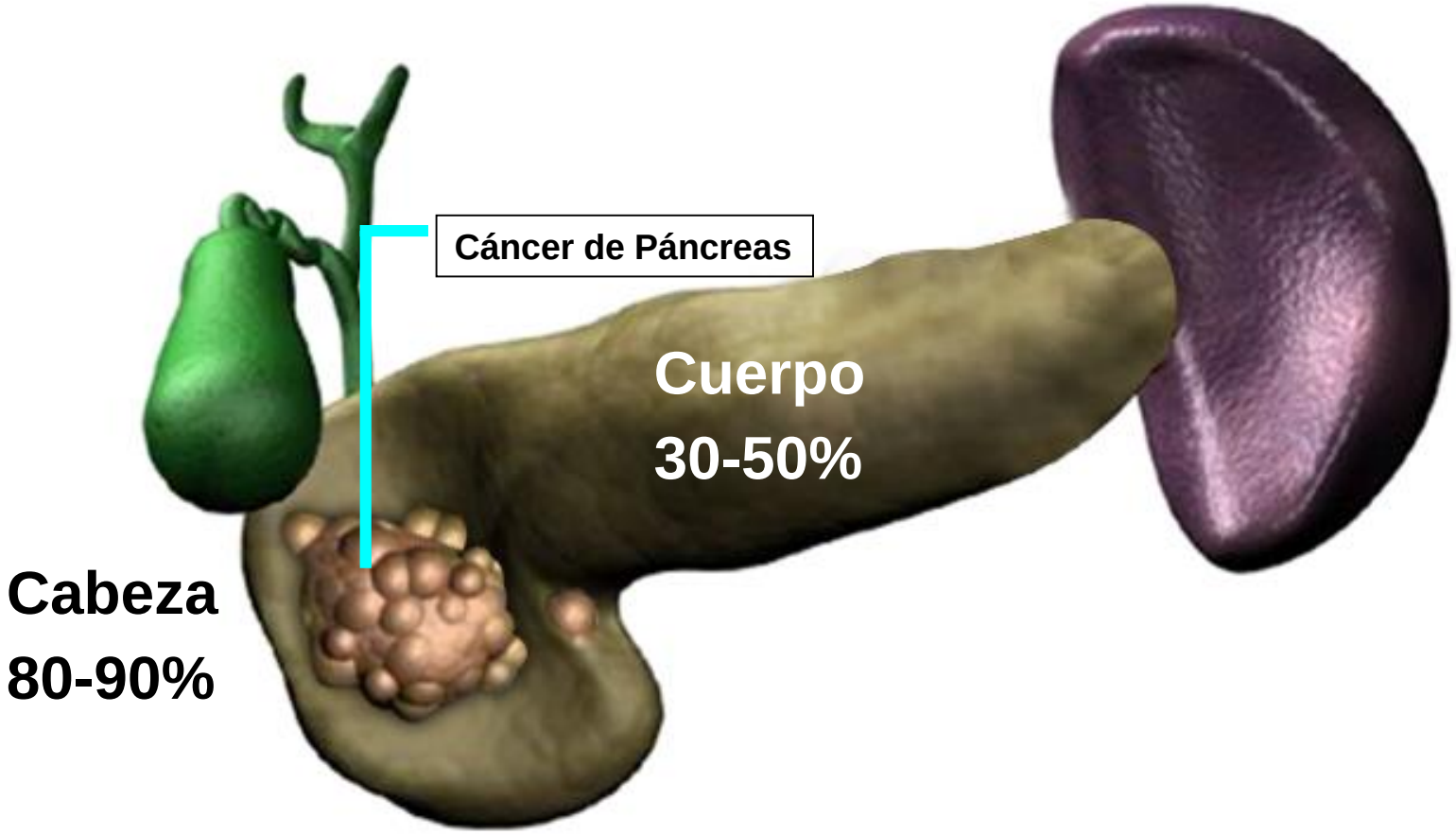
Diarrea crónica
Esteatorrea 30%

Tooli J, MJA 2010;8:461-7

Cáncer de páncreas

Cáncer de páncreas

Pérdida de peso, mala-absorción



Damerla V et al. J Support Oncol 2008;6:393-396
Sikkens EC, J ClinGastroenterol 2014;48:43-6

A Prospective Assessment of the Natural Course of the Exocrine Pancreatic Function in Patients With a Pancreatic Head Tumor

Edmée C.M. Sikkens, MD, Djuna L. Cahen, MD, PhD,* Jill de Wit, BSc,**
*Caspar W.N. Looman, MSc,† Casper van Eijck, MD, PhD,‡ and Marco J. Bruno, MD, PhD**

TABLE 2. Outcome; Pancreatic Function According to Tumor Localization at Time of Diagnosis and at the End of Follow-up

	Time of Diagnosis (N = 32)	End of Follow-up (N = 24)
Exocrine insufficiency		
All patients [no. (%)]	21 (66)	22 (92)
Pancreas	16 (67)	17 (89)
Common bile duct	4 (80)	3 (100)
Ampulla	1 (33)	2 (100)
Endocrine insufficiency		
All patients [no. (%)]	13 (41)	11 (46)
Pancreas	10 (42)	9 (42)
Common bile duct	3 (60)	3 (100)
Ampulla	0	0

2 meses

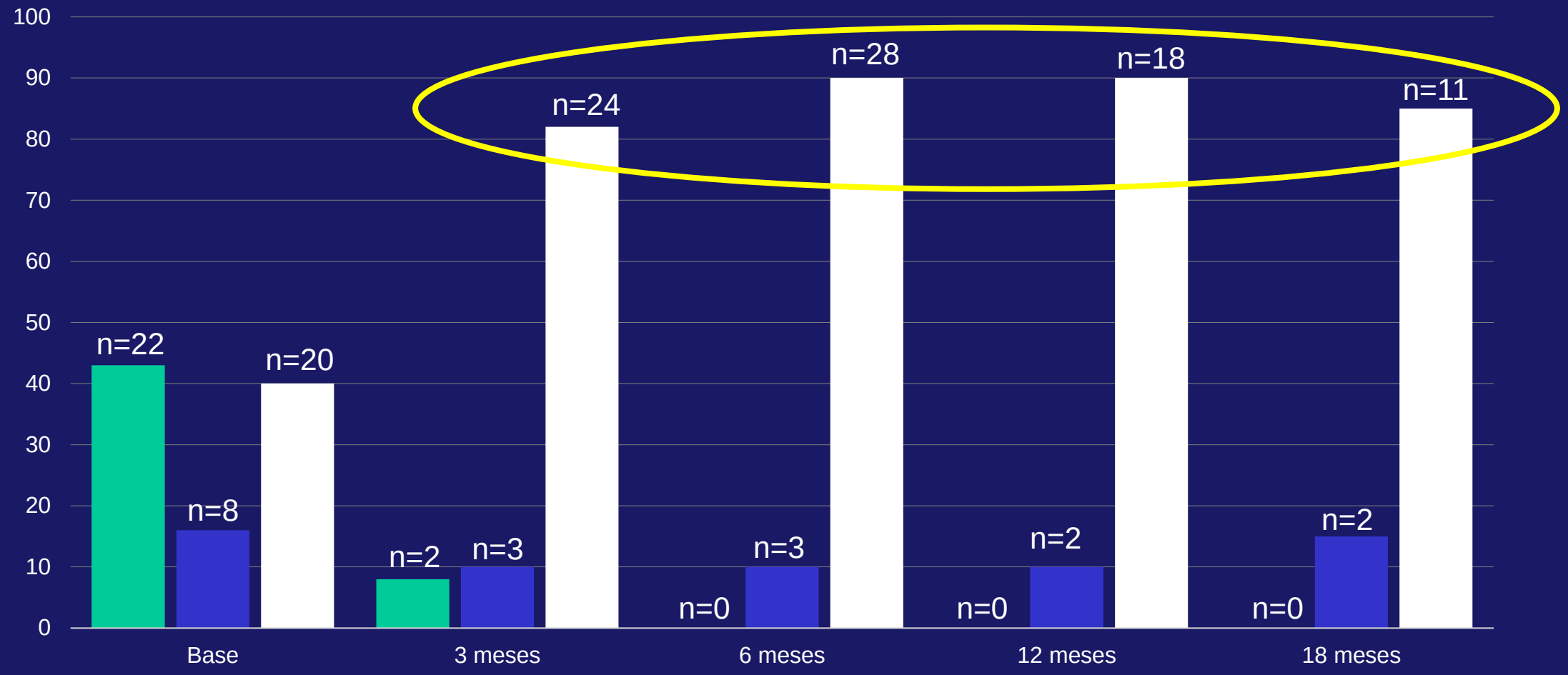
Sikkens ECM, J Clin Gastroenterol 2014;48:43–46

Leve EF 100-200u/g
Severa < 100 u/g

Pancreatic exocrine insufficiency following pancreatoduodenectomy: A prospective bi-center study

V.J. Kroon [a, 1], L.A. Daamen [a, b, 1], D.S.J. Tseng [a, 1], A. Roele- de Vreugd [a], L.J.H. Brada [a], O.R. Busch [c], T.C. Derksen [a], A. Gerritsen [a], S.J.E. Rombouts [a], F.J. Smits [a], M.S. Walma [a], R.A.W. Wennink [a], M.G. Besselink [c], H.C. van Santvoort [a, 2], I.Q. Molenaar [a, 2, *]

A los 3 meses, IPE 27/29 (93%)



Kroon VJ, et al. Pancreatology 2022; 22:1020-7

Exocrine Pancreatic Insufficiency Induced by Immune Checkpoint Inhibitors

Deepika Satish[1], I-Hsin Lin[2], James Flory[1], Hans Gerdes[1], Michael A. Postow[1,3], David M. Faleck[1,*]

12.905 pacientes tratados, 23 IPE (0.17%)

Satish D, Oncologist. 2023 Jun 7

IPE, Agenda

Definición
Etiología
Síntomas
Diagnostico
Tratamiento
Optimización tratamiento
Beneficios del tratamiento
Mensajes para la casa

IPE Manifestaciones clínicas

Síntomas Abdominales

Dolor
Bloating
Distensión
Flatulencia
Cólicos
Borborigmos

Inespecíficos!

Síntomas Intestinales

Heces malolientes
Urgencia intestinal
Diarrea
Esteatorrea
Creatorrea
Malabs CHO

Sintomas Malnutrición

Pérdida peso
IMC bajo
Sarcopenia
Cansancio
Fatiga

Domìnguez-Muñoz JE, Clínical Pancreatology 2th Edit 2021

IPE: Síntomas

Esteatorrea
Deposiciones voluminosas
Mal olientes, difíciles de expulsar del inodoro
Pérdida de vitaminas (A,D, E, K) (anual)

Lindkvist B. World J Gastroenterol 2013 ; 19: 7258-66

IPE, Agenda

Definición
Síntomas
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Sospecha de IPE

Enfermedad predisponente

Síntomas
Mala digestión
Diarrea
Flatulencia
Distensión abdominal
Dolor abdomina
Perdida peso

Evaluación Nutricional
Antropometría
Marcadores Nutricionales

Función Pancreática
Elastasa fecal
Test de aliento
TGM C^{13}
Disponible

Domìnguez-Muñoz JE, Clínical Pancreatology 2th Edit 2021
Whitcomb DC,Gastroenterology. 2023;165:1292-1301.

IPE Diagnóstico

Pruebas función Pancreática

Coeficiente absorción grasas (FDA,EMA)

Test respiratorio con Triglicéridos C^{13}

Pruebas Secreción Pancreática

CCK-P

Elastasa-1 fecal

Pruebas evalúan estado nutricional

IMC

Masa muscular

Peso

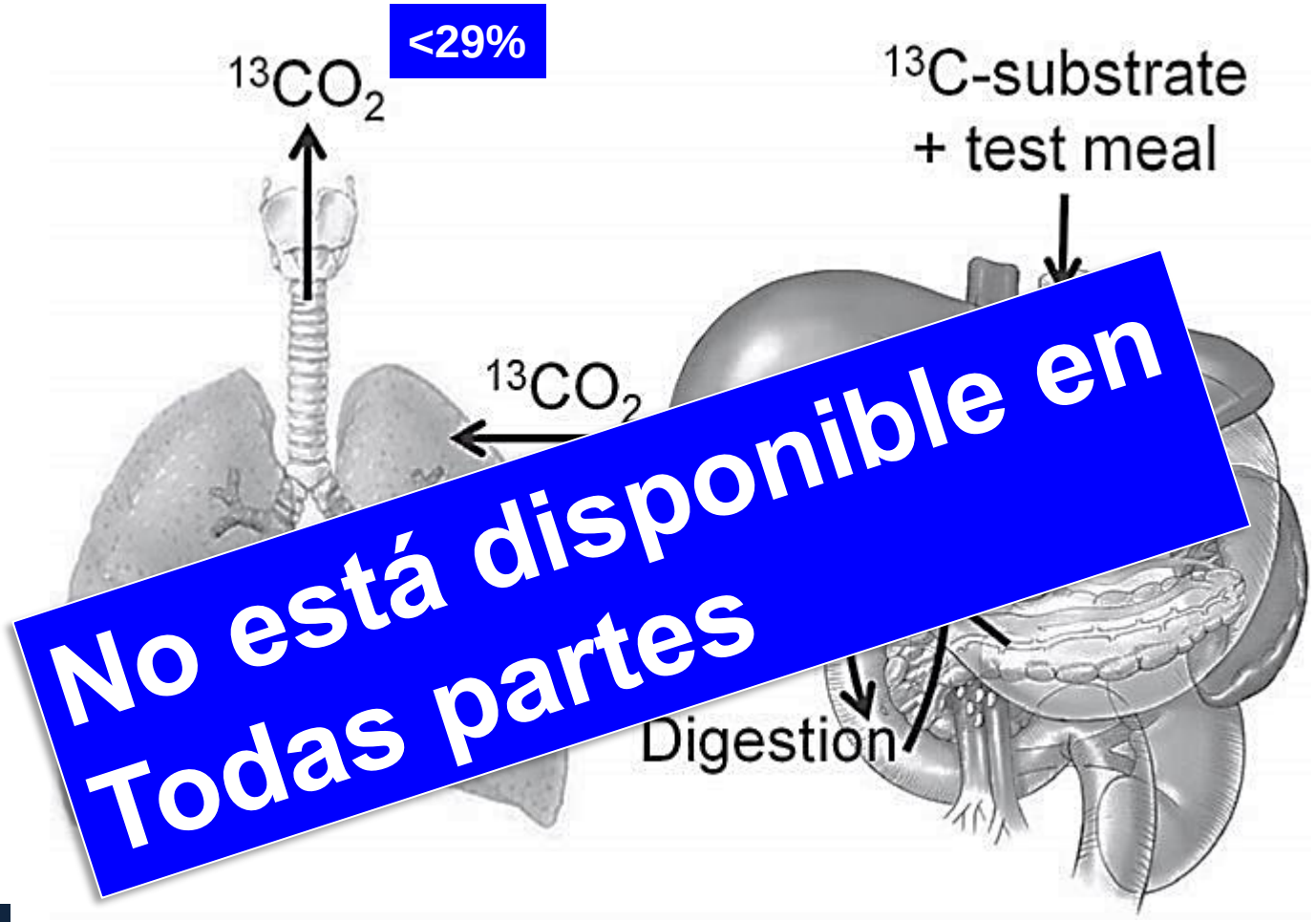
Marcadores nutricionales, Vitaminas, Magnesio

Prealbúmina, Proteína ligadora retinol

Capurso G, Clin Exp Gastroenterol 2019;12:129-39
Dominguez-Muñoz JE, Clínical Pancreatology 2th Edit 2021

Esteatorrea

Martínez J, Pancreatorology 2013;13:8-17
DiMagno EP, N Engl J Med 1973;288:813-5
Halloran CM, Pancreatoogy 2011;11:535-45



No está disponible en Todas partes

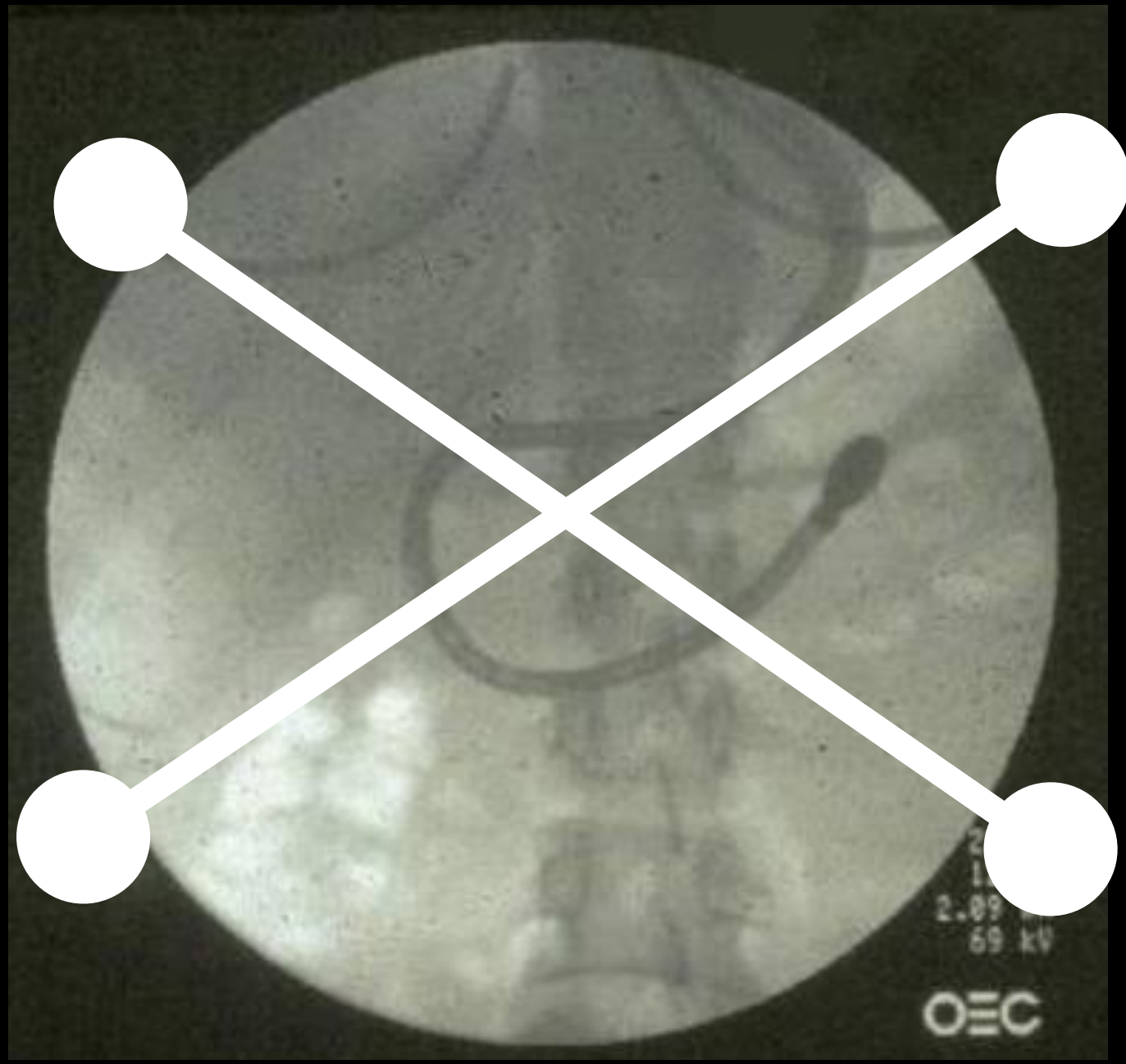
S: 92%
E: 90%

Única prueba que puede monitorear y medir el éxito de la Terapia enzimática de reemplazo
Demora 6 horas

Keller J, United Eur Gastroenterol J 2021;9:598–625.
Dominguez-Muñoz JE, J Clin Gastroenterol 2011 (Sppl.2):12-6

IPE

Pruebas de secreción pancreática


2.09
69 kV
OEC

Elastasa 1-fecal

No está disponible

Normal: >200 mcg/g

100-200 mcg/g heces: IPE Leve (S 25-65

100 mcgr/g/heces: IPE severa

S100% E97%

Baja sensibilidad en le

Falsos positivos

Sola no sirve
Debe complementarse con
Manifestaciones clínicas

Zhang J, Int J Endocrinol 2022;2022:7764963
Kuhn RJ, Adv Ther 2010;27:895-916
Sikkens ECM, Best Bract Res Clin Gastroenterol 2010;24:337-347

Severidad IPE	Sensibilidad%	Especificidad %
Leve >200ugr/gr	25-55	55-95%
Moderada 100-200 ugr/gr	33-100	
Severa < 100 ugr/gr	82-100	

Phillips Me, BMJ Open Gastro 2021;8:e000643

IPE

Marcadores nutricionales

Serum nutritional markers for prediction of pancreatic exocrine insufficiency in chronic pancreatitis

Björn Lindkvist [a,b], J. Enrique Domínguez-Muñoz [b,*], María Luaces-Regueira [b], Margarita Castiñeiras-Alvariño [b], Laura Nieto-Garcia [b], Julio Iglesias-Garcia [b]

Magnesio	Albumina	Pre Albumina	Proteìna Ligadora del Retinol	Hemoglobina Glicosilada
<2.05 mg%	<3.5 gr%	<21 mg%	<3 mg%	>6%

Dos o más

Mg < 2.05 mg% VPN: 91%, Falso negativo 9%
Normal Prácticamente descarta IPE!!!

No en otras Enfermedades

Lindkvist B, Pancreatology 2012;12:305-10

Pancreatic Elastography Predicts Endoscopic Secretin-Pancreatic Function Test Result in Patients With Early Changes of Chronic Pancreatitis: A Prospective, Cross-Sectional, Observational Study

Julio Iglesias-Garcia, MD, PhD[1,2], Jose Lariño-Noia, MD, PhD[1,2], Laura Nieto, BSN[2], Ana Alvarez-Castro, MD[1,2], Santiago Lojo, MD, PhD[3], Saul Leal, PhD[2], Daniel de la Iglesia-Garcia, MD, PhD[1,2] and J. Enrique Domínguez-Muñoz, MD, PhD[1,2]

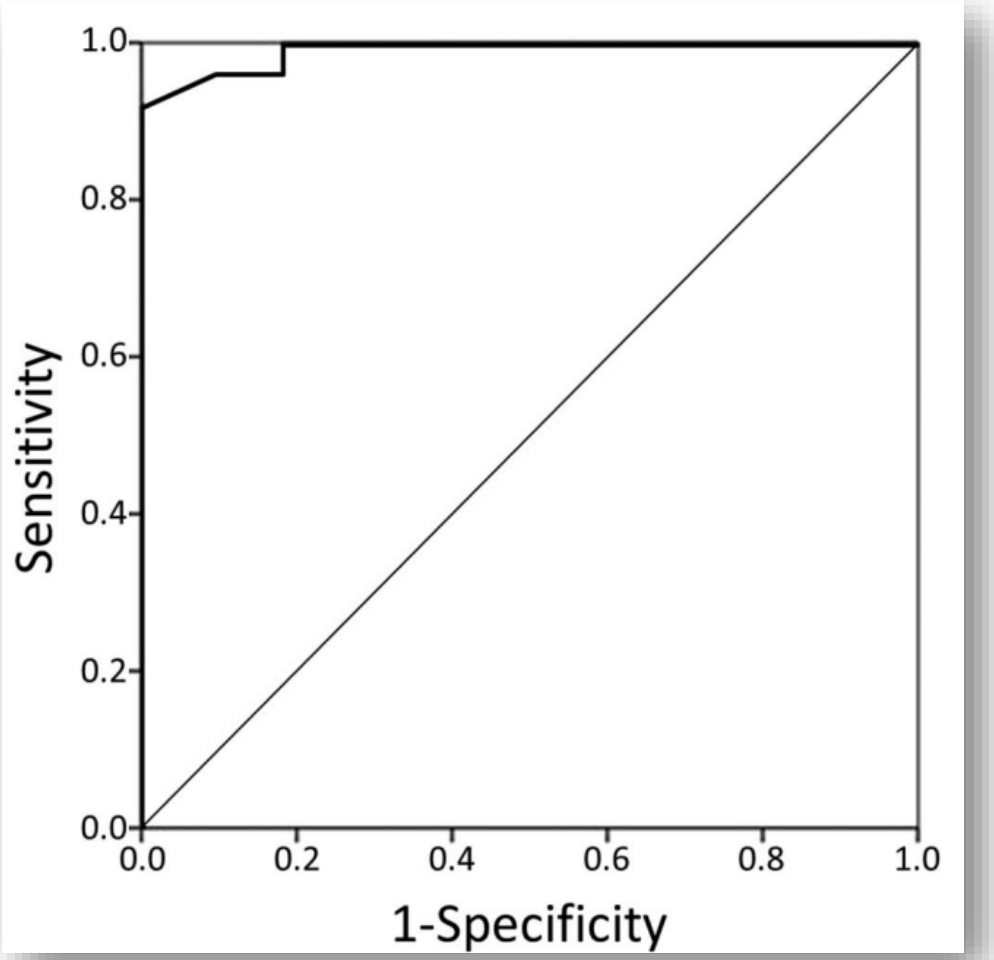


Table 1. Accuracy of endoscopic ultrasound-elastography for the diagnosis of chronic pancreatitis in patients with inconclusive pancreatic morphological findings, using the endoscopic pancreatic function test as the reference method

	Accuracy, % (95% CI)
Sensitivity	92.0 (83.5–100)
Specificity	100 (95.5–100)
Positive predictive value	100 (98.9–100)
Negative predictive value	73.3 (47.6–99.1)
Overall accuracy	93.4 (86.4–100)

A strain ratio of ≥2.88 was used as cutoff. CI, confidence ratio.

Iglesias-García J, Am J Gastroenterol 2022;117:1264-68

Mundo real

Síntomas con patologías predisponentes
Marcadores nutricionales.
Elastasa fecal
Grasa fecal + perdida peso >10%

Patologías con síntomas IPE
No justifican exámenes

Pancreatitis necrotizante severa
Cirugía pancreática
Cáncer de cabeza de páncreas
Gastrectomías parciales/totales
Pancreatitis crónica avanzada

Dominguez-Muñoz JE, Adv Med Sci 2011;56:1-5

IPE, Agenda

Definición
Síntomas
Etiología
Diagnostico
Tratamiento
Optimización tratamiento
Beneficios del tratamiento
Mensajes para la casa

La IPE Siempre debe tratarse Sin importar la causa!

Objetivos del tratamiento enzimático

Digerir la comida ingerida
Disminuir los síntomas
Diarrea, Flatulencia
Dolor abdominal
Mejorar nutrición

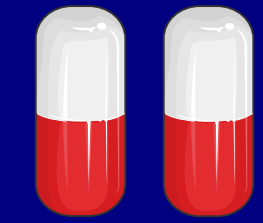
< Riesgo Cardiovascular
Infecciones, Osteoporosis

Mejorar calidad de vida

Domínguez-Muñoz E, J Gastroenterol Hepatol 2011;26 :12-6
Duggan S, Clin gastroenterol Hepatol 2014;12:219-28
Australian Guidelines, Pancreatology 2016;16:164-80

Dosis de enzimas Lipasa

Con cada comida



25000 25000

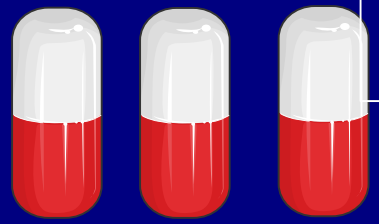
Eficacia

60%

Optimizar

25000 25000 25000

Diarrea, Esteatorrea
Pérdida de peso
Distensión
Marcadores nutricionales



25000 25000 25000

70%

40000 40000

Refrigerios

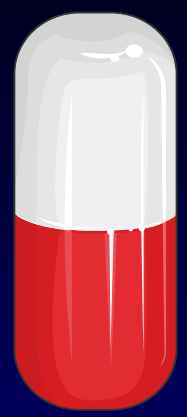
10000 25000

MD Internista, Cirujano
Endocrinólogo, general

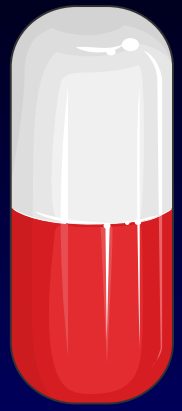
Lohr JM, Un Eur Gastroenterol J 2017; 5: 153-199
Otero W, 2022 en prensa

Dosis de enzimas Lipasa

Cáncer de Páncreas
Dosis mínima



25000



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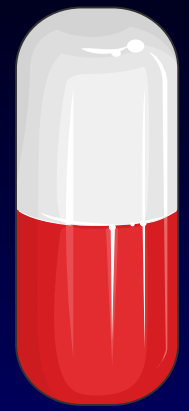
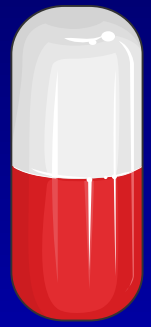


25000

Refrigerios



Dominguez-Muñoz JE, 2020

Dieta normal

No restringir grasas

Poca grasa

< vitaminas Liposolubles A,D,E

Vitamina D

Bastante grasa

>>> eficacia enzimática

Todos los expertos

Pancrelipasa mini micro esferas
5.000, 10.000, 25.000 Unidades Lipasa

United European Gastroenterology evidence-based guidelines for the diagnosis and therapy of chronic pancreatitis (HaPanEU)

United European Gastroenterology Journal
2017, Vol. 5(2) 153–199

DOI: 10.1177/2050640616684695
journals.sagepub.com/home/ueg
SAGE

J Matthias Löhr[1], Enrique Dominguez-Munoz[2], Jonas Rosendahl[3], Marc Besselink[4], Julia Mayerle[25], Markus M Lerch[5], Stephan Haas[1], Fatih Akisik[6], Nikolaos Kartalis[7], Julio Iglesias-Garcia[2], Jutta Keller[9], Marja Boermeester[4], Jens Werner[10], Jean-Marc Dumonceau[11], Paul Fockens[4,8], Asbjorn Drewes[12], Gürlap Ceyhan[13], Björn Lindkvist[14], Joost Drenth[15], Nils Ewald[16], Philip Hardt[16], Enrique de Madaria[17], Heiko Witt[18], Alexander Schneider[19], Riccardo Manfredi[20], Frøkjer J Brøndum[21], Sasa Rudolf[22], Thomas Bollen[23] and Marco Bruno[24]; HaPanEU/UEG Working Group

Q4-2.2: What are the enzyme preparations of choice?

Statement 4-2.2. Enteric-coated microspheres or mini-microspheres of <2 mm in size are the preparations of choice for PEI. Micro- or mini-tablets of 2.2–2.5 mm in size may be also effective, although scientific evidence in the context of CP is more limited. Comparative clinical trials of different enzyme preparations are lacking. **(GRADE 1B, strong agreement)**

coated tablets. It has been shown that mini-microspheres of 1.0–1.2 mm in diameter are emptied simultaneously with the meal and are associated with higher therapeutic efficacy compared to 1.8–2.0 mm

Falta de Respuesta

IBP: pH >5

SIBO: 92% PC, 2da causa diarrea

Rifaximina 550 mg 3V/14 d

Aumentar dosis de lipasa

Fibra contraindicada *< 50% lipasa*

Dominguez-Muñoz JE, Curr Gastroenterol Rep 2007;9:116-22
Forsmark CE. Curr Treat Options Gastroenterol. 2018;16:306–15.
Capurso G, Un Eur Gastroenterol J 2016;4:697-705

IPE, Agenda

Definición
Síntomas
Etiología
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Optimización tratamiento
Beneficios del tratamiento
Mensajes para la casa

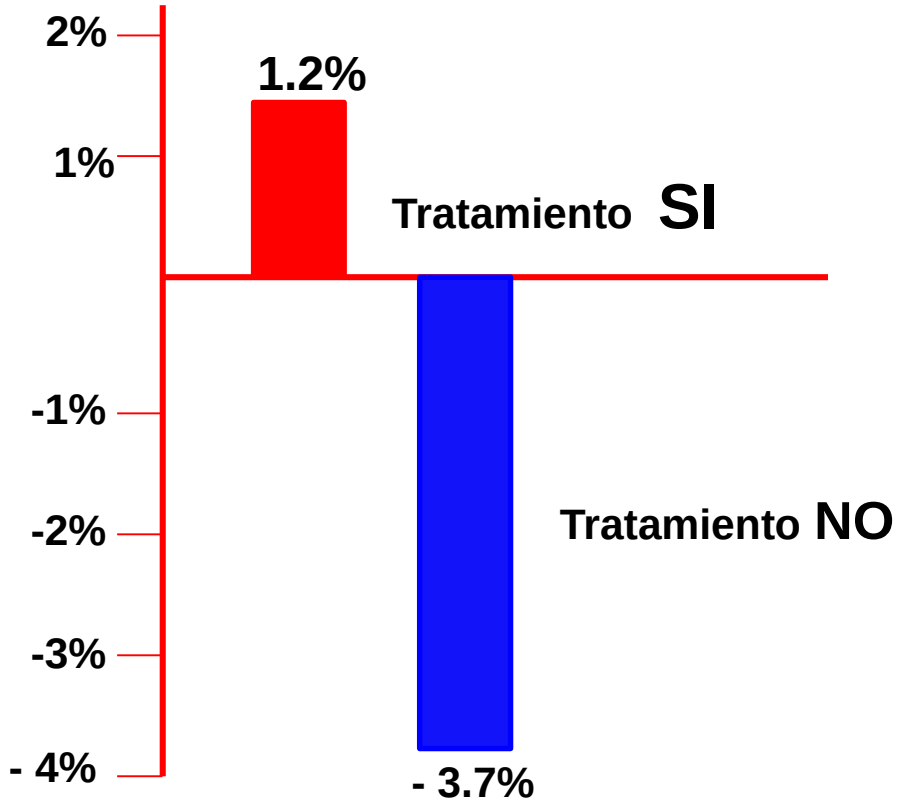
Cáncer de páncreas

Placebo controlled trial of enteric coated pancreatin microsphere treatment in patients with unresectable cancer of the pancreatic head region

M J Bruno, E B Haverkort, G P Tijssen, G N J Tytgat, D J van Leeuwen

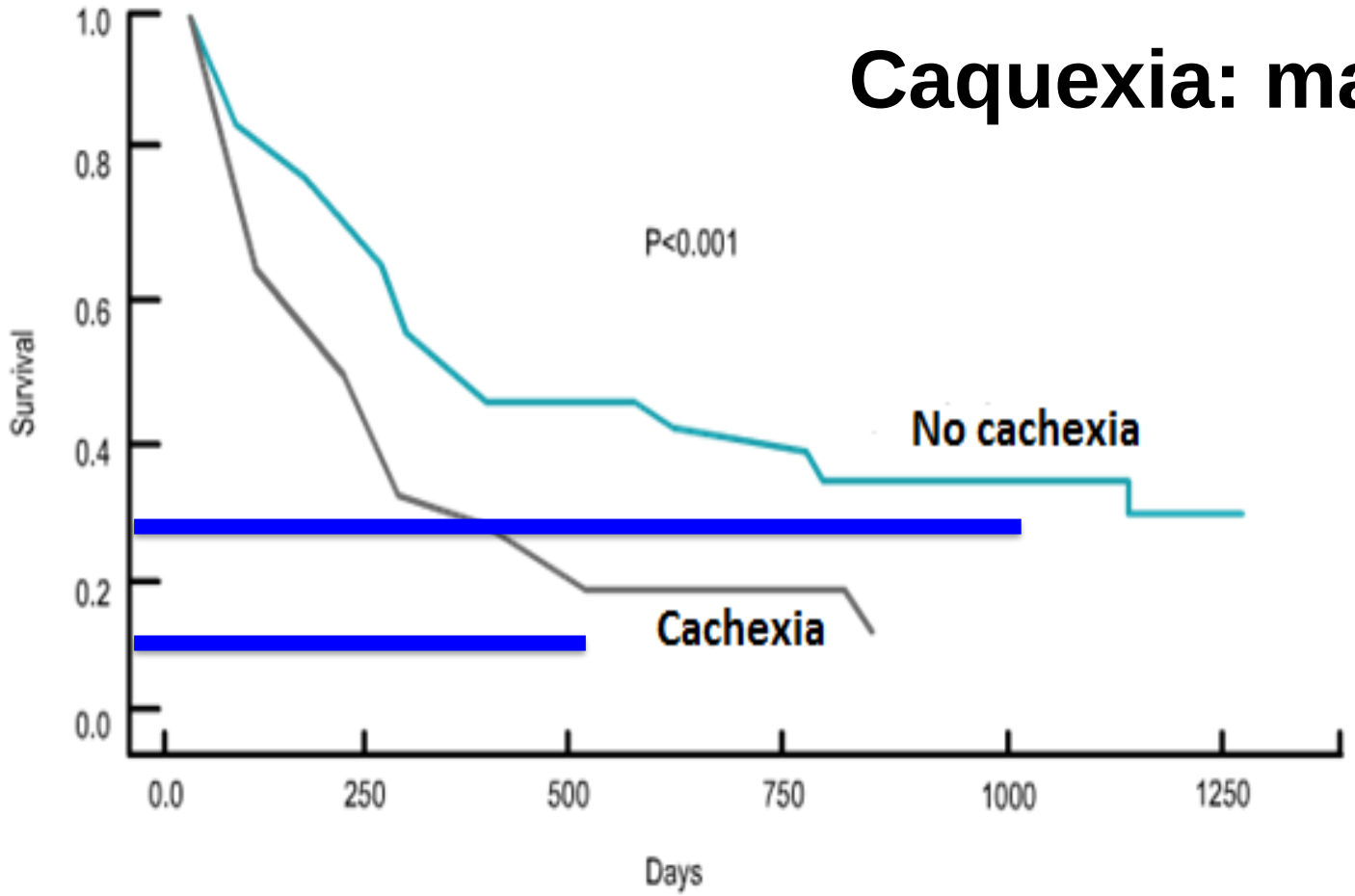
Gut 1998;42:92-96

Cancer de Páncreas inoperable



Càncer de pàncreas

Sobrevida

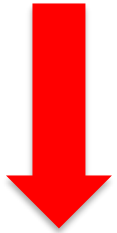


Caquexia: mal pronóstico

Bachmann J et al. *BMC Cancer* 2009;9:255-263,
Damerla V et al. *J Support Oncol* 2008;6:393-396.

Cáncer de páncreas con terapia de reemplazo enzimático

>> Tolerancia quimioterapia



Mejor Calidad de vida

>> Sobrevida promedio 189 vs 95 días, p<0.001

Domínguez-Muñoz E, BMC Cancer 2018;18:534

Pancreatitis crónica

Efficacy of pancreatic enzyme replacement therapy in chronic pancreatitis: systematic review and meta-analysis

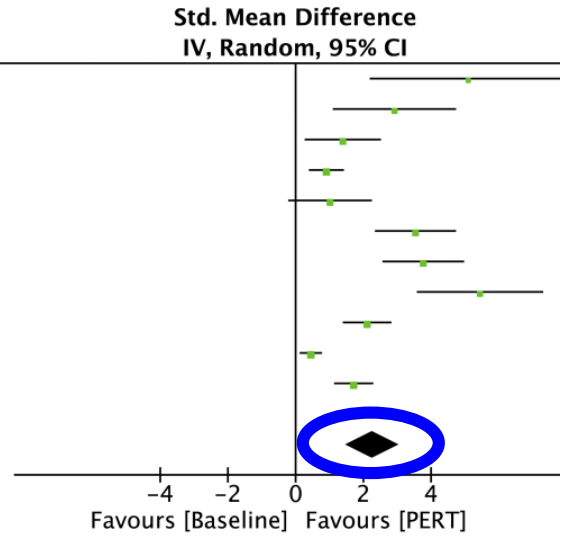
Daniel de la Iglesia-García,[1,2] Wei Huang,[1,3] Peter Szatmary,[1] Iria Baston-Rey,[2] Jaime Gonzalez-Lopez,[4] Guillermo Prada-Ramallal,[5] Rajarshi Mukherjee,[1] Quentin M Nunes,[1] J Enrique Domínguez-Muñoz,[2] Robert Sutton,[1] NIHR Pancreas Biomedical Research Unit Patient Advisory Group[1]

Gut 2017;66:1474–1486.

Coeficiente de absorción de grasa

Study or Subgroup	PERT Mean	PERT SD	PERT Total	Baseline Mean	Baseline SD	Baseline Total	Weight	Std. Mean Difference IV, Random, 95% CI	Year
Graham 1979	77.6	6.72	5	36	8	6	4.4%	5.10 [2.19, 8.01]	1979
Dutta 1983	85	5.12	6	69	5	6	7.2%	2.92 [1.10, 4.74]	1983
Lankisch 1986	76.77	10.45	8	40.6	33.1	8	9.4%	1.39 [0.27, 2.52]	1986
Paris 1993	74.2	11.25	32	50.5	34.65	32	11.2%	0.91 [0.39, 1.43]	1993
Opekun Jr 1997	83.97	9.17	6	60	29.39	6	9.1%	1.02 [-0.22, 2.25]	1997
O´Keefe 2001	80.8	3.8	15	54	9.7	15	9.2%	3.54 [2.34, 4.74]	2001
Vecht 2006	75.5	5.47	16	49	8	16	9.2%	3.77 [2.56, 4.97]	2006
Safdi 2006	86.6	2.7	12	49.9	8.8	12	7.0%	5.44 [3.58, 7.31]	2006
Whitcomb 2010	85.6	6.3	24	54.5	19.5	24	10.7%	2.11 [1.39, 2.83]	2010
Toskes 2011	89.37	9.64	72	81.68	22.13	72	11.5%	0.45 [0.12, 0.78]	2011
Thorat 2012	86.1	7.5	32	66.5	14.1	32	11.1%	1.71 [1.14, 2.29]	2012
Total (95% CI)			**228**			**229**	**100.0%**	**2.28 [1.50, 3.06]**	

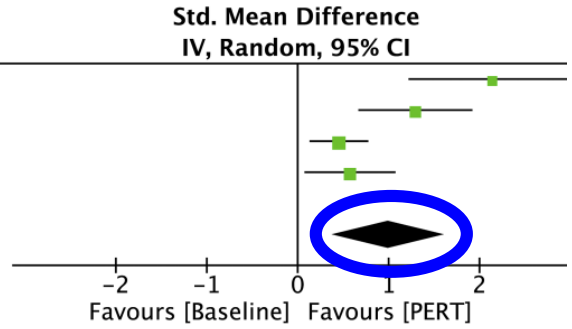
Heterogeneity: $Tau^2 = 1.34$; $Chi^2 = 92.64$, df = 10 ($P < 0.00001$); $I^2 = 89\%$
Test for overall effect: $Z = 5.75$ ($P < 0.00001$)



Coeficiente de absorción de Nitrógeno

Study or Subgroup	PERT Mean	PERT SD	PERT Total	Baseline Mean	Baseline SD	Baseline Total	Weight	Std. Mean Difference IV, Random, 95% CI	Year
O´Keefe 2001	86.8	2.2	15	80.5	3.4	15	18.8%	2.14 [1.22, 3.06]	2001
Whitcomb 2010	13	45.4	24	-78.4	87.1	24	24.4%	1.29 [0.67, 1.92]	2010
Toskes 2011	84.8	9.2	75	78.1	18.6	76	30.0%	0.45 [0.13, 0.78]	2011
Thorat 2012	83.8	6.9	32	78.8	10	32	26.8%	0.57 [0.07, 1.08]	2012
Total (95% CI)			**146**			**147**	**100.0%**	**1.01 [0.39, 1.62]**	

Heterogeneity: $Tau^2 = 0.30$; $Chi^2 = 15.28$, df = 3 ($P = 0.002$); $I^2 = 80\%$
Test for overall effect: $Z = 3.22$ ($P = 0.001$)



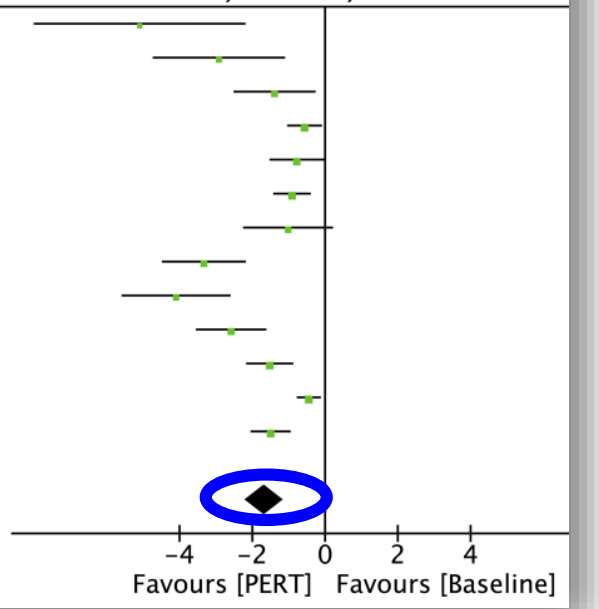
de la Iglesia-García D, et al. Gut 2017;66:1474–1486.

Excreción de grasa fecal

Study or Subgroup	PERT Mean	PERT SD	PERT Total	Baseline Mean	Baseline SD	Baseline Total	Weight	Std. Mean Difference IV, Random, 95% CI	Year
Graham 1979	22.4	6.72	5	64	8	6	2.5%	−5.10 [−8.01, −2.19]	1979
Dutta 1983	15	5.12	6	31	5	6	4.7%	−2.92 [−4.74, −1.10]	1983
Lankisch 1986	23.23	10.45	8	59.3	33.1	8	7.2%	−1.39 [−2.52, −0.26]	1986
Guoerou 1989	13.11	10.19	35	23.05	22.47	35	9.9%	−0.56 [−1.04, −0.09]	1989
Jorgensen 1991	18.11	6.63	15	25.92	12.11	15	8.9%	−0.78 [−1.52, −0.03]	1991
Paris 1993	25.8	11.25	32	49.5	34.65	32	9.8%	−0.91 [−1.43, −0.39]	1993
Opekun Jr 1997	16.03	9.17	6	40	29.39	6	6.8%	−1.02 [−2.25, 0.22]	1997
O´Keefe 2001	20.3	4.3	15	48	10.6	15	7.1%	−3.33 [−4.49, −2.18]	2001
Safdi 2006	18.6	4	12	75.1	18.4	12	5.8%	−4.10 [−5.60, −2.60]	2006
Vecht 2006	18.1	5.08	16	36.5	8.4	16	7.9%	−2.58 [−3.55, −1.62]	2006
Whitcomb 2010	14.4	20.8	24	45.6	19.5	24	9.3%	−1.52 [−2.17, −0.87]	2010
Toskes 2011	10.63	9.64	72	18.32	22.13	72	10.3%	−0.45 [−0.78, −0.12]	2011
Thorat 2012	16.2	9.6	32	37.3	17	34	9.7%	−1.50 [−2.05, −0.95]	2012
Total (95% CI)			**278**			**281**	**100.0%**	**−1.66 [−2.19, −1.13]**	

Heterogeneity: $Tau^2 = 0.68$; $Chi^2 = 74.45$, df = 12 ($P < 0.00001$); $I^2 = 84\%$

Test for overall effect: $Z = 6.16$ ($P < 0.00001$)



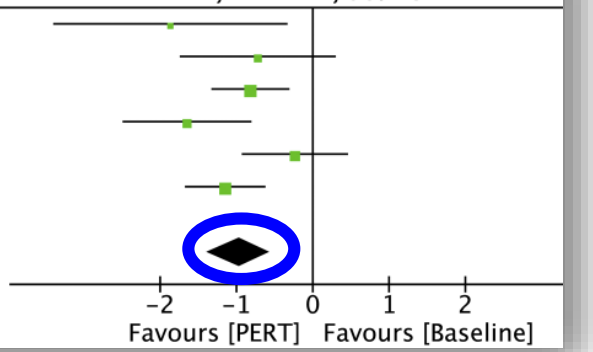
de la Iglesia-García D, et al. Gut 2017;66:1474–1486.

Excreción de Nitrógeno Fecal

Study or Subgroup	PERT Mean	PERT SD	PERT Total	Baseline Mean	Baseline SD	Baseline Total	Weight	Std. Mean Difference IV, Random, 95% CI	Year
Graham 1979	771.5	224.25	5	1,299	283	6	6.1%	−1.87 [−3.40, −0.33]	1979
Lankisch 1986	310.62	169.93	8	436	159.28	8	11.6%	−0.72 [−1.74, 0.30]	1986
Paris 1993	278	101.5	32	416	213	32	24.7%	−0.82 [−1.33, −0.31]	1993
O´Keefe 2001	267	44	15	360	64	15	14.9%	−1.65 [−2.49, −0.80]	2001
Vecht 2006	362.67	184.08	16	396	68	16	18.7%	−0.23 [−0.93, 0.46]	2006
Thorat 2012	423	208	31	714	284	34	24.1%	−1.15 [−1.67, −0.62]	2012
Total (95% CI)			**107**			**111**	**100.0%**	**−0.96 [−1.38, −0.55]**	

Heterogeneity: $Tau^2 = 0.11$; $Chi^2 = 9.04$, df = 5 (P = 0.11); $I^2 = 45\%$

Test for overall effect: Z = 4.58 (P < 0.00001)

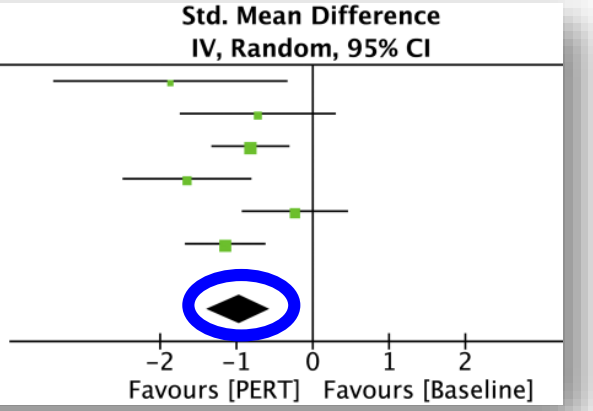


Peso Fecal

Study or Subgroup	PERT Mean	PERT SD	PERT Total	Baseline Mean	Baseline SD	Baseline Total	Weight	Std. Mean Difference IV, Random, 95% CI	Year
Graham 1979	771.5	224.25	5	1,299	283	6	6.1%	−1.87 [−3.40, −0.33]	1979
Lankisch 1986	310.62	169.93	8	436	159.28	8	11.6%	−0.72 [−1.74, 0.30]	1986
Paris 1993	278	101.5	32	416	213	32	24.7%	−0.82 [−1.33, −0.31]	1993
O´Keefe 2001	267	44	15	360	64	15	14.9%	−1.65 [−2.49, −0.80]	2001
Vecht 2006	362.67	184.08	16	396	68	16	18.7%	−0.23 [−0.93, 0.46]	2006
Thorat 2012	423	208	31	714	284	34	24.1%	−1.15 [−1.67, −0.62]	2012
Total (95% CI)			**107**			**111**	**100.0%**	**−0.96 [−1.38, −0.55]**	

Heterogeneity: $Tau^2 = 0.11$; $Chi^2 = 9.04$, df = 5 (P = 0.11); $I^2 = 45\%$

Test for overall effect: Z = 4.58 (P < 0.00001)



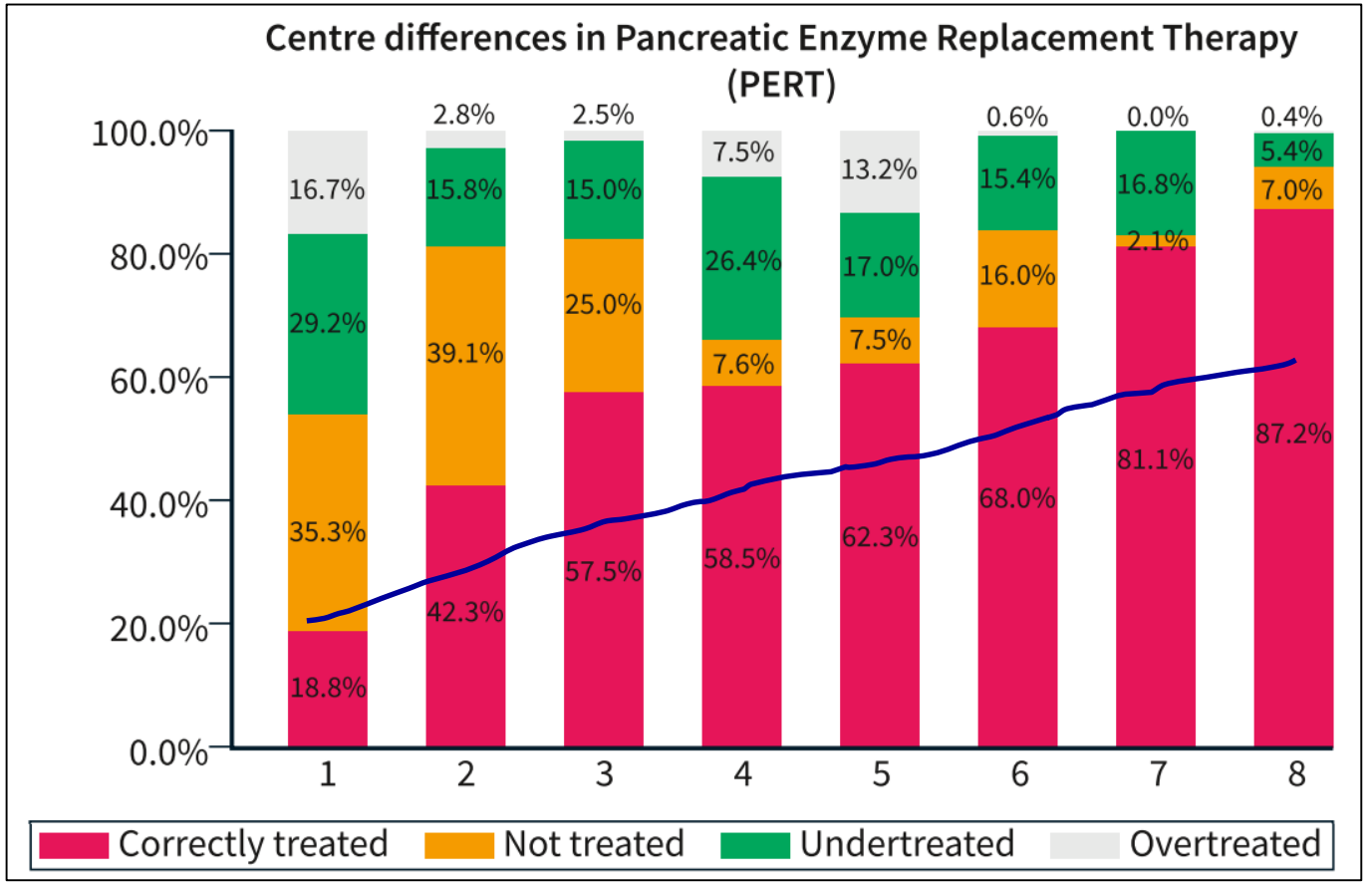
de la Iglesia-García D, et al. Gut 2017;66:1474–1486.

ORIGINAL ARTICLE

ueg journal WILEY

Pancreatic enzyme treatment in chronic pancreatitis: Quality of management and adherence to guidelines–A cross-sectional observational study

Friedemann Erchinger[1] | Erling Tjora[2] | Ingrid Kvåle Nordaas[3] | Georg Dimcevski[1] | Søren Schou Olesen[4] | Nanna Jensen[5] | Eva Efsen Dahl[5] | Anders Borch[6] | Camilla Nøjgaard[7] | Srdan Novovic[7] | Giedrus Barauskas[8] | Povilas Ignatavicius[8] | Miroslav Vujasinovic[9,10] | Matthias Lőhr[11] | Johanna Laukkarinen[12] | Mikael Parhiala[12] | Asbjørn Mohr Drewes[4] | Trond Engjom[3]



Erchinger F, et al. United European Gastroenterol J. 2022;10:844-53.

Mensajes para la casa

La IPE alto riesgo cardiovascular.
Síntomas y patologías predisponentes
IPE siempre debe tratarse con enzimas
Tratamiento enzimático > sobrevida Cáncer
Mínimo 50.000 U con cada comida
Mini-micro-esferas medicamento ideal
Todos los médicos podrían tratarla

Muchas gracias!

SOCIEDAD ECUATORIANA DE ENDOSCOPIA DIGESTIVA

SOCENDI