Percorsi diagnostico-terapeutici in endoscopia digestiva

Ferrara 13 aprile 2018

Aula Magna Ospedale di Cona (FE)

I percorsi diagnostici e terapeutici dei NET pancreatici e gastrointestinali

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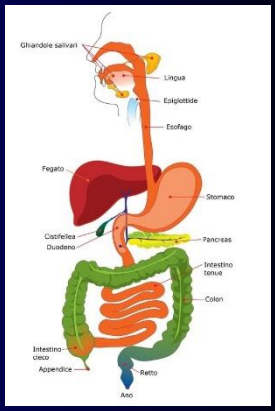
NET PANCREATICI E GASTROINTESTINALI



DEFINIZIONE

- Neoplasie che originano dal sistema endocrino diffuso, presente nel pancreas e nel tratto gastroenterico
- Esistono almeno 16 differenti tipi di «cellule endocrine» nell'apparato digerente
- Da (almeno) 8 di queste, possono originare neoplasie

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CLINICAL MANIFESTATIONS

CLINICALLY FUNCTIONING	CLINICALLY NON-FUNCTIONING
Hypersecretion of active hormones	Lack of hormone secretion
SPECIFIC SYNDROME	NO SPECIFIC SYNDROME

Oberg K et al. Ann Oncol 2004, 15: 966–973

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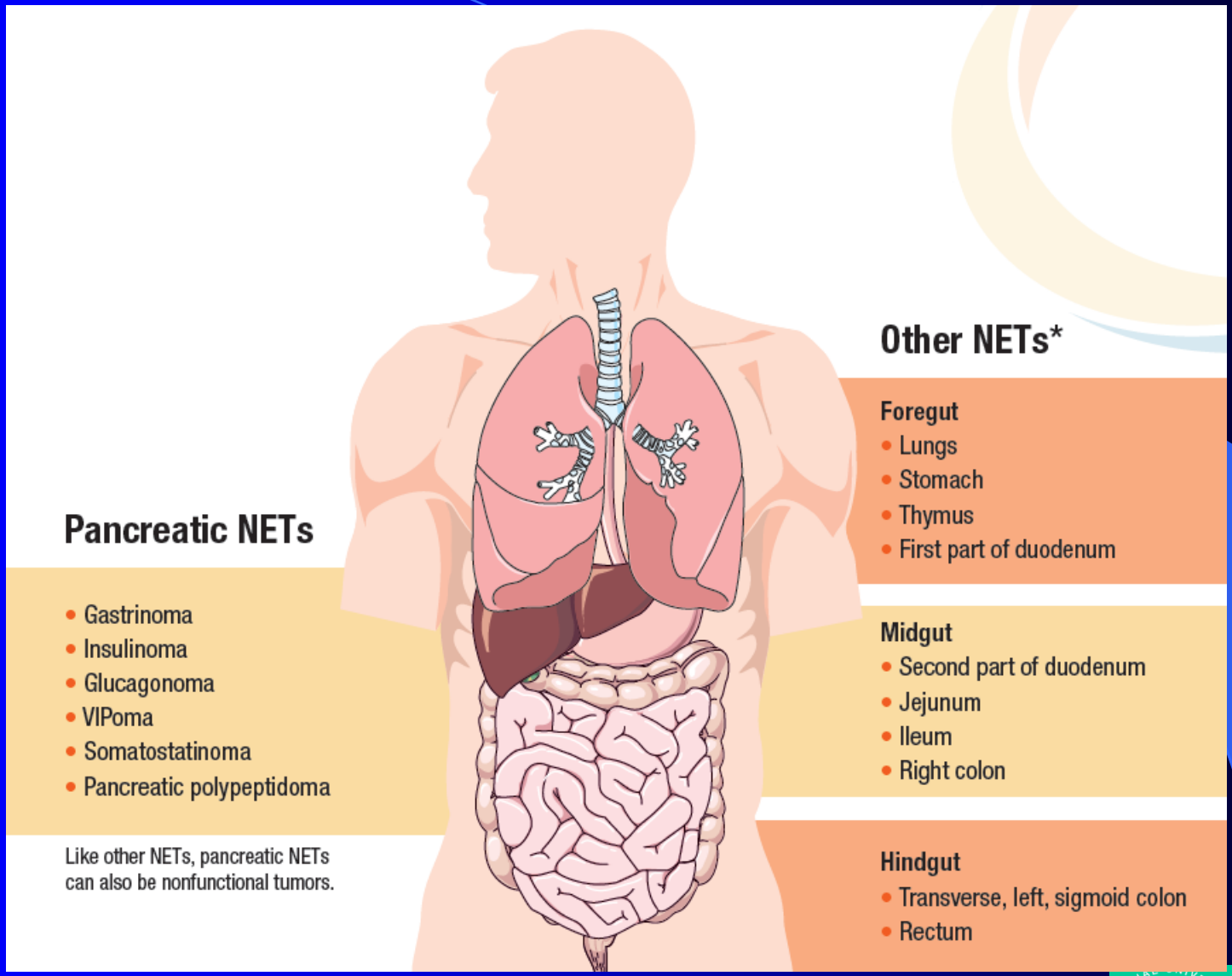

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FAMILY HISTORY

NETs may occur as part of familial endocrine cancer syndrome such as

- MEN 1
- MEN 2
- MEN 4
- Neurofibromatosis Type 1 (NF1)
- Von Hippel Lindau Syndrome
- Carney's Complex
- Familial paraganglioma/pheochromocytoma

Frequency in these syndromes

- carcinoid < 1%
- pancreatic endocrine tumors 80%-100%
  insulinomas 5%-20%, gastrinomas 25%-30%, non-functioning > 50%

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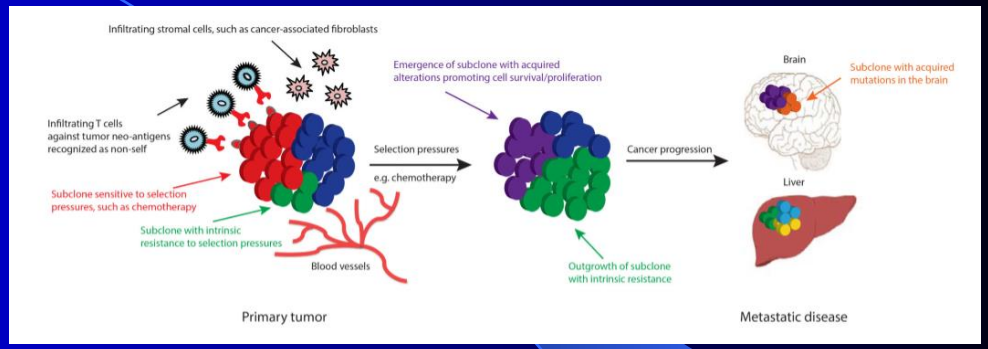
Extreme heterogeneity

in terms of

- ❑ biological variability
- ❑ speed of progression
- ❑ response to therapies



Jamal-Hanjani M et al et al Clin Cancer Res. 2015 ;21(6): 1258

WHO classification systems of gastroenteropancreatic neuroendocrine neoplasms

WHO 2000 GI	WHO 2000 Appendix	WHO 2004 Pancreas	WHO 2010 GEP	WHO 2017 Pancreas
Well-differentiated endocrine tumour Benign: limited to mucosa and submucosa, without angioinvasion, ≤1 cm in size (for stomach and small intestine), ≤2 cm in size (colon and rectum) Uncertain behaviour: limited to mucosa and submucosa with angioinvasion and/or >1 cm (stomach and small intestine), >2 cm in size (colon, rectum)	Well-differentiated endocrine tumour Benign: limited to the appendix wall (without extension into mesoappendix), without angioinvasion, ≤2 cm in size Uncertain behaviour: limited to subserosa with angioinvasion or >2 cm in size	Well-differentiated endocrine tumour Benign: confined to the pancreas, without angioinvasion, no perineural invasion, <2 cm in diameter, 2 mitoses/10 HPF and <2% Ki-67 positive cells Uncertain behaviour: confined to pancreas and ≥1 of following features: ≥2 cm in diameter, 2–10 mitoses/10 HPF, >2% Ki-67 positive cells, angioinvasion, perineural invasion	NET G1 <2 mitoses/10 HPF and/or ≤2% Ki-67 index	NET G1 <2 mitoses/10 HPF and/or <3% Ki-67 index
Well-differentiated endocrine carcinoma Invasion beyond submucosa or metastatic disease	Well-differentiated endocrine carcinoma Invasion of mesoappendix and/or metastatic disease	Well-differentiated endocrine carcinoma Gross local invasion and/or metastatic disease	NET G2 2–20 mitoses/10 HPF and/or >3–20% Ki-67 index	NET G2 2–20 mitoses/10 HPF and/or 3–20% Ki-67 index
Poorly differentiated endocrine carcinoma	Poorly differentiated endocrine carcinoma	Poorly differentiated endocrine carcinoma >10 mitoses/10 HPF	NEC G3 (large cell or small cell type) >20 mitoses/10 HPF and/or >20% Ki-67 index	NET G3 (well-differentiated neoplasm) >20 mitoses/10 HPF and/or >20% Ki-67 index
				NEC/neuroendocrine carcinoma G3 (large cell or small cell type) >20 mitoses/10 HPF and/or >20% Ki-67 index

GI, gastrointestinal t; HPF, high-power field; NET, neuroendocrine tumour; NEC, neuroendocrine carcinoma.

Chai SM et al. Histopathology 2018;72:153

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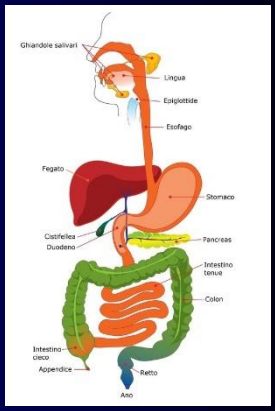


~2% of all the GI tumors

global clinical incidence ➔ 2.5-5 cases/100 000 per year

autoptical incidence ➔ 2-5 times higher than clinical incidence

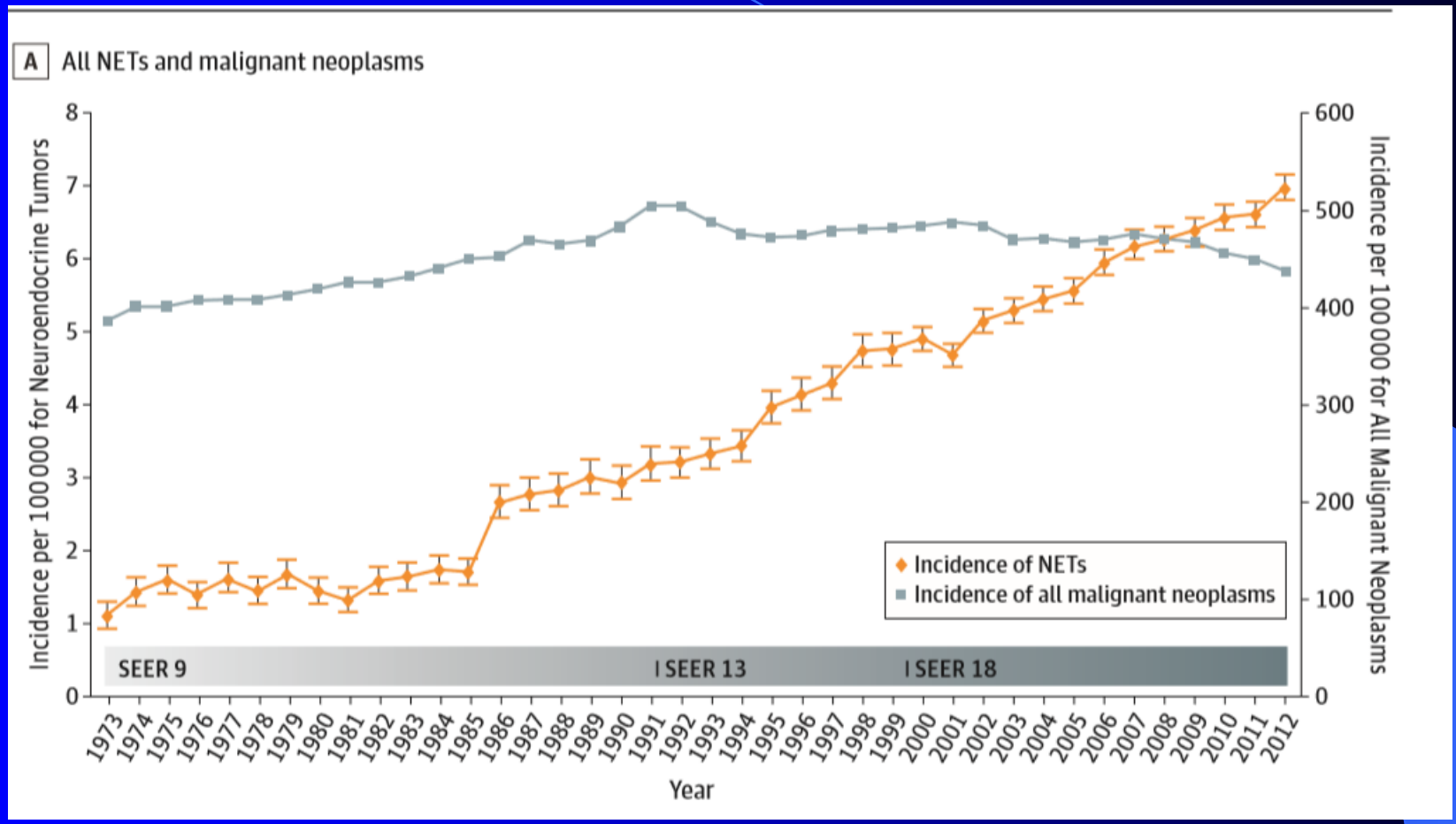
slight predominance in females

estimated prevalence 35/100,000 in the United States
outstripping the prevalence of esophageal cancer, gastric cancer and pancreatic cancer

Yao et al JCO 2008

Incidence Trends of Neuroendocrine Tumors (NETs) From 1973 to 2012

Annual age-adjusted incidence of all neuroendocrine tumors and all malignant neoplasms



Dasari et al JAMAOncol.2017;3(10):1335

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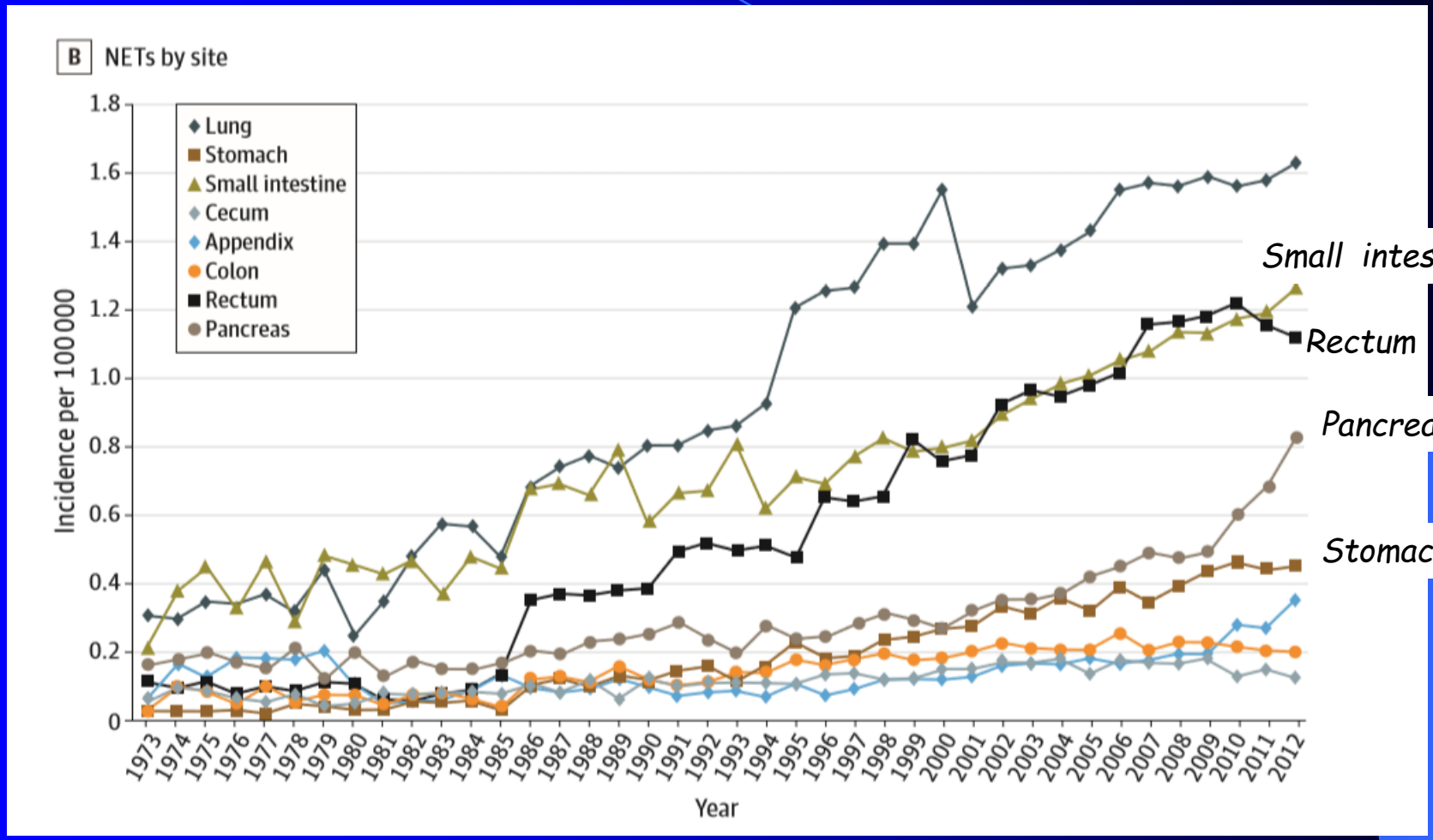
Incidence Trends of Neuroendocrine Tumors (NETs) From 1973 to 2012

Annual age-adjusted incidence of NETs by site



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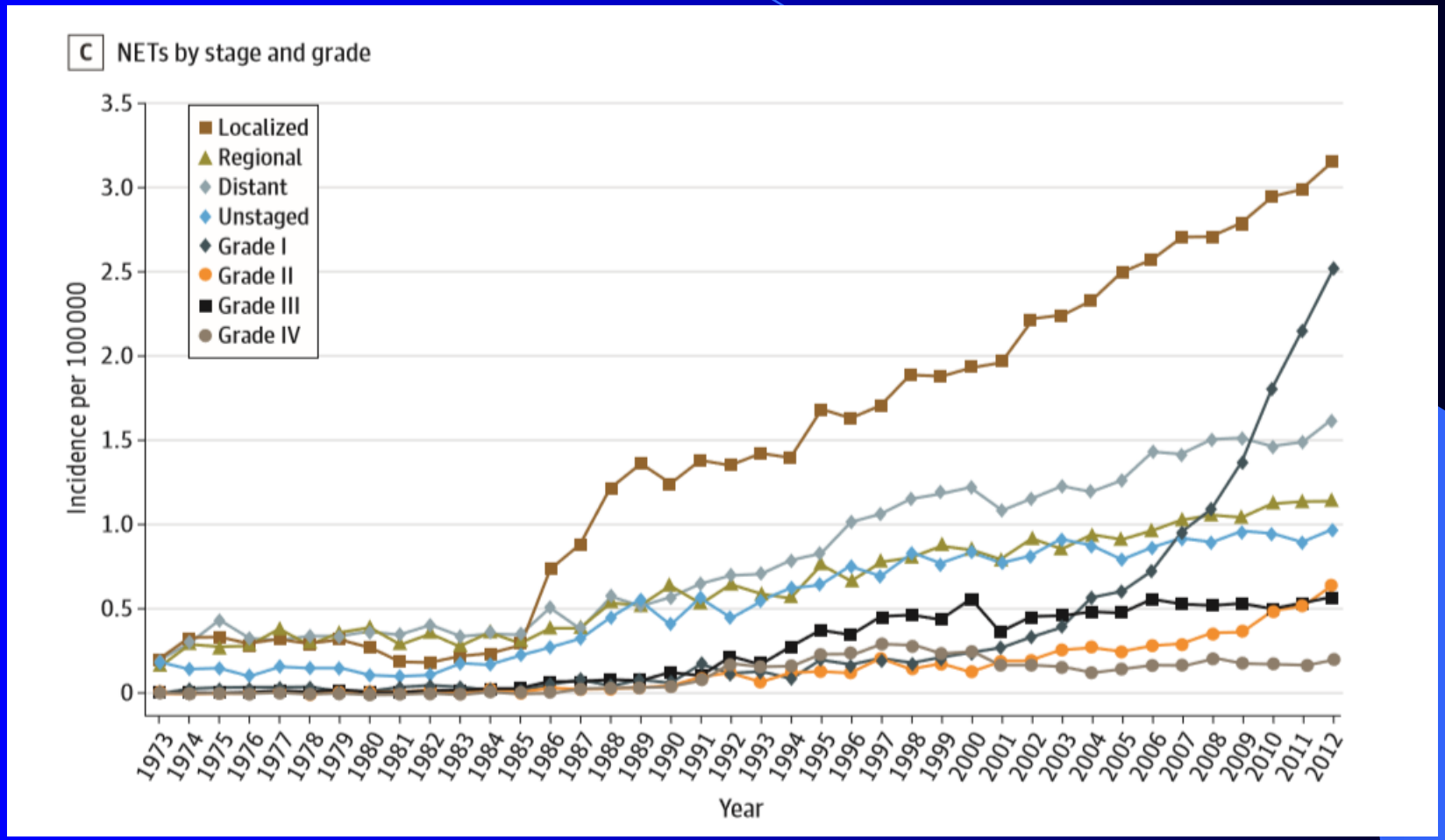
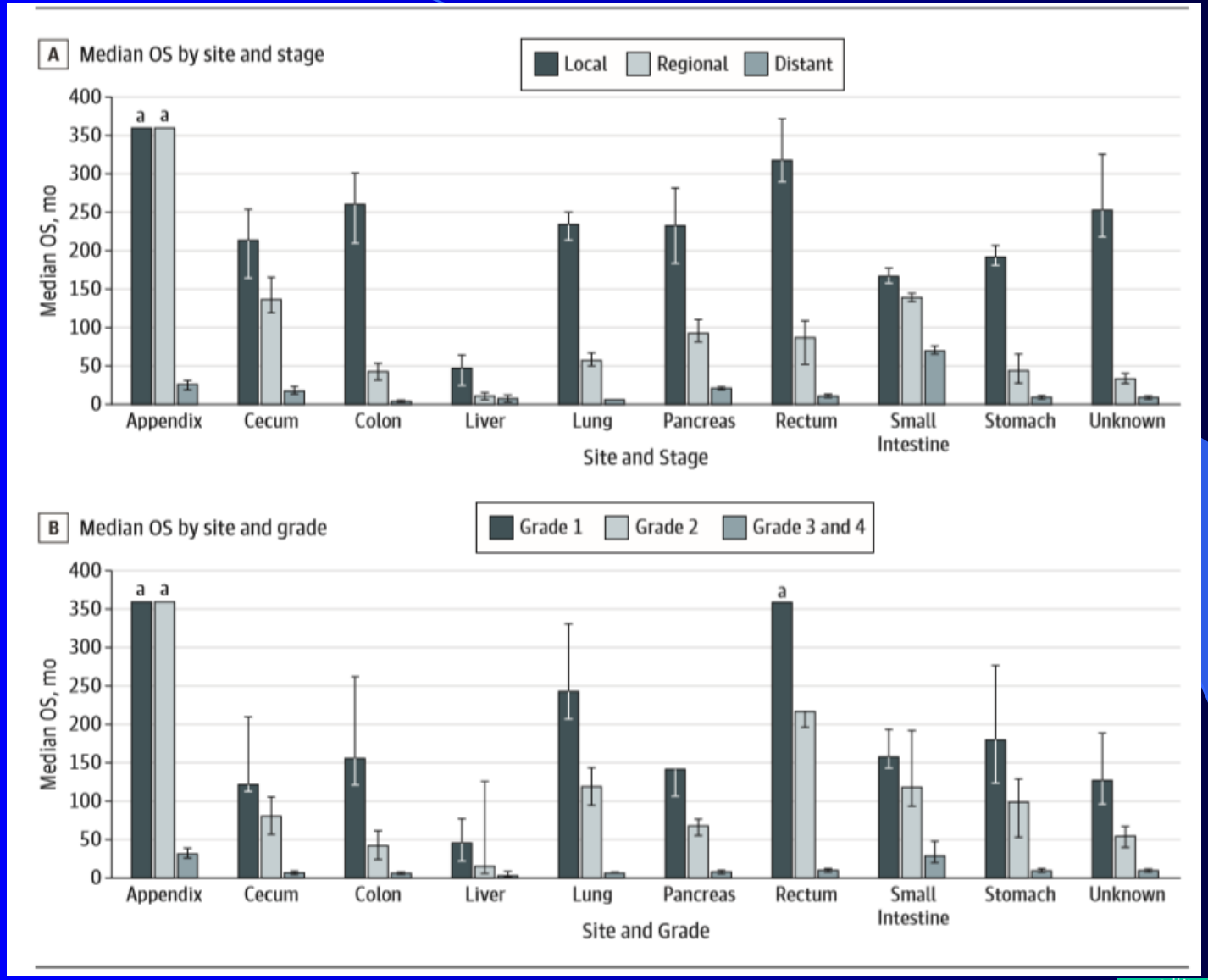
Incidence Trends of Neuroendocrine Tumors (NETs) From 1973 to 2012

Annual age-adjusted incidence of NETs by stage and grade



Dasari et al JAMAOncol.2017;3(10):1335

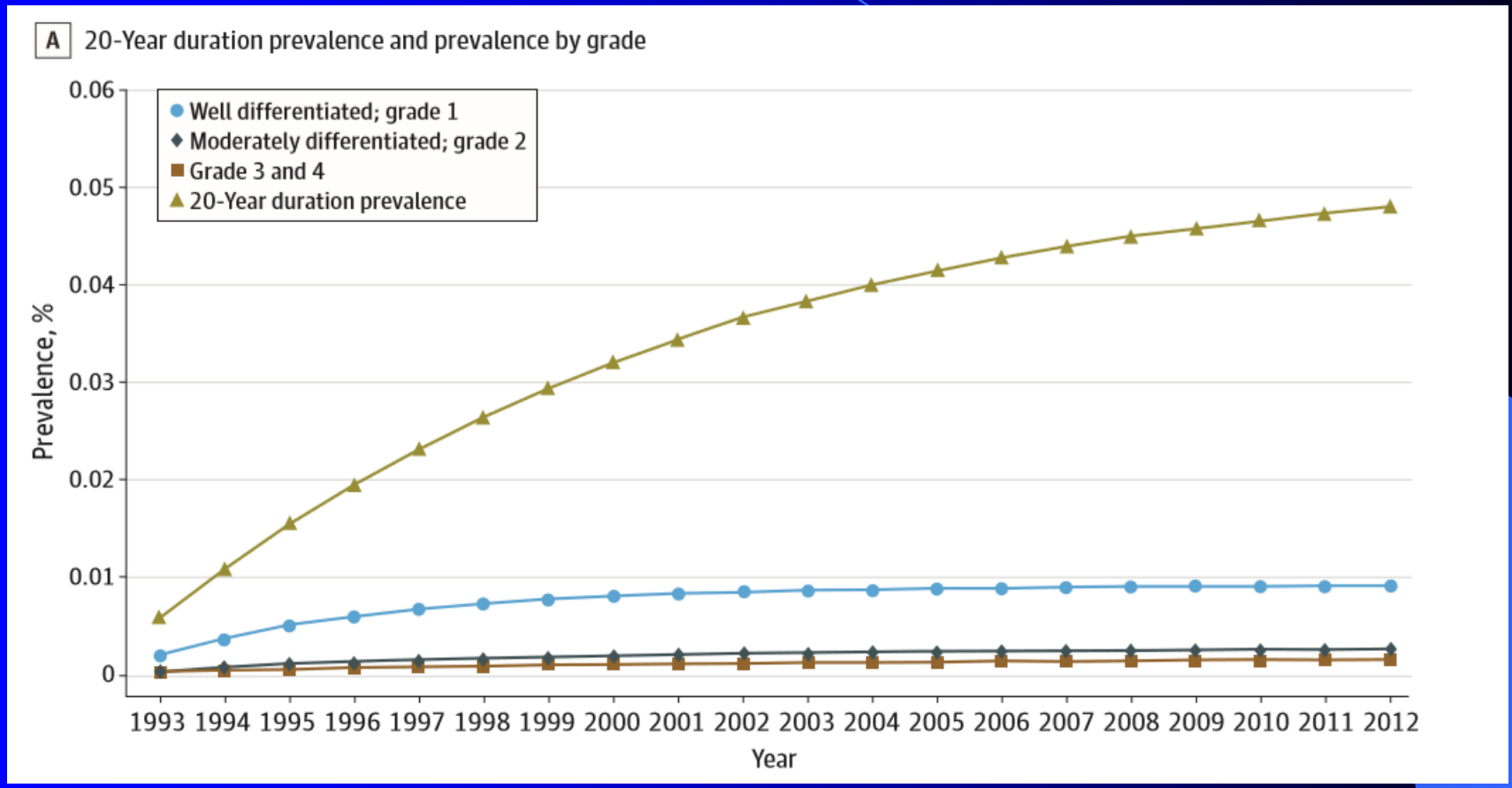
Median Overall Survival (OS) of Neuroendocrine Tumors



Dasari et al JAMAOncol.2017;3(10):1335

Limited Duration Prevalence of NeuroendocrineTumors (NETs)

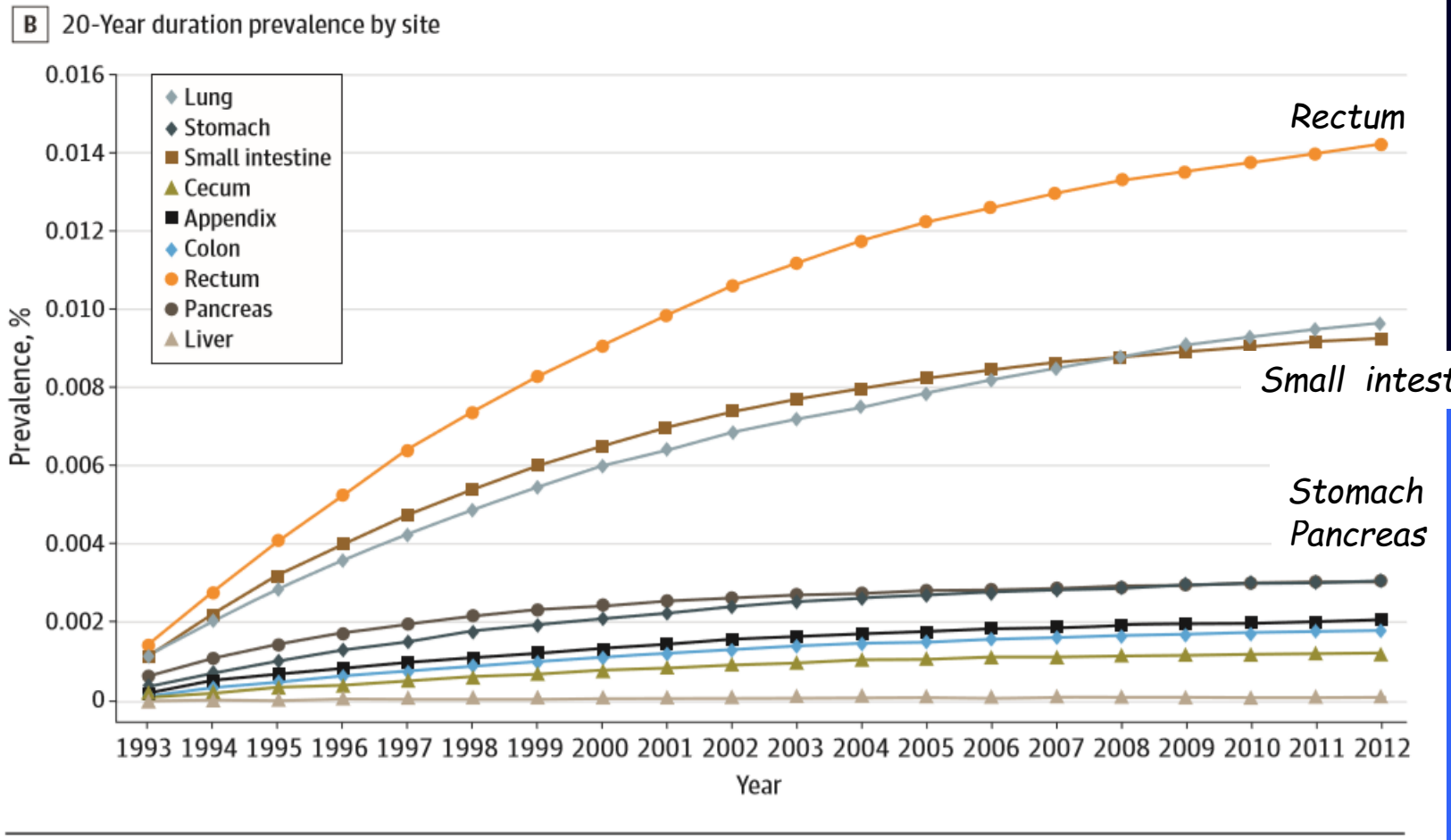
20-Year limited duration prevalence of all neuroendocrine tumors and according to grade



Dasari et al JAMAOncol.2017;3(10):1335

Limited Duration Prevalence of NeuroendocrineTumors (NETs)

20-Year limited duration prevalence of neuroendocrine tumors by site



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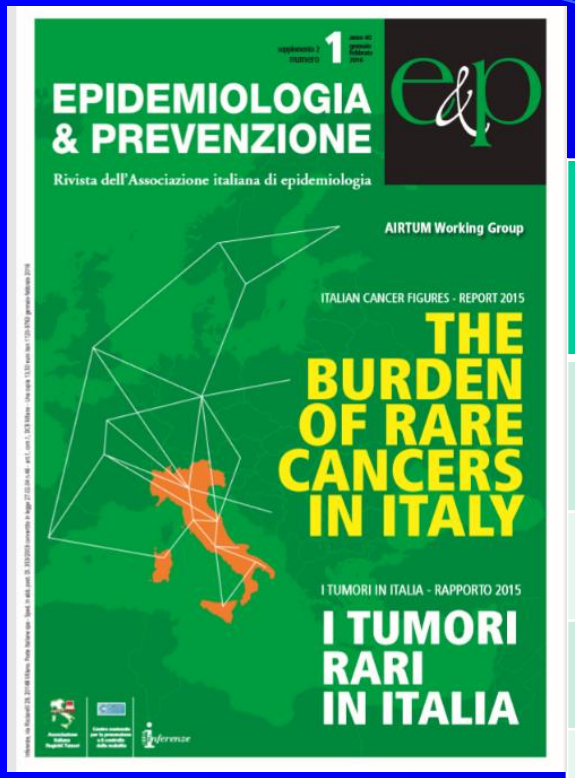

The NET grouping proposed by European RARECARE combines morphologies (as a proxy of the grading) and topographies

In ITALY	ESTIMATED NEW CASES 2015	ESTIMATED PREVALENT CASES 2010
Gastroenteropancreatic (GEP), well-differentiated non functioning endocrine carcinoma	576	7 427
GEP, well-differentiated functioning endocrine carcinoma	12	195
GEP, poorly differentiated endocrine carcinoma	655	2 140
GEP, mixed endocrine-exocrine carcinoma	5	51

The most frequent primary GEP sites are the

- small intestine ➥ 25%
- pancreas ➥ 22%
- colon ➥ 19%
- stomach ➥ 17%
- rectum ➥10%
- appendix ➥ 5%

It is important to stress that carcinoid tumours of uncertain malignant potential of the appendix are not included in the data presented here

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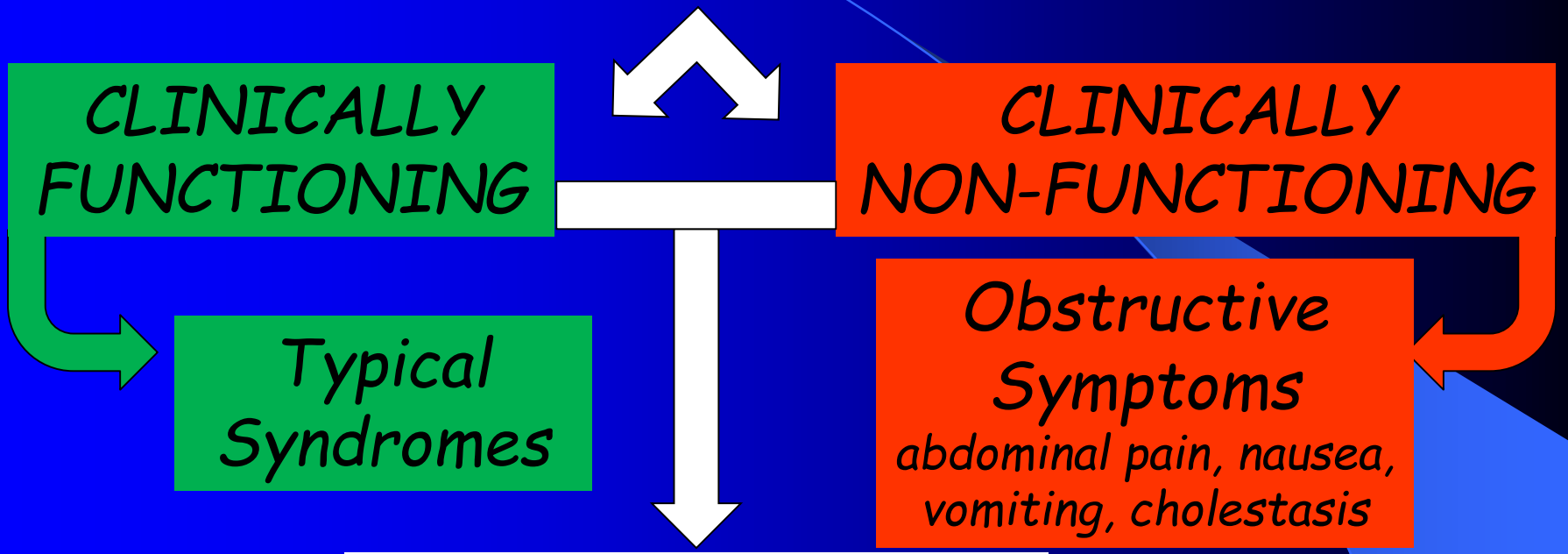
Clinical Manifestations



Due to the vagueness of symptoms, the diagnosis may be delayed (3-10 years) with an increased risk of metastasis

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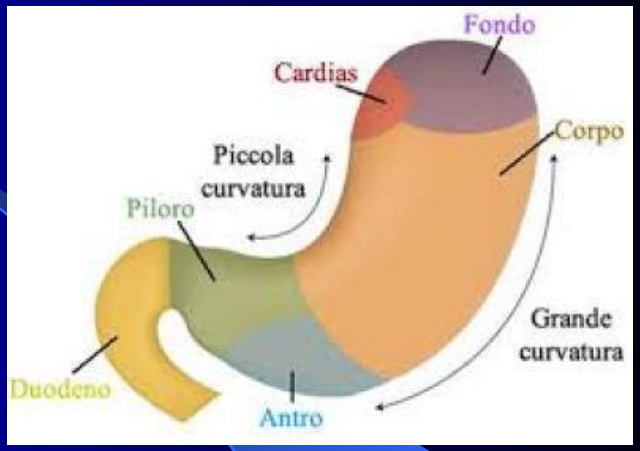
STOMACH NENs



- 4% of all GEP NENs
- overall survival 5-year ➔64%

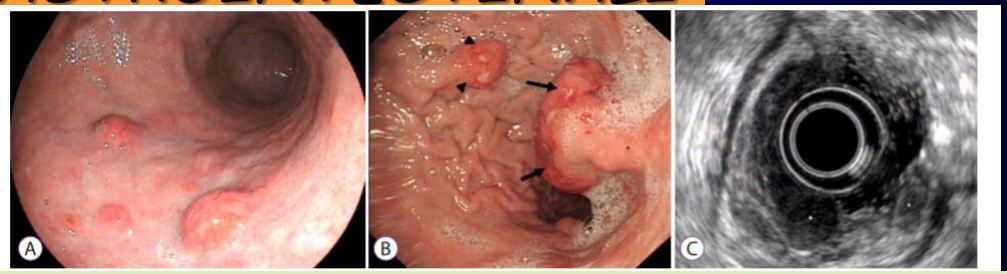
Most gastric NENs are composed of ECL cells (enterochromaffin- like cells) which produce histamine and reside predominantly in the body and fundus

4 distinct types (1–4) are recognised based on the background in which they arise

Chai SM et al. Histopathology 2018;72:153

NET PANCREATICI E GASTROINTESTINALI

STOMACH NENs

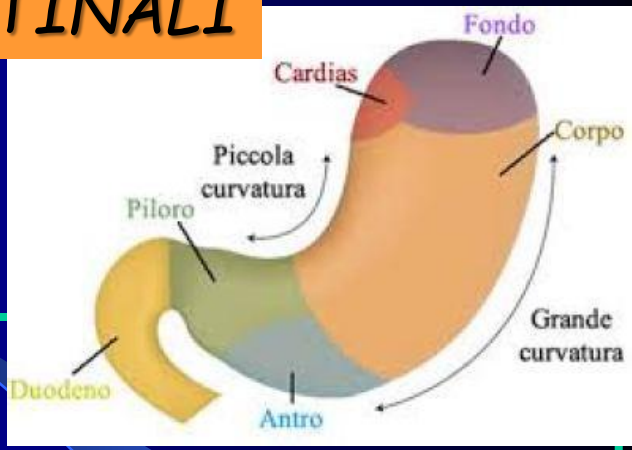


	Gastric NET G1 (carcinoids) and NET G2			Poorly differentiated NE gastric cancer (type 4): gastric NEC G3
	type 1	type 2	type 3	
Relative frequency, %	70–80	5–6	14–25	6–8
Features	mostly small (≤1 cm) and multiple	mostly small (≤1 cm) and multiple	often >2 cm, solitary	mostly >2 cm, solitary
Associated conditions	CAG	MEN1/ZES	no	no
Histology	well-differentiated G1/G2[a]	well-differentiated G1/G2[a]	well/moderately differentiated G1/G2[b]	G3
Serum gastrin	(very) high	(very) high	normal	(mostly) normal
Gastric pH	anacidic	hyperacidic	normal	(mostly) normal
Metastases, %	<10	10–30	30–80	80–100
Tumor-related deaths, %	no	<10	25–30	>50

[a]Most type 1 and type 2 gastric NET G2 show a Ki-67 expression of ≤5%.
[b]Some type 3 gastric NET, though well-differentiated, show a Ki-67 index of >20% (NET G3).
CAG = Chronic atrophic gastritis; MEN1 = multiple endocrine neoplasia type 1; ZES = Zollinger-Ellison syndrome; MEN1/ZES = ZES associated with MEN1; G1 and G2 = well-differentiated; G3 = poorly differentiated (Ki-67 index of 0–2%: G1; Ki-67 index of 3–20%: G2; Ki-67 index of >20%: G3); NE = neuroendocrine; NET = neuroendocrine tumor; NEC = neuroendocrine carcinoma.

NET PANCREATICI E GASTROINTESTINALI

STOMACH NENs



Recently

ECL cell tumours have been identified to arise

with hypergastrinaemia and parietal cell hypertrophy

not associated with MEN-1 or ZES

- Hypergastrinaemia ➔defect or lack of a proton pump
- Tumors are multiple
- Background ➔ parietal cell hyperplasia, hypertrophy and ECL cell proliferations
- Lymph node metastases have been reported

Chai SM et al. Histopathology 2018;72:153

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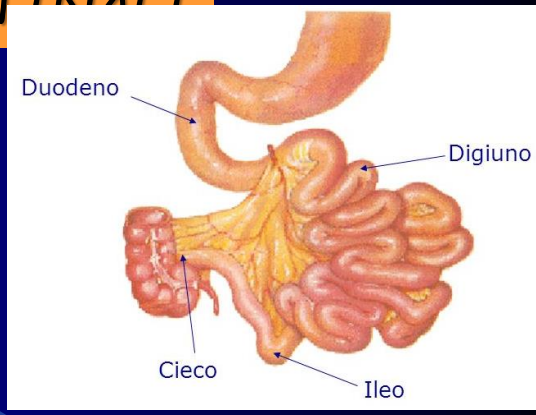
JEJUNUM AND ILEUM NENs



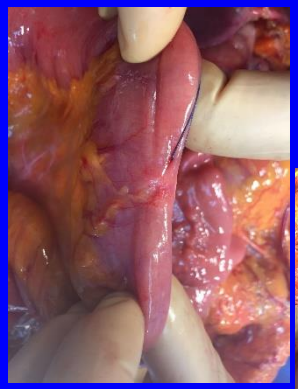
- Occur in the distal ileum
- Multicentric in up to 30% of cases
- Usually sporadic
- High frequency of lymph node and distant metastases

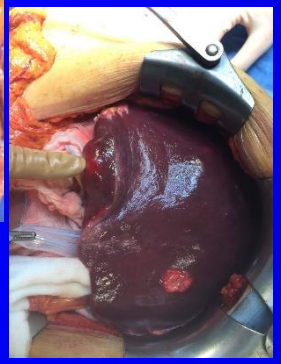
Produce serotonin

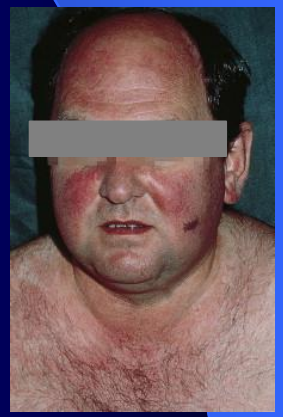
strong tendency to metastasize to lymph nodes and liver

↓

classic carcinoid syndrome







Chai SM et al. Histopathology 2018;72:153

SINDROME DA CARCINOIDE TIPICA

FLUSHING (80%)
rush cutaneo eritematoso al volto e collo
dura pochi minuti
scatenato dall'ingestione di alcuni cibi (es. ananas, kiwi, banane, pomodori, cioccolato), bevande alcooliche, farmaci, situazioni di stress

DIARREA (75%)
di solito post-prandiale
non acquosa

DOLORE ADDOMINALE (40%)

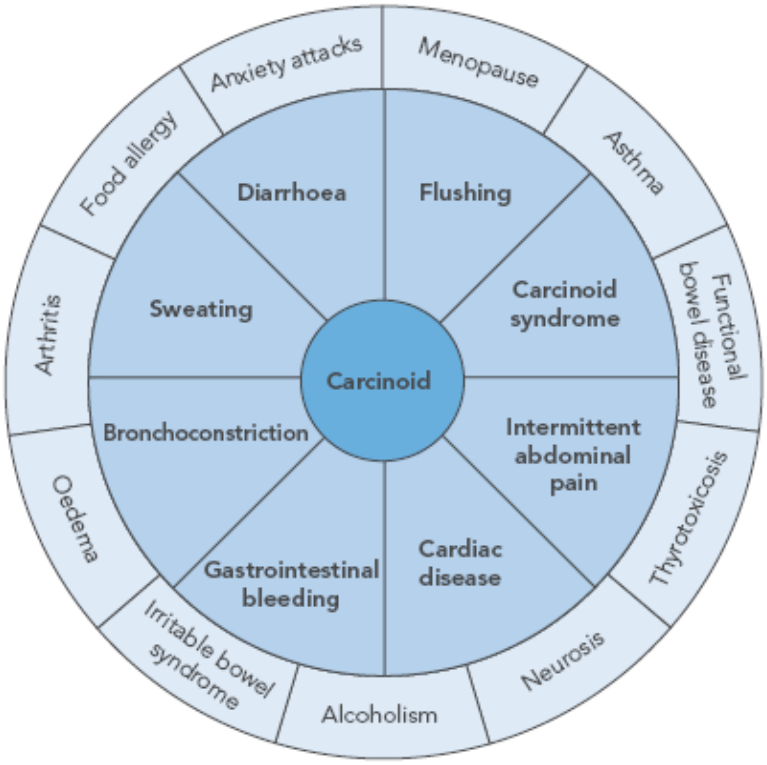
CARDIOPATIA DA CARCINOIDE (40%)

TELEANGIECTASIE AL VOLTO (25%)

BRONCOSPASMO (25%)

SUDORAZIONE PROFUSA (15%)

LESIONI CUTANEE PELLAGRA SIMILI (5%)



The non-specific nature of the symptoms and signs (inner circle) result in diagnostic error (outer circle) or delay in diagnosis.[13]

Modlin IM et al. Clinical update, 2010; 193: 46

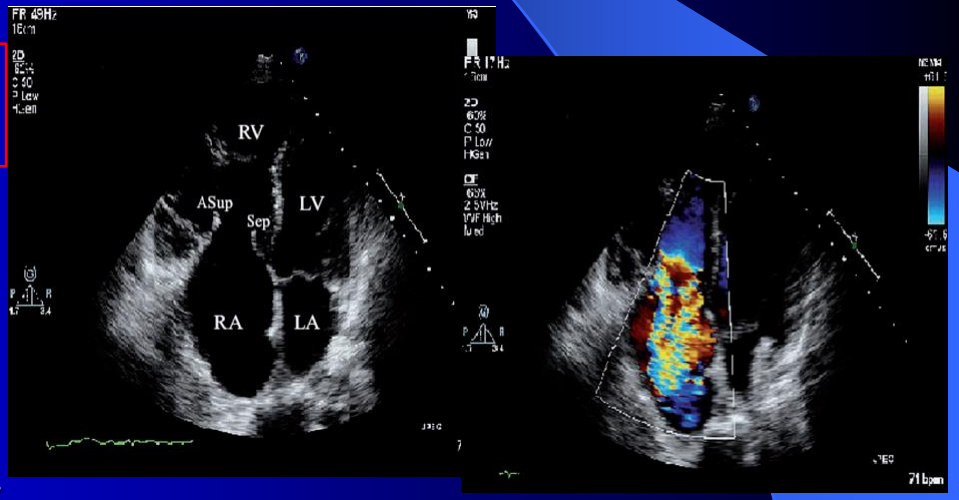
CARDIOPATIA DA CARCINOIDE

FIBROSI ENDOCARDICA VALVOLARE → fissazione e retrazione dei lembi valvolari
disfunzione valvolare
insufficienza cardiaca

Interessa circa il 40% dei pazienti con sindrome da carcinoide, con metastasi epatiche

Causata degli aumentati livelli di serotonina che stimolano la proliferazione e la deposizione di collagene da parte dei fibroblasti

Interessa il cuore destro (la serotonina viene inattivata a livello del circolo polmonare)



L'insufficienza tricuspidalica è l'alterazione più comune

Il coinvolgimento della sezioni cardiache sinistre interessa meno del 10% dei pazienti

L'insufficienza cardiaca destra rimane una delle cause maggiori di morbidità e mortalità nei pazienti affetti da cardiopatia da carcinoide

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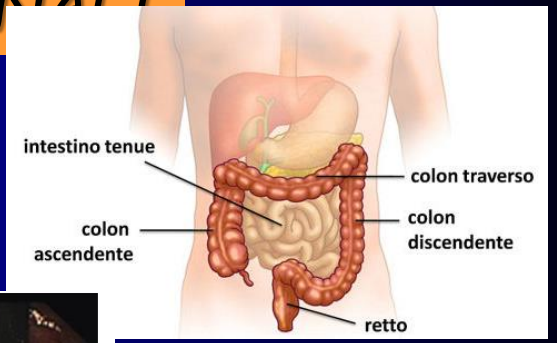
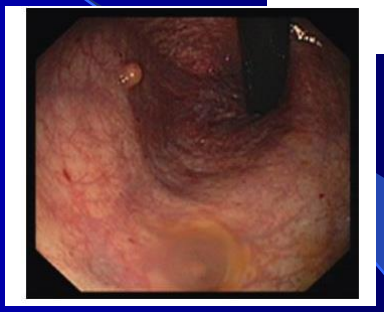
COLORECTUM NENs





- Most are identified in the rectum on screening colonoscopies
- Usually small (50% <1 cm)
- Endoscopically resectable

- The frequency of metastases increases with size 3% in tumours <1 cm and 60– 80% in tumours >2 cm
- Adverse prognostic factors include lymphovascular invasion, elevated mitotic count and depth of invasion
- Rectal NETs 5-year survival rate ➔ 88% (localized and small size at presentation)
- Colonic NETs are more aggressive, 5- year survival rate ➔ 62%

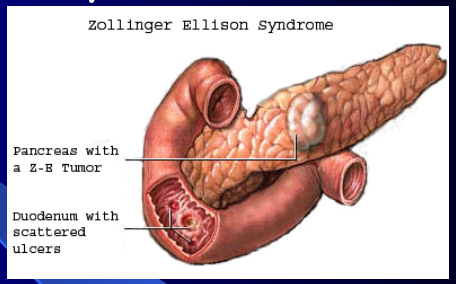
- Mixed adenoneuroendocrine carcinomas and NECs of the colorectum are rare aggressive neoplasms that are usually locally advanced at presentation, with extensive lymphovascular invasion

Chai SM et al. Histopathology 2018;72:153

NET PANCREATICI E GASTROINTESTINALI

PANCREAS NENs

- Incidence ➔ 1.3–2.8% of pancreatic malignancies per years
- 85% non-functioning
- Metastatic disease rate 60% -94%
- 5-year survival rates 29% - 70%
- Well-differentiated insulinomas rarely metastasise and have a particularly good prognosis



Well-differentiated P NETs may occur sporadically or as part of a hereditary cancer syndrome (<10%)

- von Hippel-Lindau (VHL) syndrome
- tuberous sclerosis complex (TSC)
- neurofibromatosis type 1(NF-1)
- multiple neuroendocrine neoplasia type 1 (MEN-1)

Patients with MEN-1 and VHL often develop multifocal tumours at a younger age

Chai SM et al. Histopathology 2018;72:153

NET PANCREATICI E GASTROINTESTINALI

THE DIAGNOSIS IS BASED on

- CLINICAL MANIFESTATIONS
- FAMILY HISTORY
- LABORATORY STUDIES
- LOCALIZING IMAGING STUDIES:
  - CT, MRI, Endoscopy, PET
  - Ultrasound, Endoscopic US, and CEUS
- HISTOLOGICAL CONFIRMATION

NET PANCREATICI E GASTROINTESTINALI

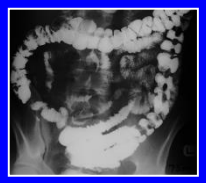
LOCALIZING IMAGING STUDIES

- TO DETECT DISEASE IN A PATIENT SUSPECTED OF A NET
- TO ASSESS THE EXTENT OF DISEASE IN A KNOWN CASE

NET PANCREATICI E GASTROINTESTINALI

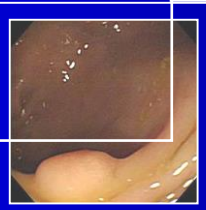
IMAGING STUDIES

- X-ray

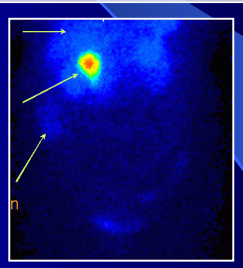


- MRI

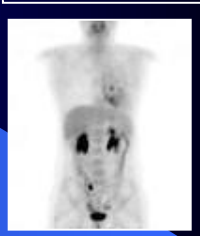
- Endoscopy



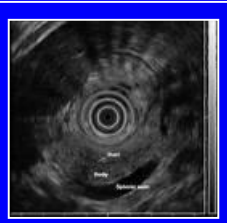
- SSR scintigraphy



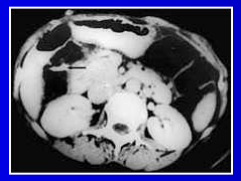
- PET



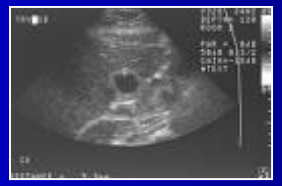
- Endoscopic ultrasound



- CT



- Ultrasound



- Angio-MRI

- Capsule endoscopy

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ENETS Consensus Guidelines for the Standards of Care in Neuroendocrine Tumors: Radiological, Nuclear Medicine & Hybrid Imaging

Data in the literature on the sensitivity, specificity and detection rate for NET diagnosis by CT

CT diagnosis of NETs

Type of NET	Sensitivity mean (range)	Specificity mean (range)	Detection rate mean (range)	Patients/ Studies	Reference
NET disease	82% (77–85)	86% (71–85)		253/4	3-6
Pancreatic NET	82% (67–96)	96%		119/2	10-11
Liver metastases			79% (73–94)	79/3	7-9
	84% (75–100)	92% (83–100)		342/5	3, 12-15
Extrahepatic abdominal soft tissue metastases	70% (60–100)	96% (87–100)		451/6	3, 12-15, 17
Bone metastases	61% (46-80)	99% (98-100)		337/3	3, 18,19
CT enteroclysis for	50%	25%		8/1	20
SI-NETs	85%	97%		[a]219/1	21

[a] Out of 219 patients included in the study there were 19 subjects with SI-NETs.

Sundin A et al 2017 Neuroendocrinology (DOI:10.1159/000471879)

NET PANCREATICI E GASTROINTESTINALI

ENETS Consensus Guidelines for the Standards of Care in Neuroendocrine Tumors: Radiological, Nuclear Medicine & Hybrid Imaging

Data in the literature on the sensitivity, specificity and detection rate for NET diagnosis by MRI

MRI diagnosis of NETs

Type of NET	Sensitivity mean (range)	Specificity mean (range)	Detection rate mean (range)	Patients/ Studies	Reference
Gastrinoma	70%			122/1	28
Pancreatic NET	79% (54-100)	100 %	76% (61–95)	258/7	11, 29-34
Liver metastases	75% (70–80)	98%		200/2	40, 41
Carcinomatosis			88% (81-91)	72/2	42, 43

Sundin A et al 2017 Neuroendocrinology (DOI:10.1159/000471879)

NET PANCREATICI E GASTROINTESTINALI

ENETS Consensus Guidelines for the Standards of Care in Neuroendocrine Tumors: Radiological, Nuclear Medicine & Hybrid Imaging

Data in the literature on the sensitivity, specificity and detection rate for NET diagnosis by US, EUS, IOUS and CEUS

US, EUS, IOUS and CEUS diagnosis of NETs

Type of NET and US method	Sensitivity mean (range)	Specificity mean (range)	Detection rate mean (range)	Number of patients/studies	Reference
pNETs					
US			39% (17–76)	250/6	61-66
EUS			86% (75-97)	220/9	9, 62, 63, 66, 70-74
	86% (82-93)	92% (86-95)		149/3	67-69
IOUS			92% (74–96)	127/4	64, 66, 75, 76
Insulinoma					
EUS			86% (57–100)	250/12	63, 64, 72, 77-85
IOUS			92% (84–100)	264/9	66, 75, 76, 86-91
Duodenal tumors and lymph node metastases					
US			18%	25/1	66
EUS			63%	59/2	66 72
Liver metastases					
US	88%	95%		131/1	12
CEUS	82%			48/1	92

Sundin A et al 2017 Neuroendocrinology (DOI:10.1159/000471879)

NET PANCREATICI E GASTROINTESTINALI

ENETS Consensus Guidelines for the Standards of Care in Neuroendocrine Tumors: Radiological, Nuclear Medicine & Hybrid Imaging

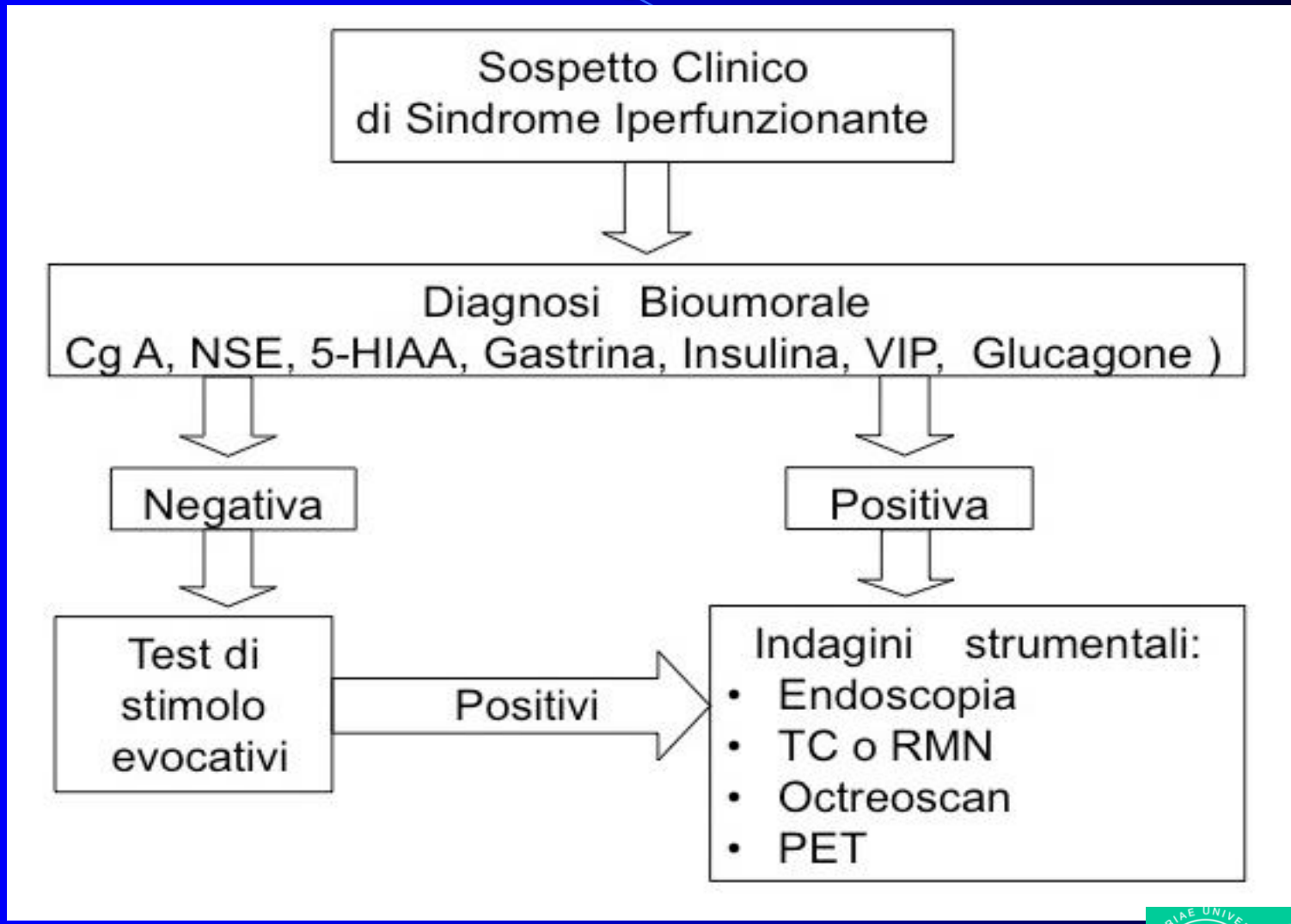
Data in the literature on the sensitivity, specificity and detection rate for NET diagnosis by PET/CT with 68Ga-DOTA-somatostatin analogs CUP; Cancer with unknown primary tumor site

^{68}Ga-DOTA-somatostatin analog-PETCT diagnosis of NETs					
Type of NET	Sensitivity mean (range)	Specificity mean (range)	Detection rate mean (range)	Patients/ Studies	Reference
NETs all types	92% (64-100)	88% (50-100)		416/10	125
NETs all types	92% (64-100)			2078/21	126
		95% (83-100)		1776/8	
NETs all types	88% (70-100)			2105/22	127
NETs all types	93% (72-100)			567/16	128
		90% (67-100)		325/6	
Duodenopancreatic NETs	92%	83%		19/1	126
Gastrinomas	68%			21/1	126
^{C}NET CUP	52% (36-60)			93/3	126
Bone metastases	97-100%	92-100%		95/2	126

Sundin A et al 2017 Neuroendocrinology (DOI:10.1159/000471879)

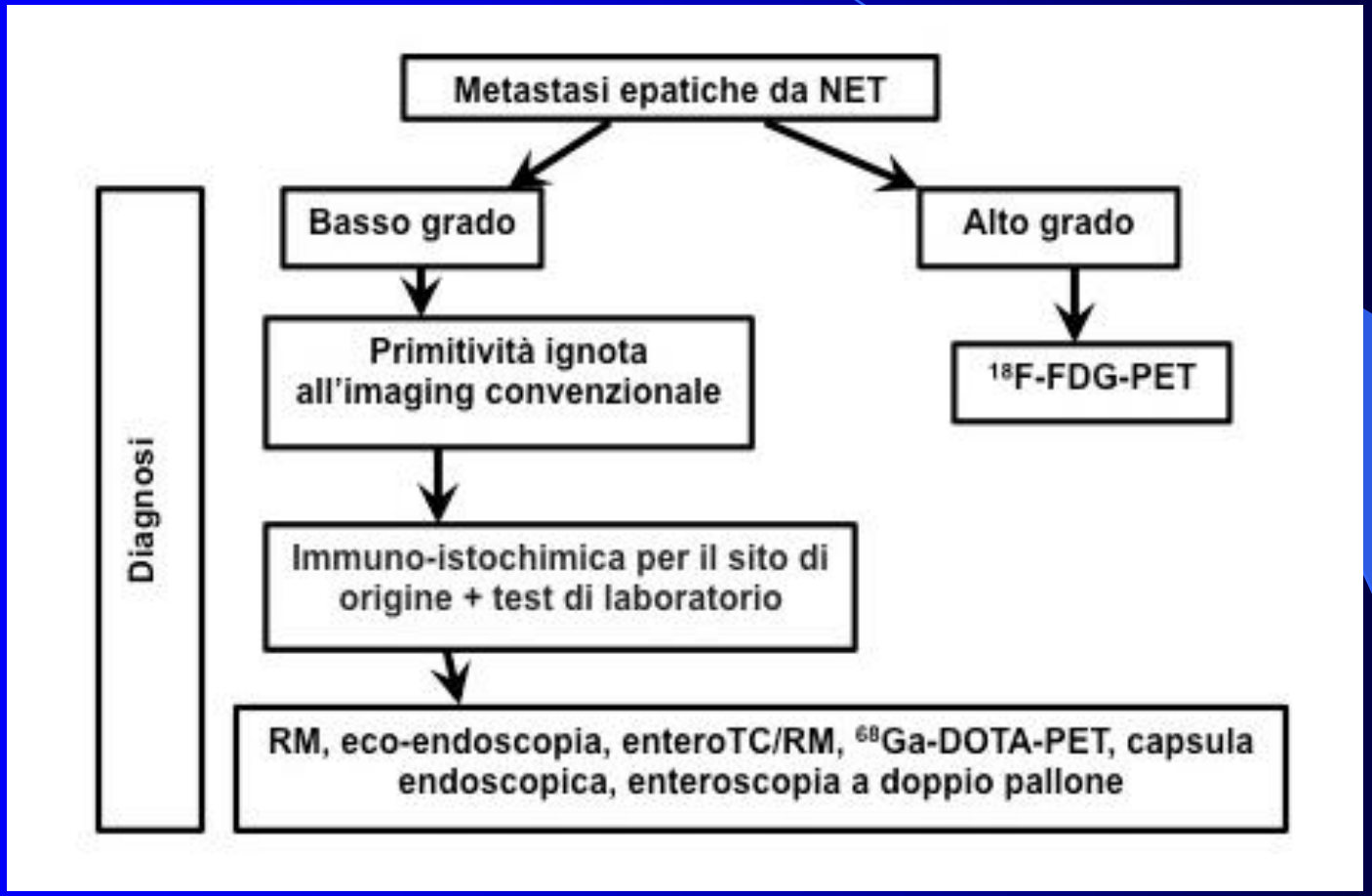
NET PANCREATICI E GASTROINTESTINALI

Iter diagnostico



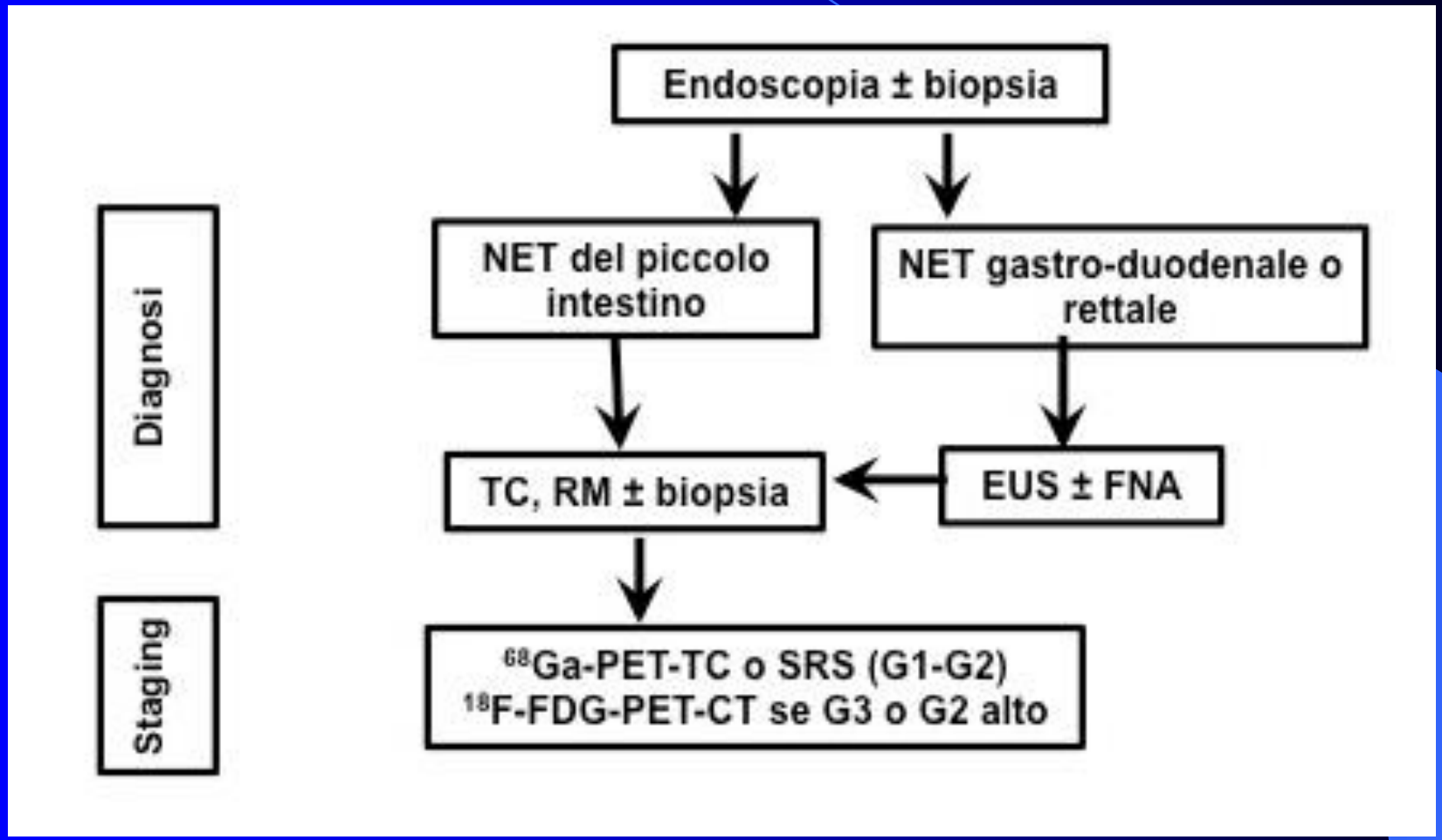
NET PANCREATICI E GASTROINTESTINALI

Iter diagnostico



NET PANCREATICI E GASTROINTESTINALI

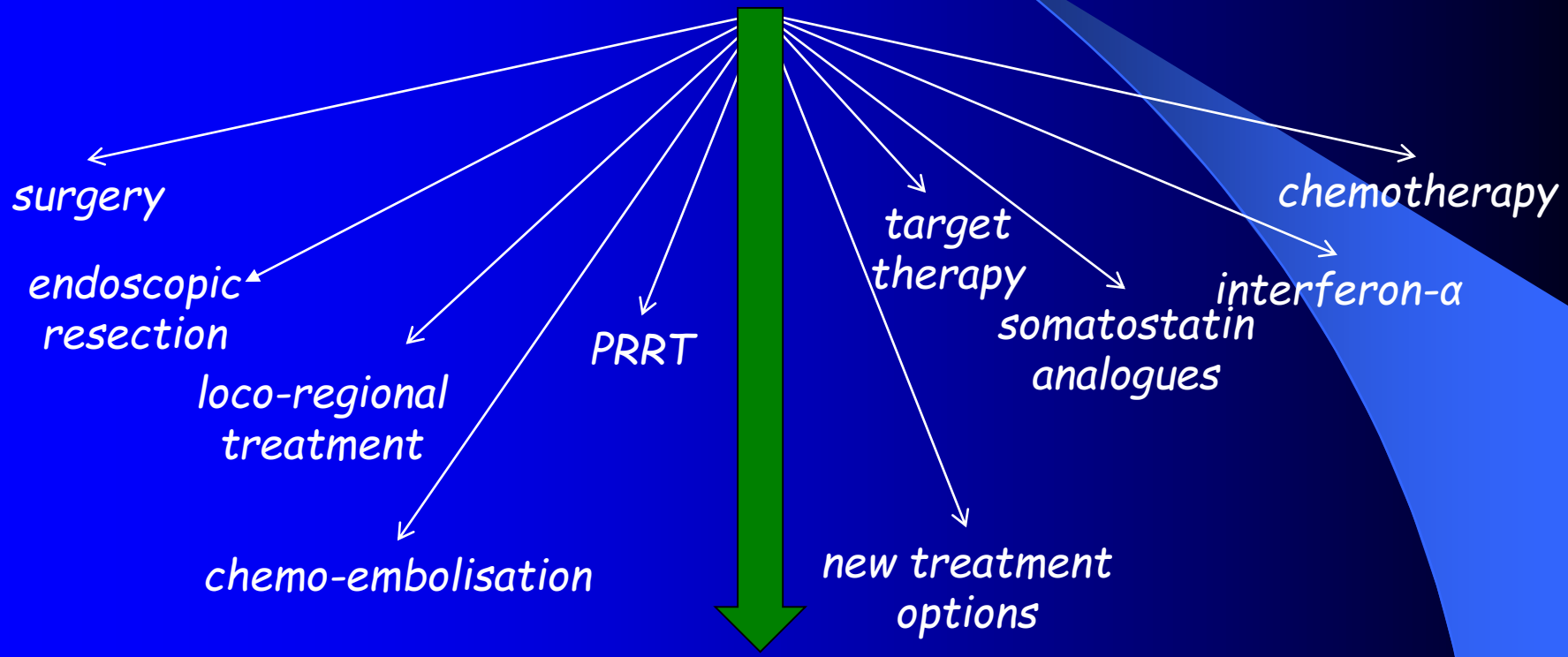
Iter diagnostico in paziente con reperto incidentale sospetto per NET



NET PANCREATICI E GASTROINTESTINALI

TREATMENT GOALS

Tumor control
Symptoms control
Preserve quality of life



Survival

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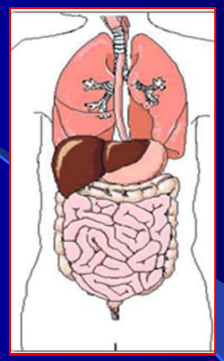
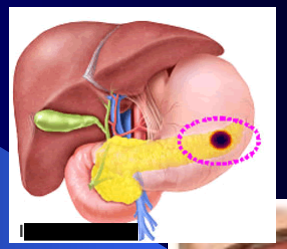
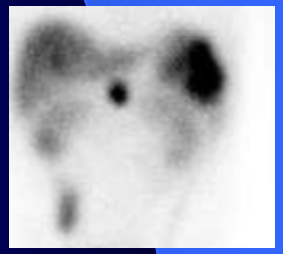
NET PANCREATICI E GASTROINTESTINALI

Treatment options they depend on

- Site of the primitive neoplasia
- Histological differentiation
- Tumors/metastasis size
- Genetics / Biology
- Secretory Profile (Functioning / Non- Functioning)
- Uptake of the labeled octreotide (SSTR density)
- Performance status
- Patient choice



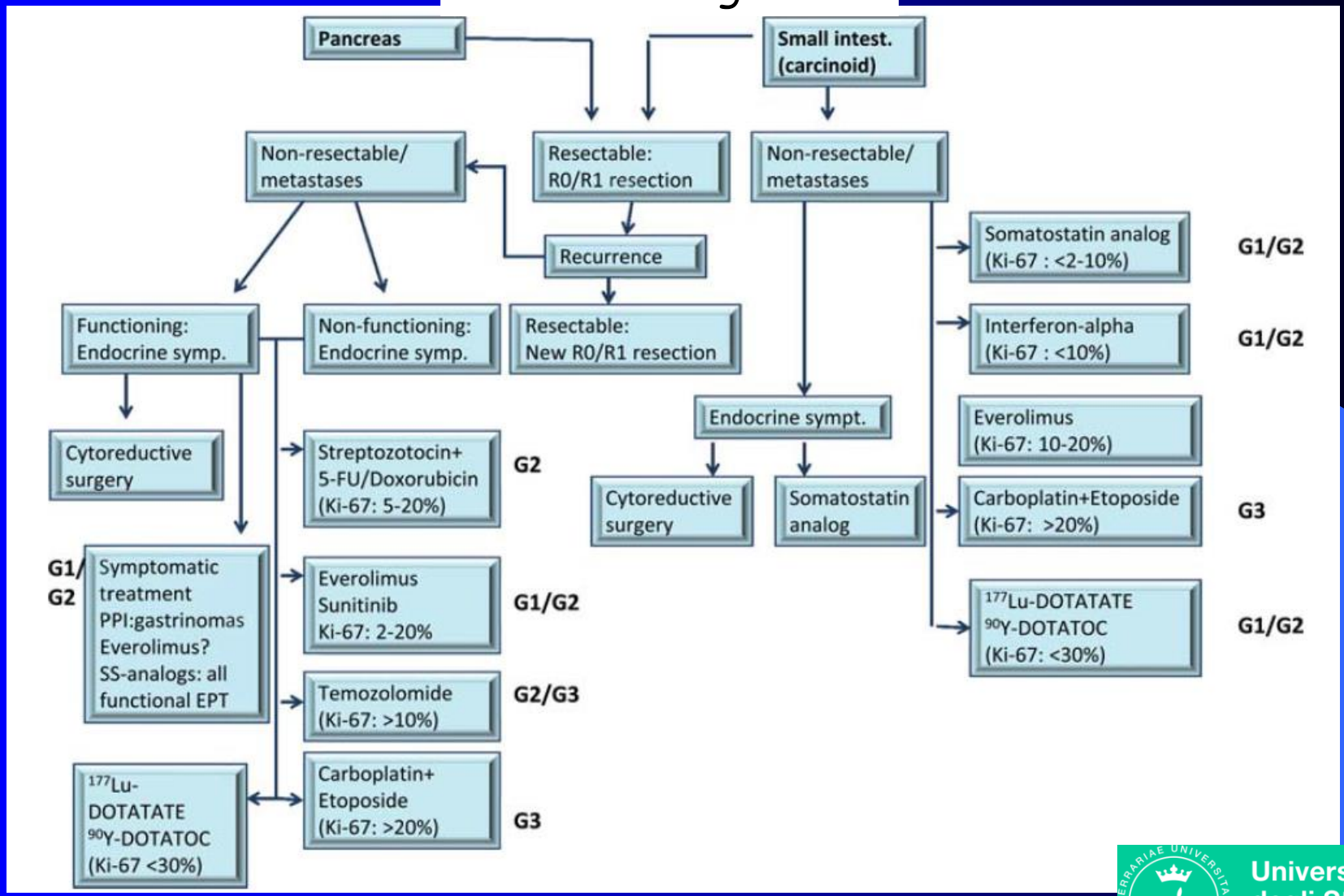




NET PANCREATICI E GASTROINTESTINALI

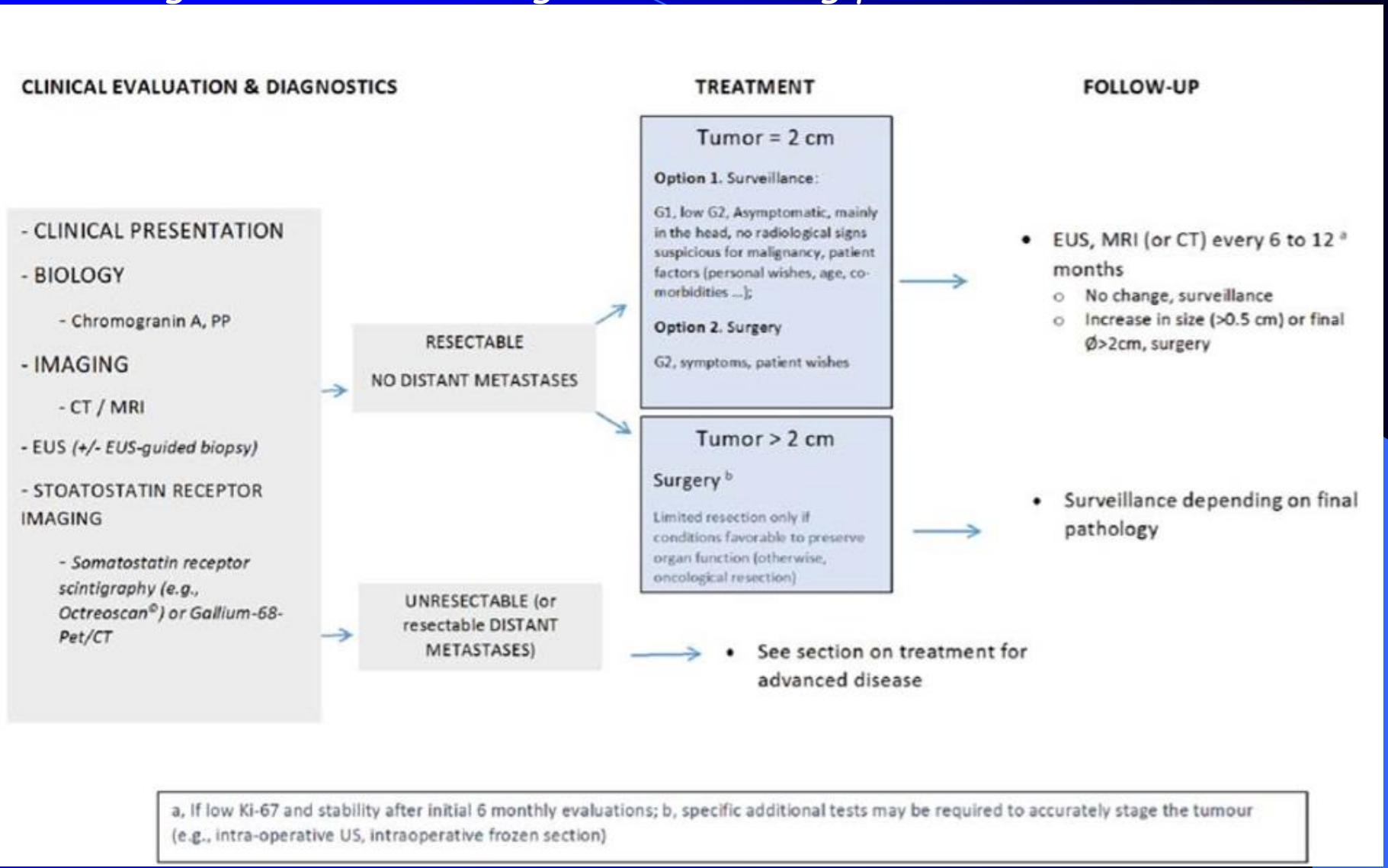
ESMO Clinical Practice Guidelines

Treatment algorithm



Öberg K et al Annals of Oncology.2012; 23 (7): vii124

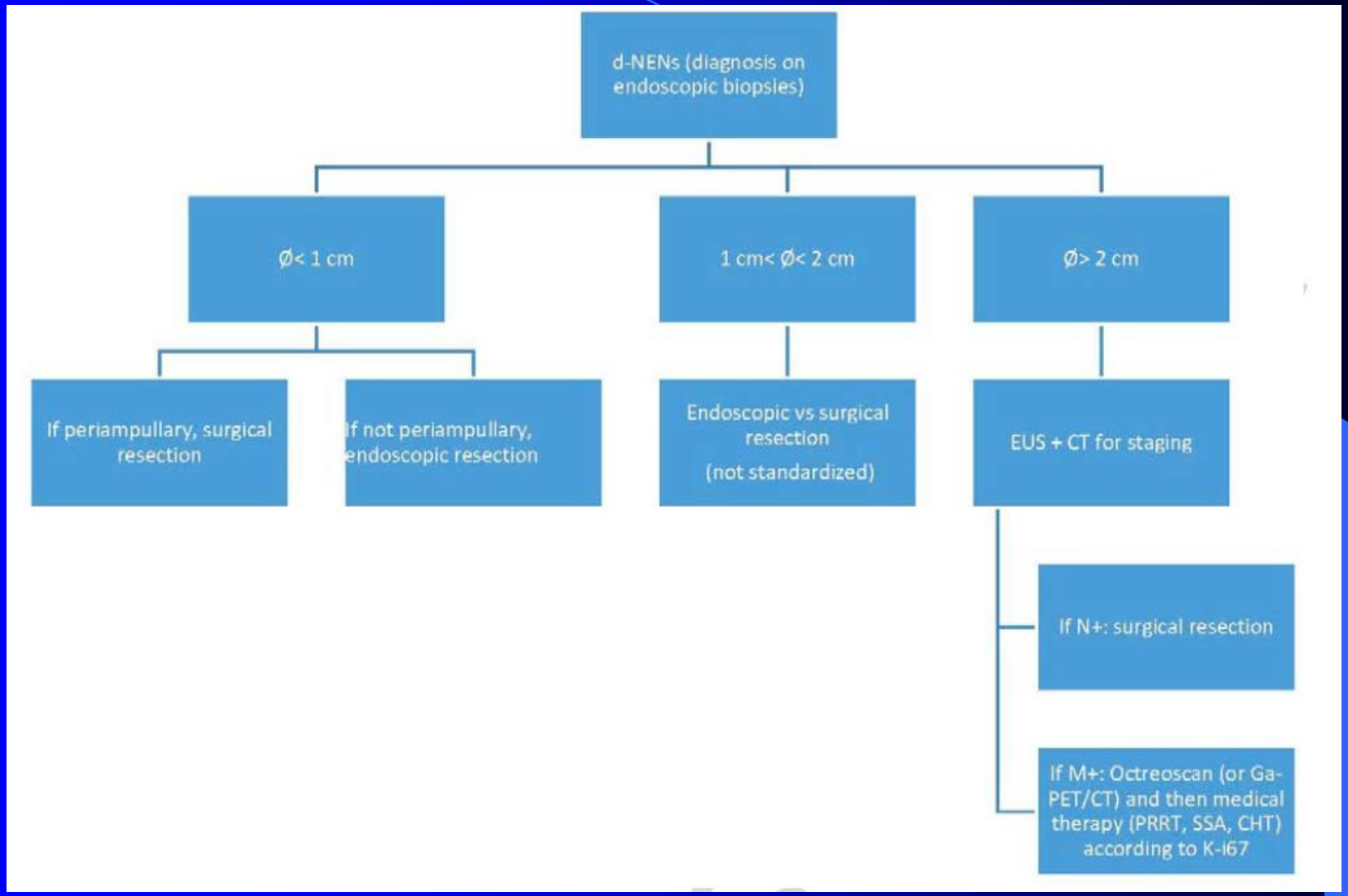
Algorithm for treating nonfunctioning pancreatic NENs



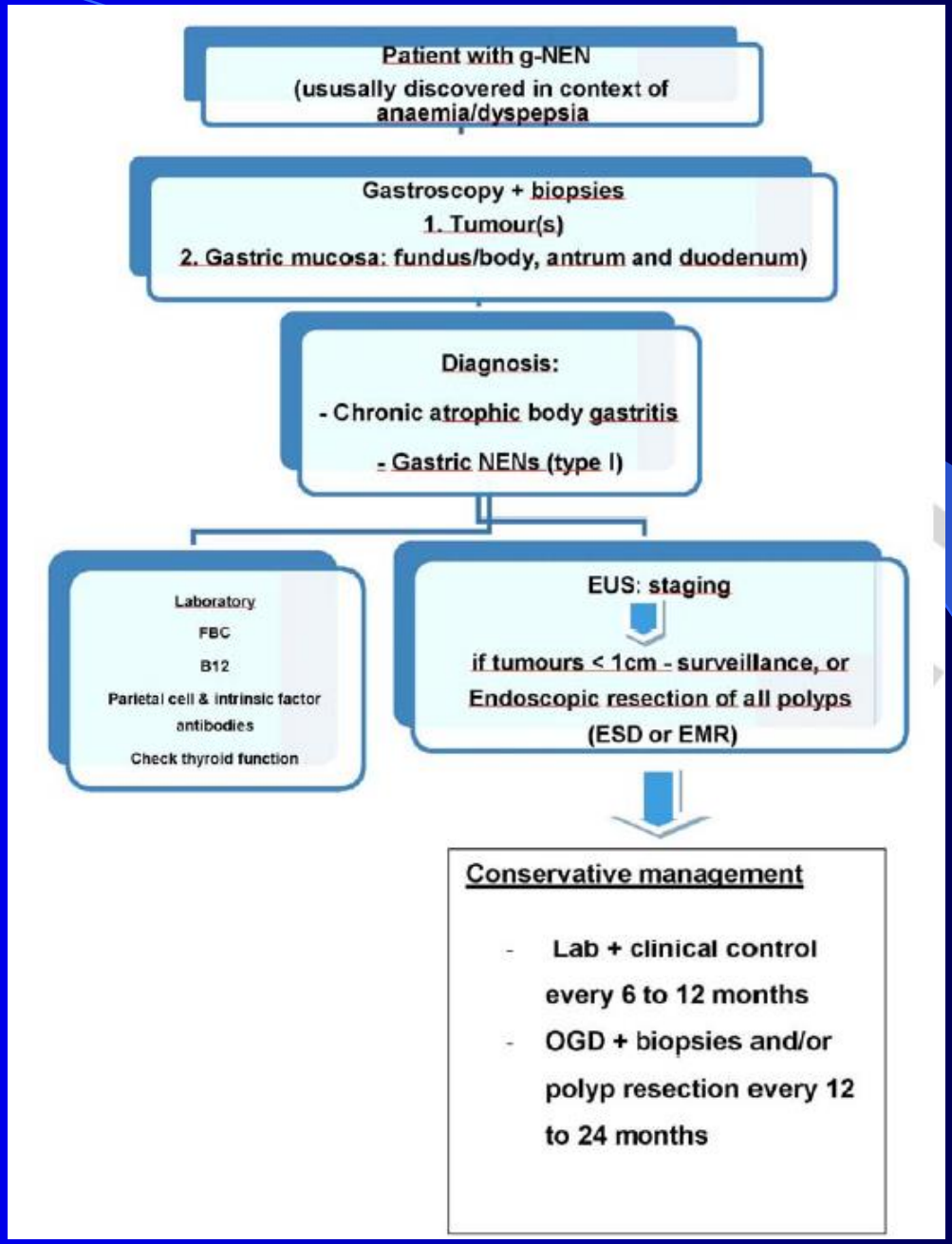
a, If low Ki-67 and stability after initial 6 monthly evaluations; b, specific additional tests may be required to accurately stage the tumour (e.g., intra-operative US, intraoperative frozen section)

Falconi M et al Neuroendocrinology (DOI:10.1159/000443171)

Algorithm for duodenal neuroendocrine neoplasms (d-NENs)

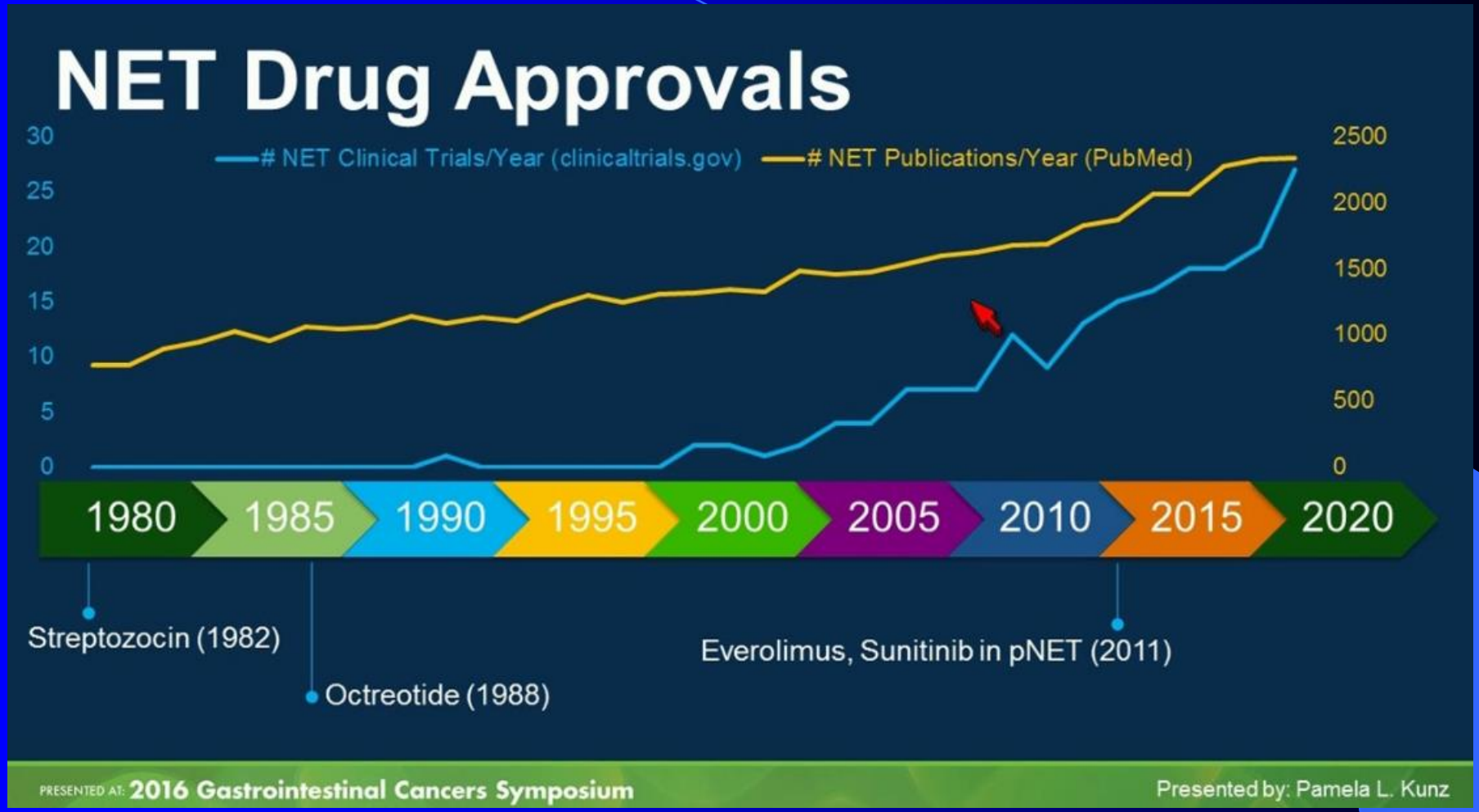


Algorithm for type 1 gastric neuroendocrine neoplasm management



Delle fave et al 2016 Nuroendocrinology (DOI:10.1159/000443168)

NET PANCREATICI E GASTROINTESTINALI



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Therapy of NETs

SSAs

- Control of carcinoid syndrome and other syndromes due to release of bioactive amines
- Slowdown of the growth of advanced NETs

Lee ME & O'Neil BH J Gastrointest Oncol 2016;7:804

PROMID

Octreotide LAR prolonged PFS compared to placebo in 85 pts with metastatic well-differentiated midgut NETs (Ki-67 <2%)
(PFS 14.3 vs. 6 mo; HR 0.34, 95% CI: 0.20–0.59)

Rinke et al. J Clin Oncol. 2009 1;27:4656

CLARINET

Lanreotide significantly improved PFS in 204 pts with well or moderately differentiated, nonfunctional pancreatic, midgut, or hindgut NETs, grade 1 and 2 (all had Ki-67 <10%), and hepatic tumor volume ≤25% or >25%
(PFS 32.8 vs. 18 mo HR 0.47, 95% CI: 0.30–0.73)

Caplin ME et al N Engl J Med 2014;371:1556

NET PANCREATICI E GASTROINTESTINALI

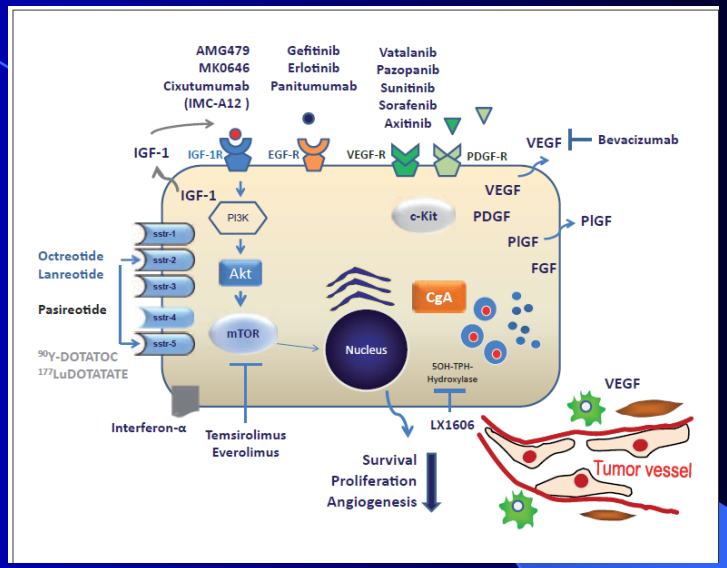
Therapy of Pancreatic NETs

Selection of everolimus or sunitinib

at present
is guided by the toxicity profile of the drugs
everolimus is recommended in metastatic insulinomas to better control hypoglycemia

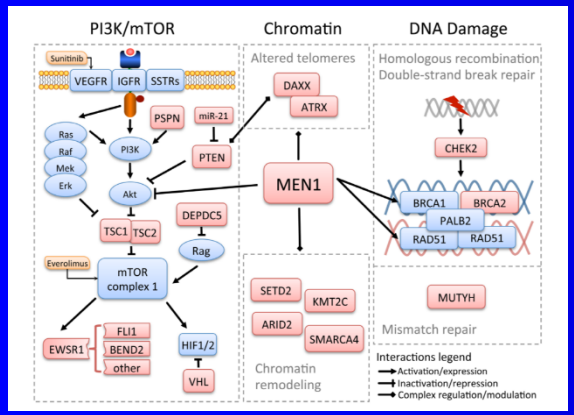
in perspective
it should be guided by the genotype

Targeted therapies in NET focusing on inhibitors of VEGF and mTOR signaling pathways



Pavel M. Neuroendocrinology 2013

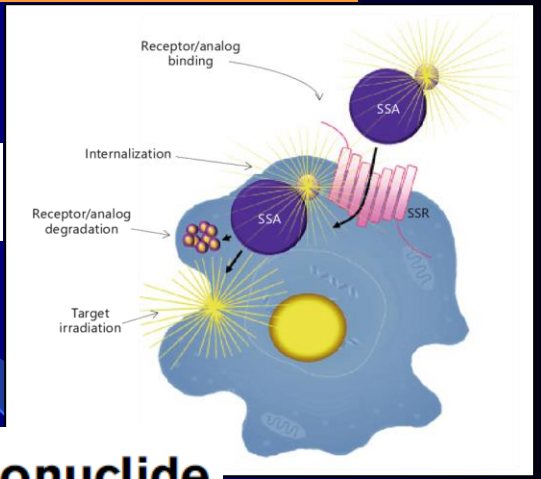
Outline of main altered pathways in pancreatic neuroendocrine tumours



mutations in MEN1, PDGFR, KIT, or FLT3 ➔sunitinib
mutations in NF1, PTEN, PI3K, AKT, MTOR, VHL, or TP53 ➔ everolimus

NET PANCREATICI E GASTROINTESTINALI

Peptide Receptor Radionuclide Therapy



The efficacy of the available peptide receptor radionuclide therapy for neuroendocrine tumors: a meta-analysis

Tailored therapy depending on

- *performance status*
- *tumors/metastasis size*
- *previous treatments*

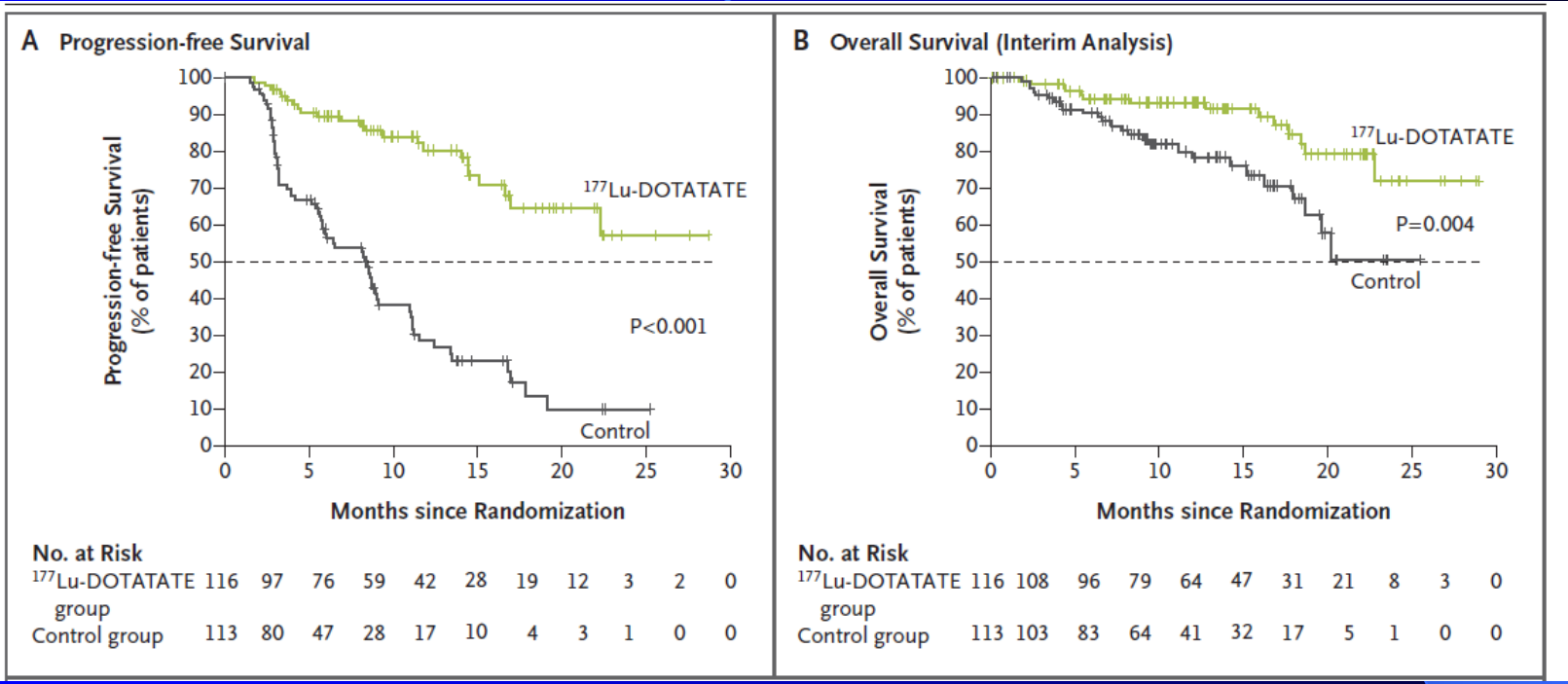
The pooled effects favour of the tandem-PRRT compared with ^{90}Y-only or ^{177}Lu-only therapies

Dannoon et al. Nuclear Medicine Communications 2017, DOI: 10.1097/MNM.0000000000000758

PRRT

NET PANCREATICI E GASTROINTESTINALI

Phase 3 Trial of 177Lu-Dotatate for Midgut Neuroendocrine Tumors



CONCLUSIONS

Treatment with 177Lu-Dotatate resulted in markedly longer progression-free survival and a significantly higher response rate than high-dose octreotide LAR among patients with advanced midgut neuroendocrine tumors. Preliminary evidence of an overall survival benefit was seen in an interim analysis; confirmation will be required in the planned final analysis. Clinically significant myelosuppression occurred in less than 10% of patients in the 177Lu-Dotatate group.

J. Strosberg et al N *Engl J Med 2017; 376:2*

NET PANCREATICI E GASTROINTESTINALI

Endocrinologo

Nutrizionista

Radiologo

Pato

Onco

Cardiol

Pneumo

Gastroente

re

entista

APPROCCIO MULTIDISCIPLINARE

APPROPRIATEZZA

Procedura corretta sul paziente giusto al momento opportuno e nel setting più adatto

>> Efficienza
>> Efficacia
>> Sicurezza
Risparmio di risorse

>>Soddisfazione dell'utente

Infermiere

Laboratorista

Genetista

NET PANCREATICI E GASTROINTESTINALI

Incontro su neoplasie neuroendocrine

Il 3 maggio presso l'Aula di Pediatria (dalle ore 15)

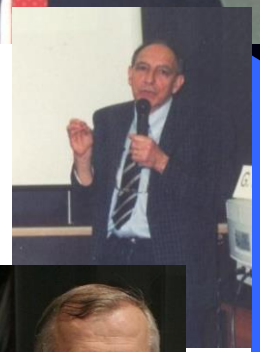
"Neoplasie Neuroendocrine gastroenteropancreatiche e carcinoide bronchiale: un approccio multidisciplinare" è il titolo dell'incontro che si svolgerà il **3 maggio** presso l'Aula di Pediatria dell'Azienda Ospedaliera dalle ore 15 alle 17.30.

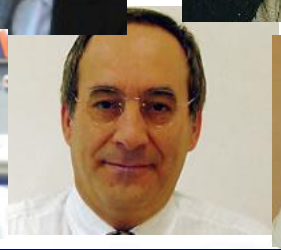
Nel corso della riunione verranno analizzati i percorsi diagnostici e terapeutici nelle neoplasie neuroendocrine con l'obiettivo di definire l'approccio interdisciplinare a queste neoplasie.

Target dell'incontro saranno: endocrinologi, gastroenterologi, oncologi, chirurghi, radiologi, medici nucleari, anatomo-patologi, medici internisti.

Si parlerà dunque di classificazione clinica delle neoplasie neuroendocrine, di approccio gastroenterologico, di anatomia patologica, di markers endocrini e non endocrini, di quadri radiologici, di medicina nucleare, di terapia medica (gli analoghi della somatostatina e la chemioterapia) e della terapia chirurgica.

Interverranno i dottori: Maria Rosaria Ambrosio, Luciano Feggi, Roberto Galeotti, Paolo Pazzi, Fausto Roila, Simone Sala, Stefano Tamberi, Maria Chiara Zatelli e i professori Gianfranco Azzena, Pier Luigi Cavazzini, Ettore degli Uberti, Giancarlo Pansini ed Enzo Pozza.





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NET PANCREATICI E GASTROINTESTINALI

23 luglio 2002

Funzione Operativa Polispecialistica focalizzata sui pazienti affetti da neoplasia neuroendocrina gastroenteropancreatica (GEP) e carcinoide bronchiale

Sezione di Endocrinologia

AMBULATORIO di Secondo livello
dedicato ai TUMORI NEUROENDOCRINI

DAY SERVICE *PAC ENDOCRINOLOGIA*
NEOPLASIE EUROENDOCRINE
MOD-012-UOEndo

EFE 2013

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Azienda Ospedaliero Universitaria di Ferrara

Gruppo Mutidisciplinare sui Tumori Neuroendocrini

Anatomia Patologica G.Lanza

Chirurgia 1 G Ferrocci ; N Tamburini, G Cavallesco

Chirurgia 2 M Portinari; P Carcoforo

Ecografia Interventistica S Sartori; P Tombesi

Endocrinologia e Malettie del Ricambio MR Ambrosio; MR Zatelli

Gastroenterologia A Pezzoli; N Fusetti

Medicina Nucleare S Panareo; I Rambaldi; M Bartolomei

Oncologia Clinica B Urbini; A Frassoldati

Radiologia R Rizzati G Benea

Radiologia Interventistica R Galeotti M Giganti

Radioterapia F Fiorica

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NET PANCREATICI E GASTROINTESTINALI

LA NOSTRA CASISTICA

N totale di casi = 95
M : F = 51 : 44
Età media alla diagnosi = 57,9 ± 17,4

Grading	N°	%
G1	71	74,7
G2	20	21,1
G3	4	4,2

	N°	%
MEN 1	9	9,5
Sporadiche	66	69,4
Fenocopie	20	21,1

	N°	%
Funzionanti	11	11,6
Non funzionanti	88	88,4

Sede	N°	%
Pancreas	46	48,4
Ileo	28	29,5
Duodeno	6	6,3
Stomaco	5	5,3
Appendice	8	8,4
Retto	2	2,1

NET PANCREATICI E GASTROINTESTINALI

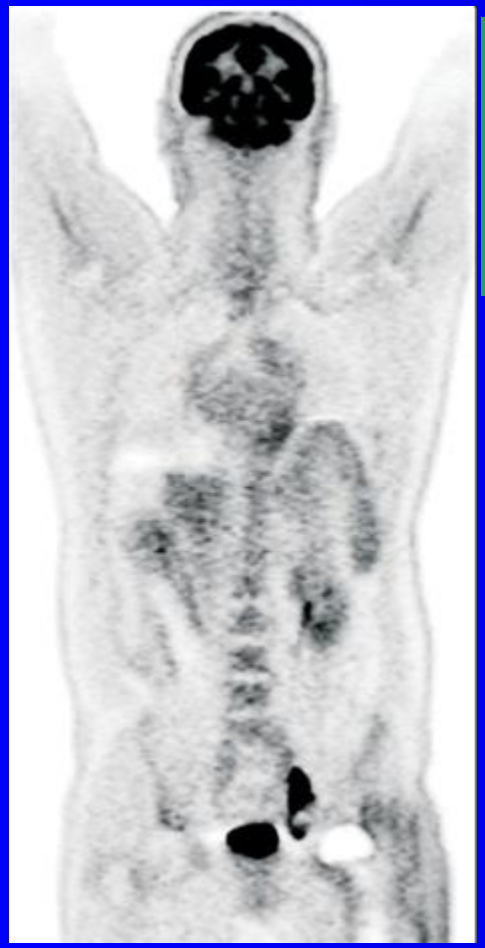
THE DIAGNOSIS IS BASED on

- CLINICAL MANIFESTATIONS
- FAMILY HISTORY
- LABORATORY STUDIES
- LOCALIZING IMAGING STUDIES:
  - CT, MRI, Endoscopy, PET
  - Ultrasound, Endoscopic US, and CEUS
- HISTOLOGICAL CONFIRMATION

IMAGING IBRIDO (SEDUTA UNIFICATA)

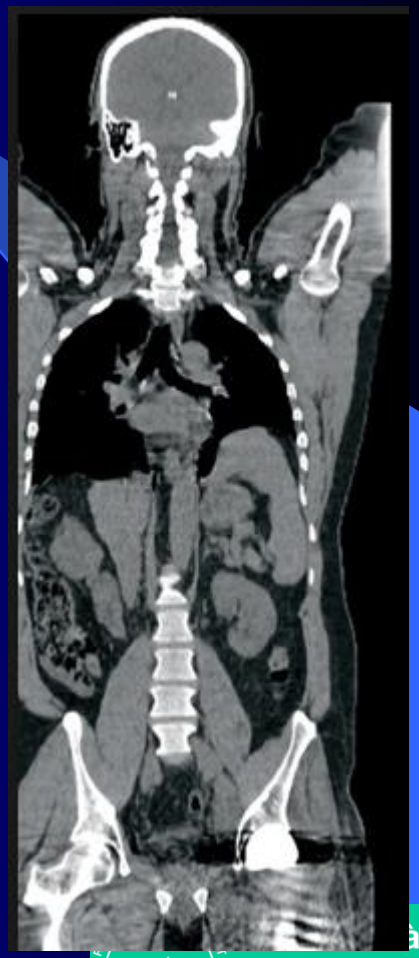
PET

IMAGIN METABOLICO



TC CON MDC

IMAGIN MORFOLOGICO



VANTAGGI :

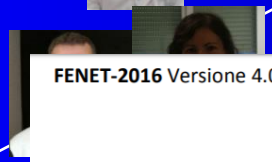
- Un solo accesso per il pz
- Un solo posizionamento di CVP
- Due specialisti a confronto

NET PANCREATICI E GASTROINTESTINALI

THERAPEUTIC OPTIONS







surgery

endoscopic resection

loco-re… treatment

…chemo-emb…

chemotherapy

interferon-α

…atin

…es

FENET-2016 Versione 4.0 del 05.02.2018

"Terapia radiorecettoriale con analoghi radiomarcati della somatostatina in tumori con elevata espressione dei recettori per la somatostatina"

FENET-2016
Codice EUDRACT number 2016-005129-35

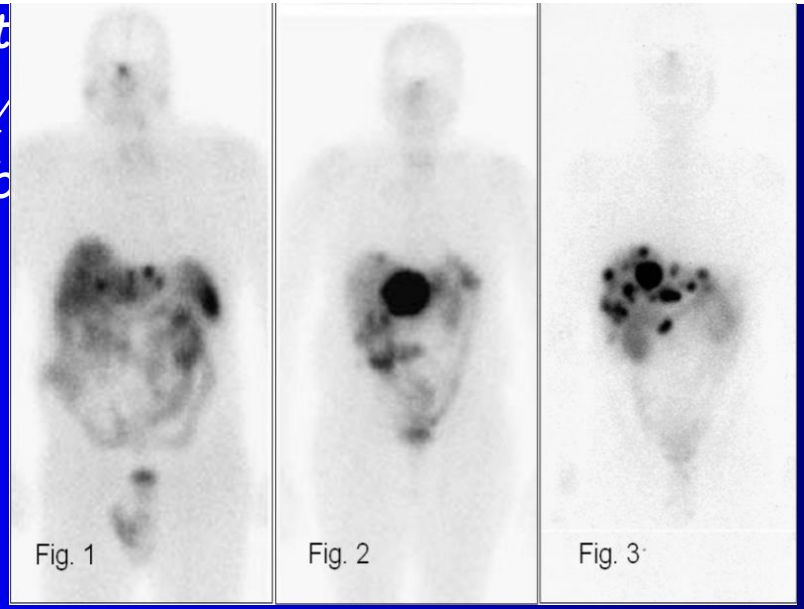



Fig. 1 Fig. 2 Fig. 3

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EndoOnco@FE

4° CONGRESSO NAZIONALE
CLUB SIE
ENDOCRINOLOGIA ONCOLOGICA

15 – 16 novembre 2018

FERRARA

Grazie per l'attenzione

Bondanelli Marta
Franceschetti Paola
Sabrina Lupo
Rossi Martina
Rossi Roberta

Bruni Stefania
Crociara Anna

Dall'Ara Elena
Damiani Luca
D'Ercole Francesca
Dinatolo Elisa
Gagliardi Irene
Mella Alessandro
Mungari Roberta
Pontrelli Margherita
Tarquini Mario

Sezione di Endocrinologia e Medicina Interna
Dipartimento di Scienze Mediche
Università degli Studi di Ferrara
Maria Rosaria Ambrosio mbrmrs@unife.it

Zatelli Maria Chiara

Ettore degli Uberti

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