



Iperparatiroidismo Dal sospetto clinico alla terapia Percorso multidisciplinare

Venerdì 16 maggio 2025

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Cona, Ferrara**

La Medicina Nucleare

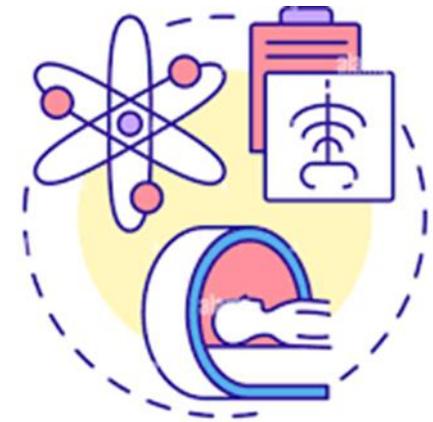
Dott. Matteo Caracciolo
U.O Medicina Nucleare - Cona (FE)

EPIDEMIOLOGIA

- **Terza** malattia endocrina più frequente
- Forma **sporadica** è la più diffusa (90/95%) → Adenoma singolo 85%
- Forme **ereditarie** sono il 5-10% (MEN1)
- La **prevalenza** supera il 2% nelle donne dopo i 55 anni
- La terapia **chirurgica** è l'unica cura

METODICHE

- **Ecografia** collo
- Indagini **radiologiche** (RM, TC, 4D-TC)
- **Scintigrafia** (pertecnetano/MIBI)
- **PET/CT** ^{18}F -Colina



ECOGRAFIA

VANTAGGI

- Basso costo
- Relativa facilità di esecuzione
- No radiazioni

SVANTAGGI

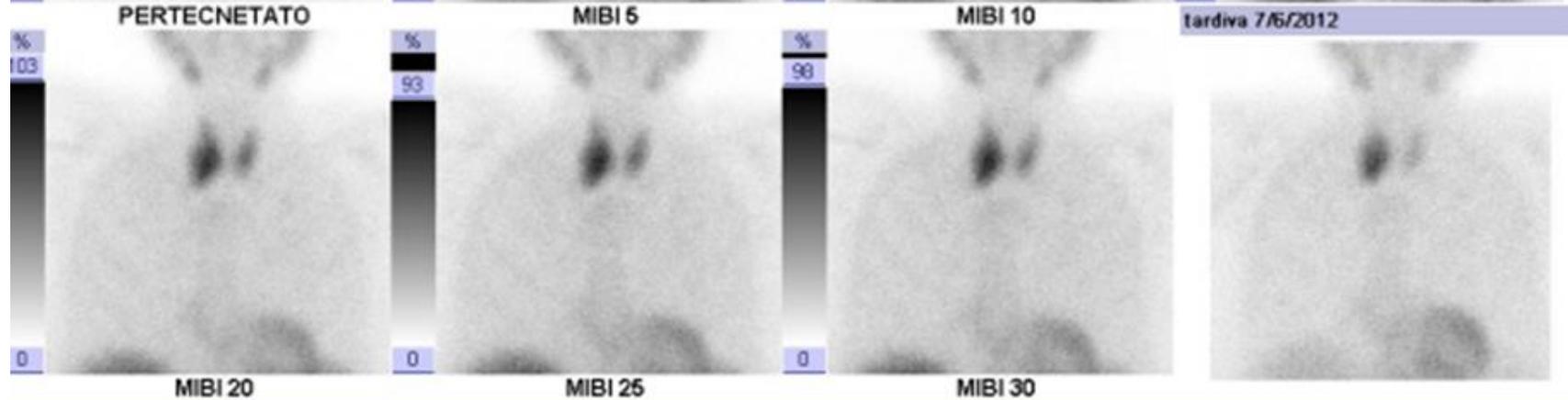
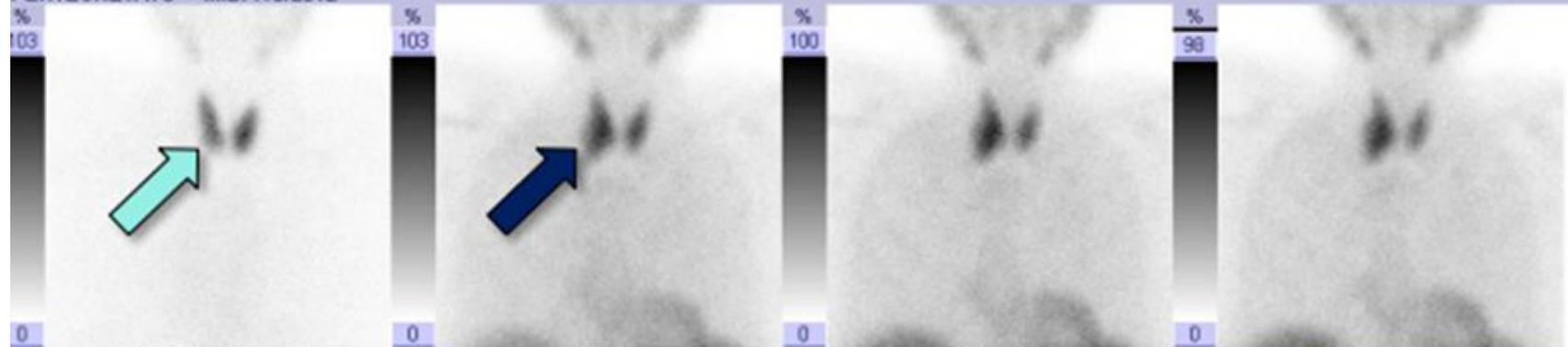
- Falsi positivi
- Sedi anomale
- Operatore-dipendente
- No criteri ecografici di tipicità

SCINTIGRAFIA

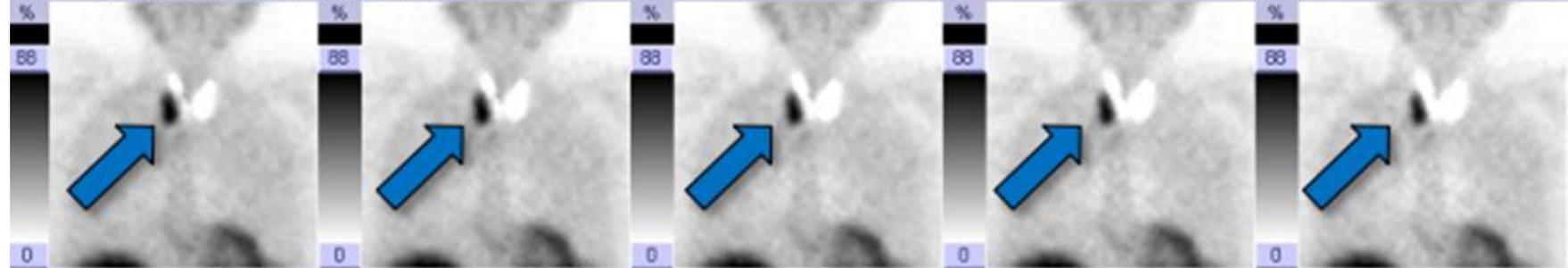
- **Non** è necessaria alcuna preparazione
- **Non** esiste radiofarmaco specifico
- Tecnica di **sottrazione**



PERTECNETATO + MIBI 7/6/2012



All Images
PERTECNETATO + MIBI [Arithmetic] 7/6/2012



Subtraction: 64% 850K Subtraction: 69% 811K Subtraction: 74% 772K Subtraction: 79% 736K Subtraction: 84% 709K

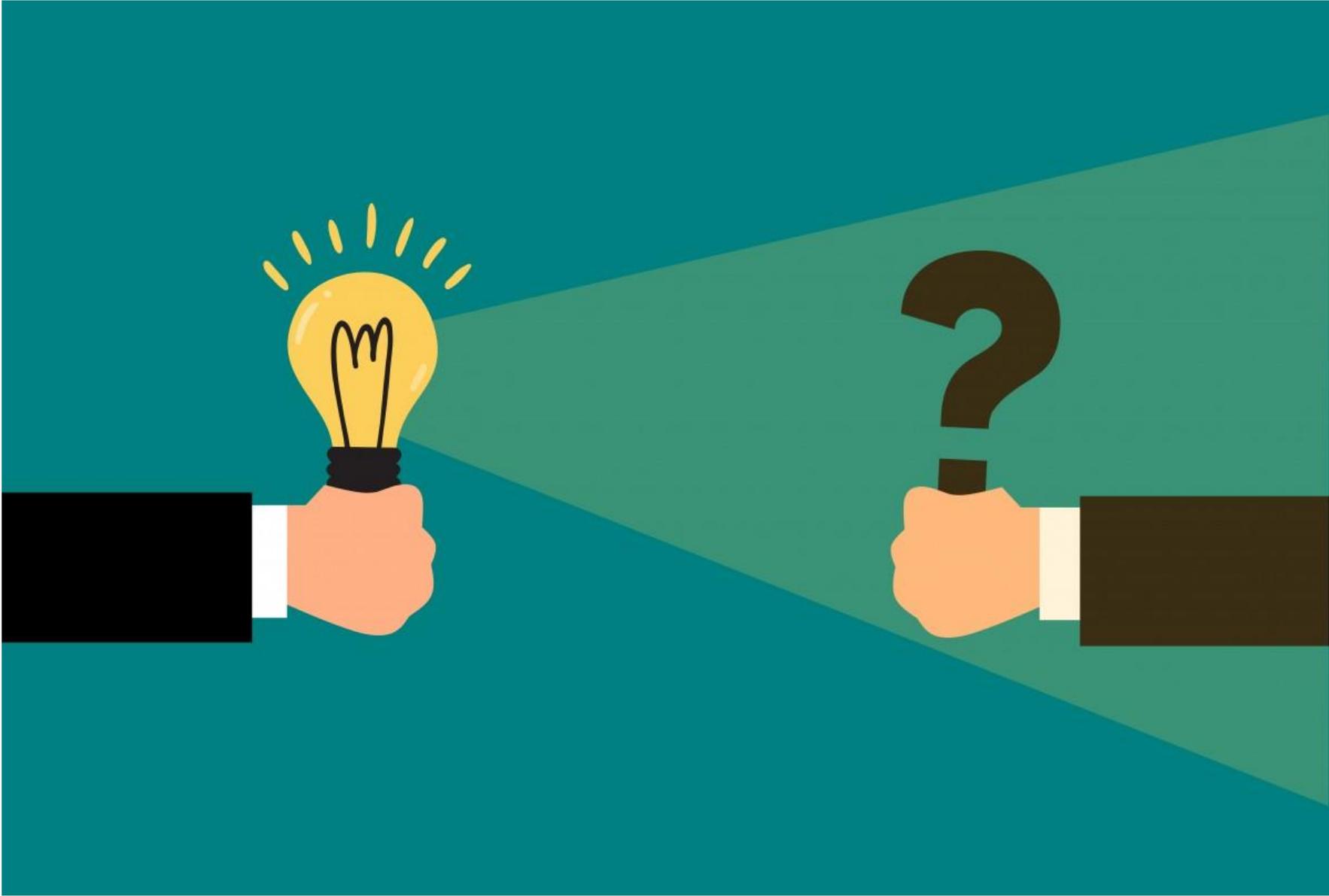
SCINTIGRAFIA

VANTAGGI

- Maggiore sensibilità
- Tolleranza
- SPECT/CT

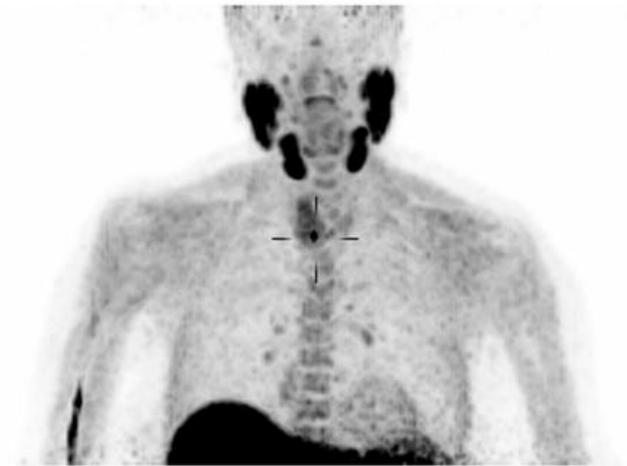
SVANTAGGI

- Falsi negativi
- Potere risolutivo
- Radiazioni
- Sospensione farmaci



PET/CT 18F-COLINA

- **Fosfatidil-colina** è un costituente delle membrane cellulari
- Risulta maggiormente **espressa** nelle cellule tumorali
- Utilizzata per il tumore della **prostata**, HCC e glioma



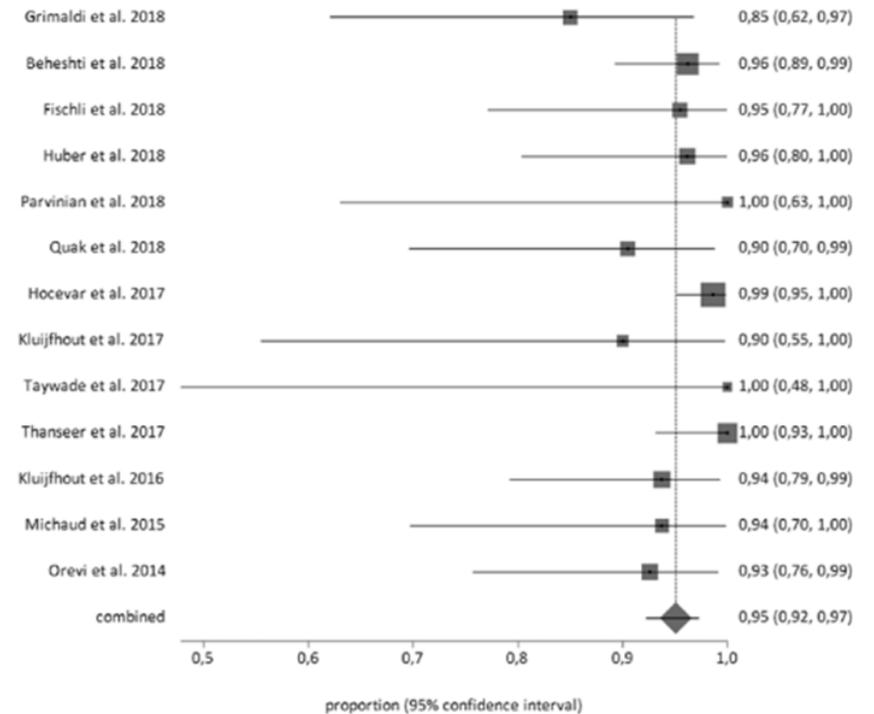
PET/CT 18F-COLINA

Diagnostic performance of choline PET for detection of hyperfunctioning parathyroid glands in hyperparathyroidism: a systematic review and meta-analysis

Giorgio Treglia^{1,2,3,4}  • Arnoldo Piccardo¹ • Alessio Imperiale^{5,6} • Klaus Strobel⁷ • Philipp A. Kaufmann⁸ • John O. Prior⁴ • Luca Giovanella¹

- «..The **sensitivity** of Choline-PET in detecting HP on a per-patient and per-lesion basis ranged from 85 to 100% and from 71 to 100%..»
- «..The **PPV** ranged from 86 to 100% and from 85 to 100%..»

Sensitivity (patient-based)

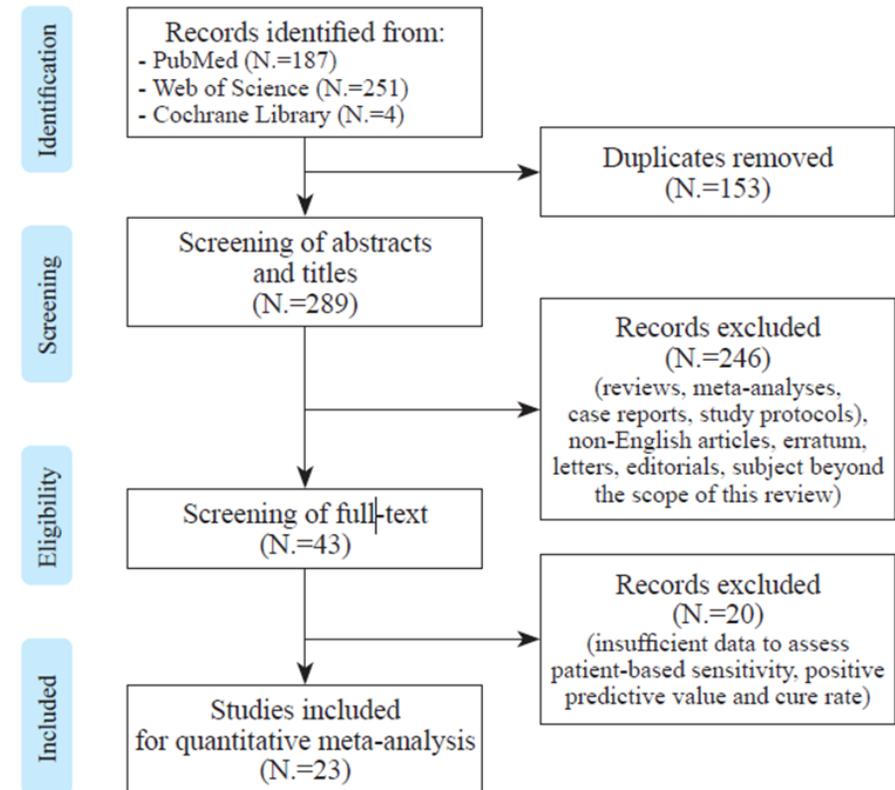


PET/CT 18F-COLINA

Detection, resection and cure: a systematic review and meta-analysis of ¹⁸F-choline PET in primary hyperparathyroidism

Elske QUAK ¹*, Marie CAVAREC ², Renaud CIAPPUCCINI ¹, Gilles GIRAULT ³, Roman ROUZIER ⁴, Justine LEQUESNE ⁵

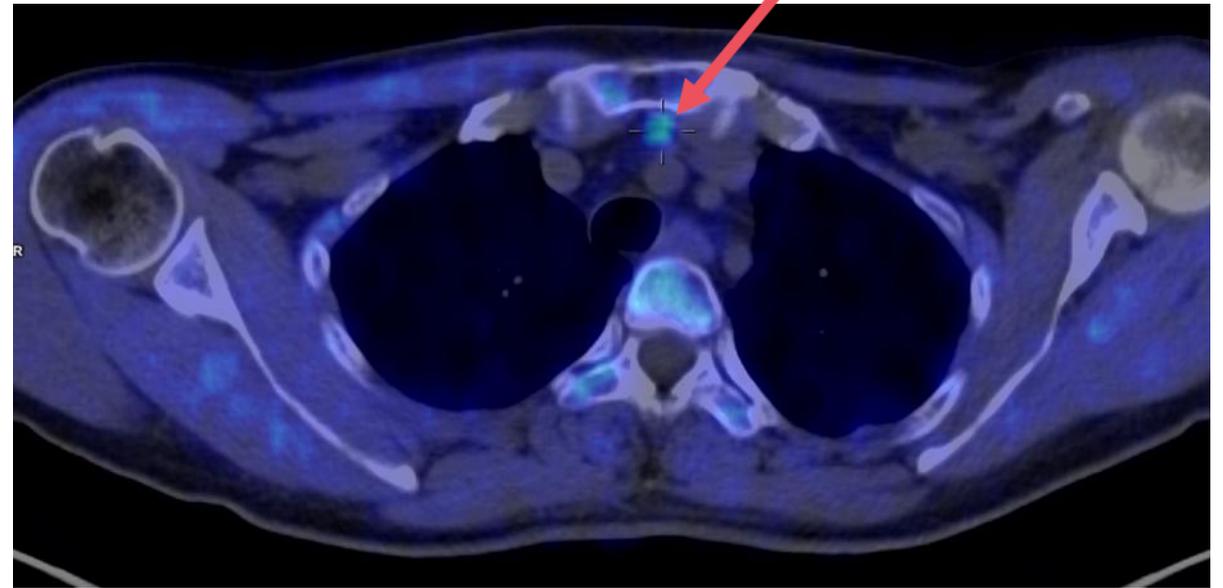
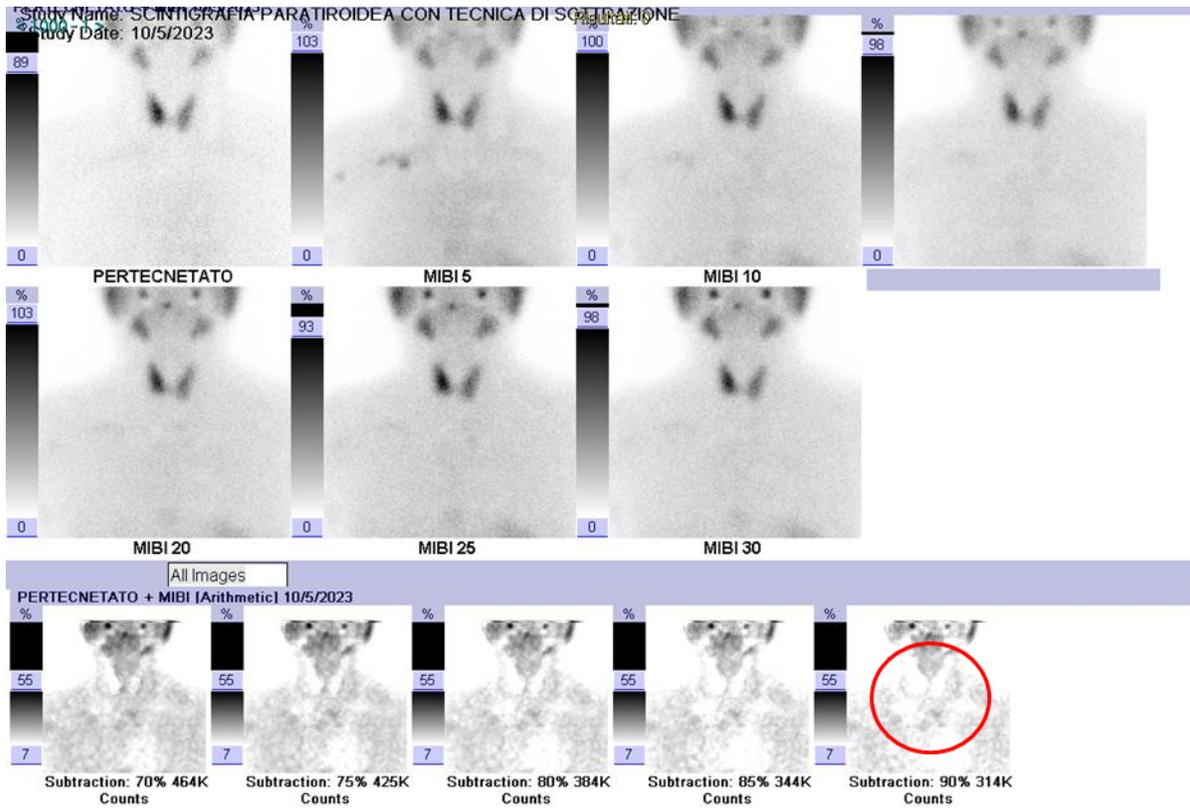
- «..FCHPET showed a pooled patient-based **sensitivity** of 93.8% (95% CI: 89.8-96.3) and **PPV** of 97% (95% CI: 92.8-98.8) in patients with pHPT.. »
- «..The pooled cure rate of **PET-guided surgery** was 92.8% (95% CI: 87.4-96.0).. »

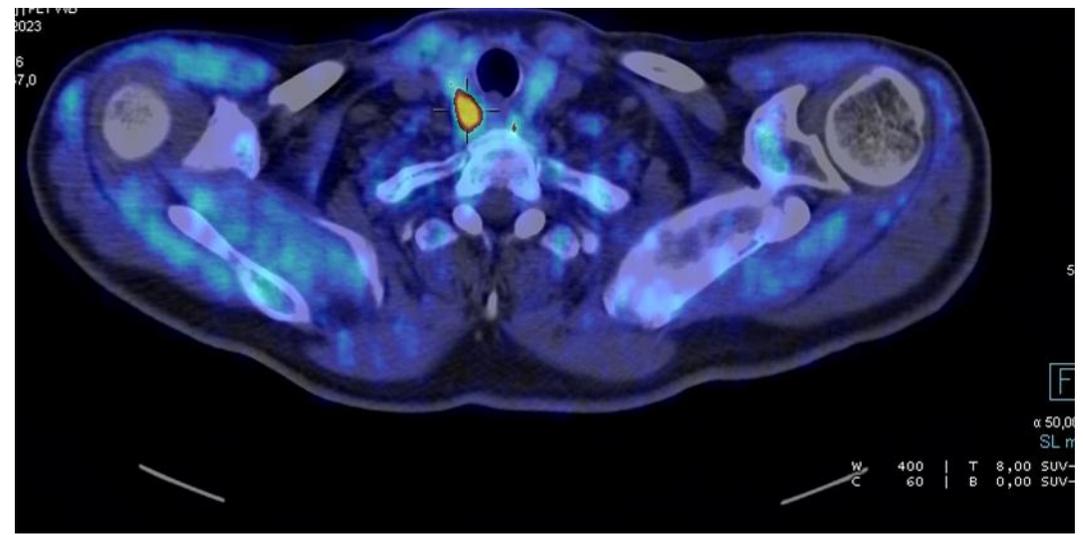
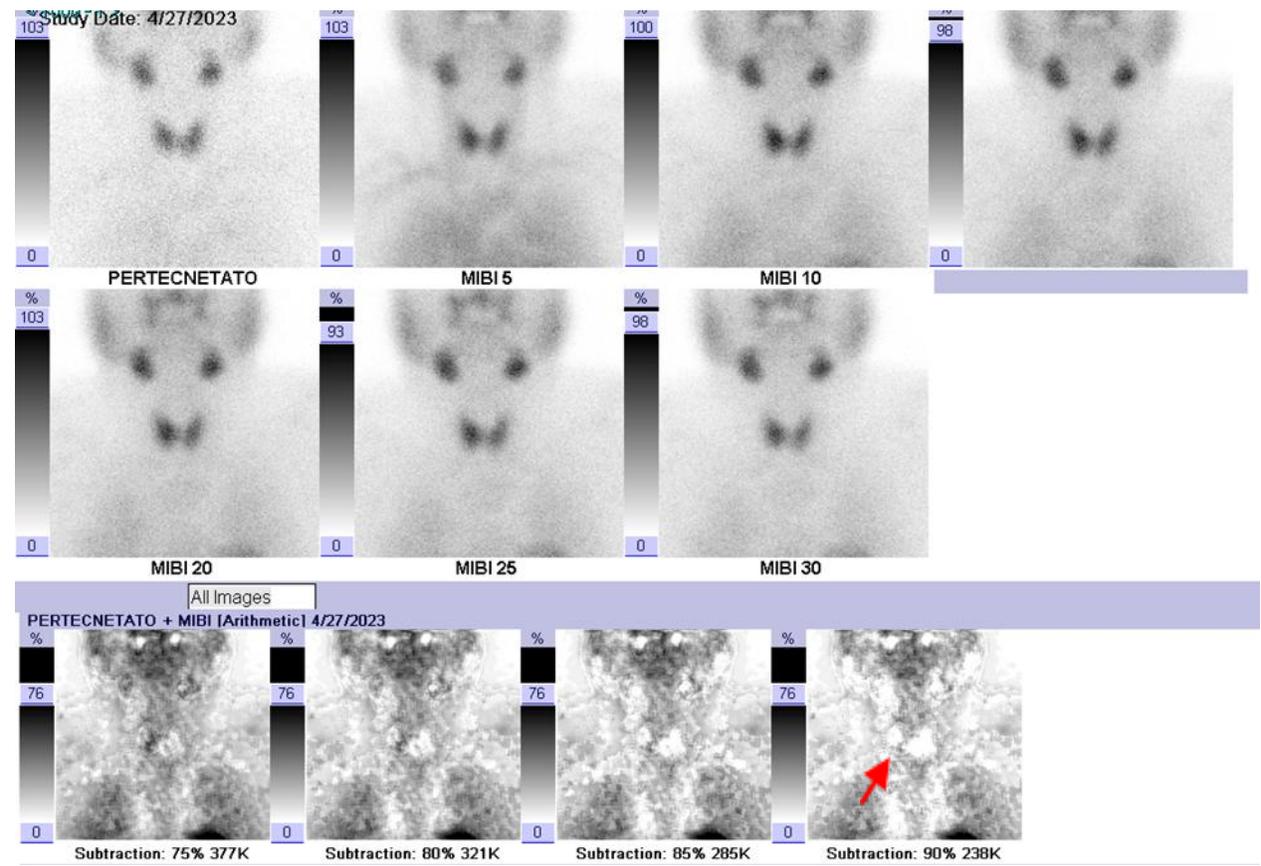


PET/CT 18F-COLINA



Medicinale	Estensione di indicazione relativa ad usi consolidati sulla base di evidenze scientifiche presenti in letteratura
Fluorocolina (18F) cloruro	<p>Localizzazione preoperatoria di adenomi della paratiroide in caso di iperparatiroidismo primario <u>dopo una diagnostica per immagini convenzionale negativa o non conclusiva</u> (scintigrafia con 99mTc-sestamibi o SPECT/TC).</p> <p>Quak E. et al. F18-choline PET/CT guided surgery in primary hyperparathyroidism when ultrasound and MIBI SPECT/CT are negative or inconclusive: the APACH1 study. Eur J Nucl Med Mol Imaging. 2018; 45(4):658-666.</p> <p>Hope TA et al. Accuracy of 18F-fluorocholine PET for the detection of parathyroid adenomas: prospective single center study. J Nucl Med. 2021 2021 Mar 5;jnumed.120.256735. doi: 10.2967/jnumed.120.256735</p>



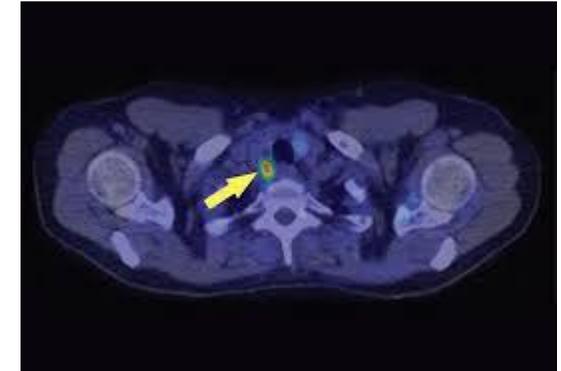


PET/CT 18F-COLINA

► Radiol Oncol. 2024 Nov 28;58(4):486–493. doi: [10.2478/raon-2024-0058](https://doi.org/10.2478/raon-2024-0058) 

[¹⁸F]fluorocholine PET vs. [^{99m}Tc]sestamibi scintigraphy for detection and localization of hyperfunctioning parathyroid glands in patients with primary hyperparathyroidism: outcomes and resource efficiency

[Sebastijan Rep](#)^{1,2}, [Klara Sirca](#)³, [Ema Macek Lezaic](#)⁴, [Katja Zaletel](#)^{1,5}, [Marko Hocevar](#)^{3,5}, [Luka Lezaic](#)^{1,5,✉}

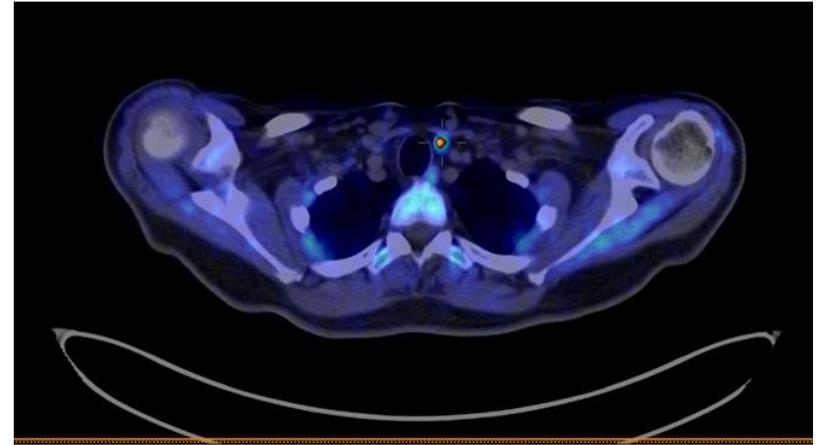


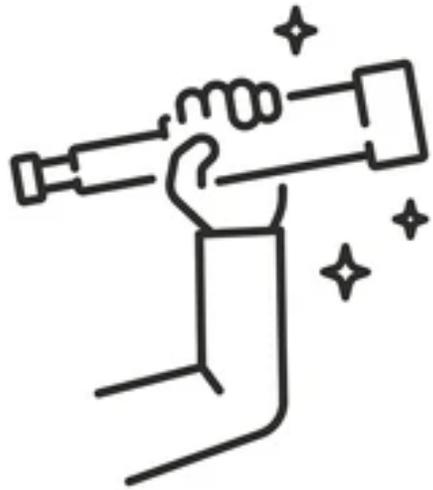
«..ioPTH can be **safely omitted**, leading to the reduction of surgery time..»

«..FCh-PET/CT **reduces** the time of imaging, the time of surgery and potentially reduces the number of reoperations for persistent disease..»

PET/CT 18F-COLINA

- ✓ Elevata **detection rate**
- ✓ Migliore **sensibilità, specificità, PPV, NPV**
- ✓ Minore quantità di **radiazioni**
- ✓ Metodica **standardizzata**
- ✓ Influenza sulla **strategia chirurgica**





1

Ecografia e Scintigrafia **I livello**

2

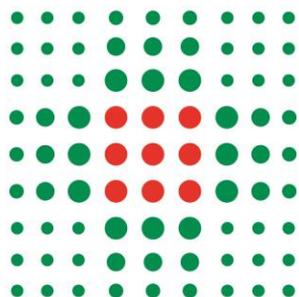
PET se indagine negativa o dubbia

3

Integrazione clinica e radiologica



GRAZIE



**SERVIZIO SANITARIO REGIONALE
EMILIA-ROMAGNA
Azienda Ospedaliero - Universitaria di Ferrara**