

Sphère ORL

Incidentalomes en TEP

Réunion DES AuRA

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Gaëtan PROHET

Sommaire

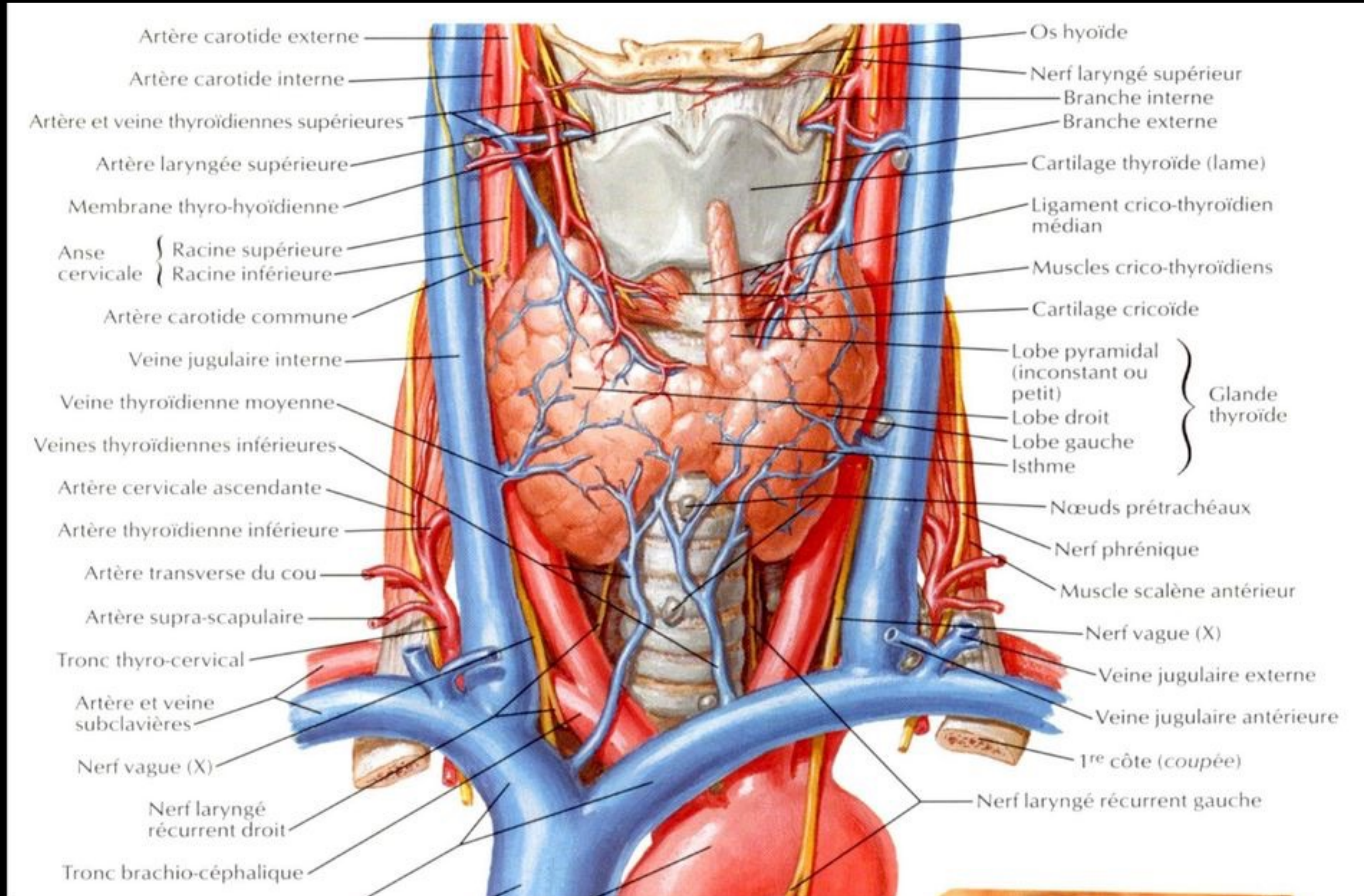
I. Thyroïde

II. Parotide

III. Sinus piriforme

Thyroïde

Rappels



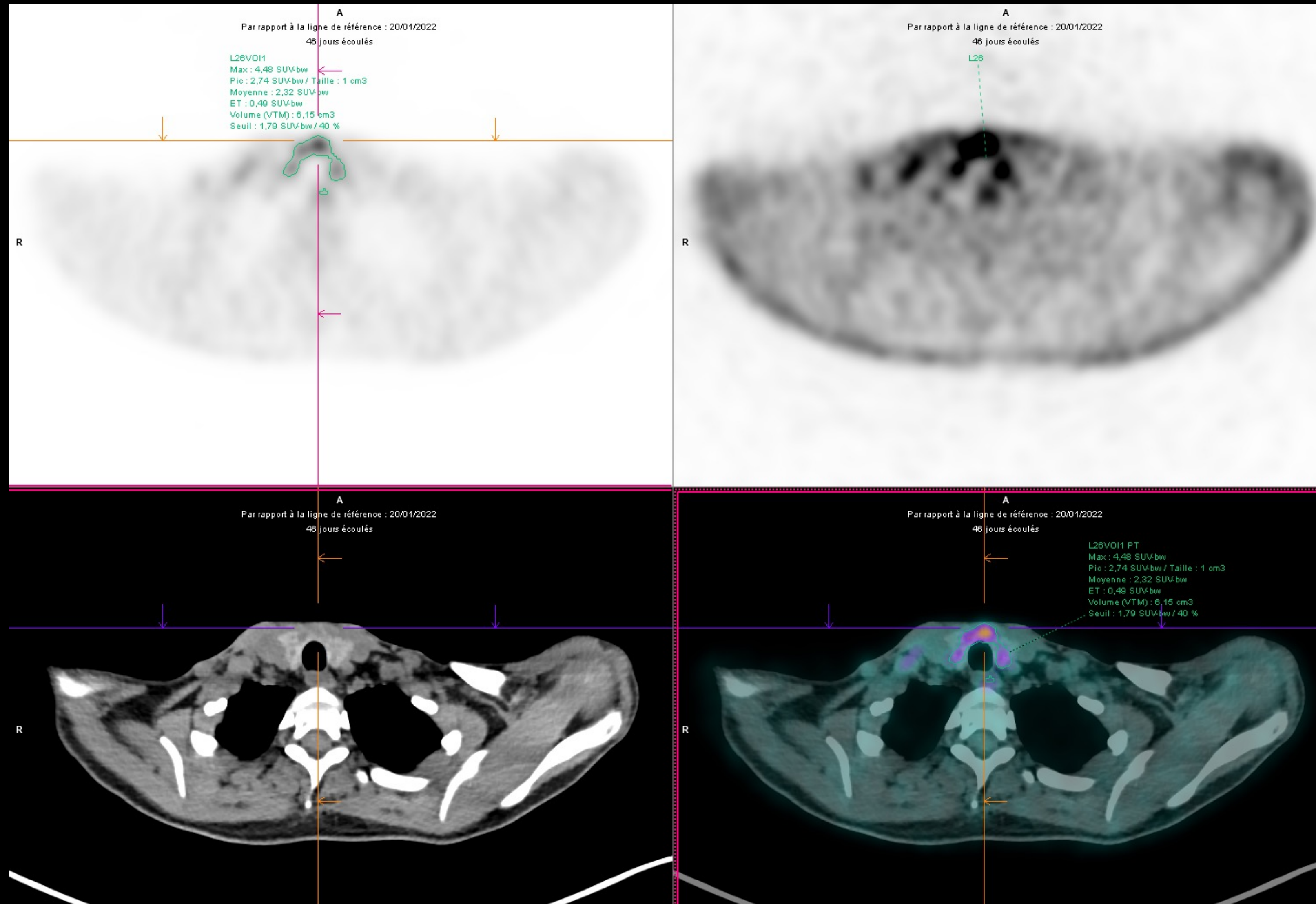
Thyroïde

TEP 18F-FDG

- Hypermétabolisme diffus
- Hypermétabolisme focalisé

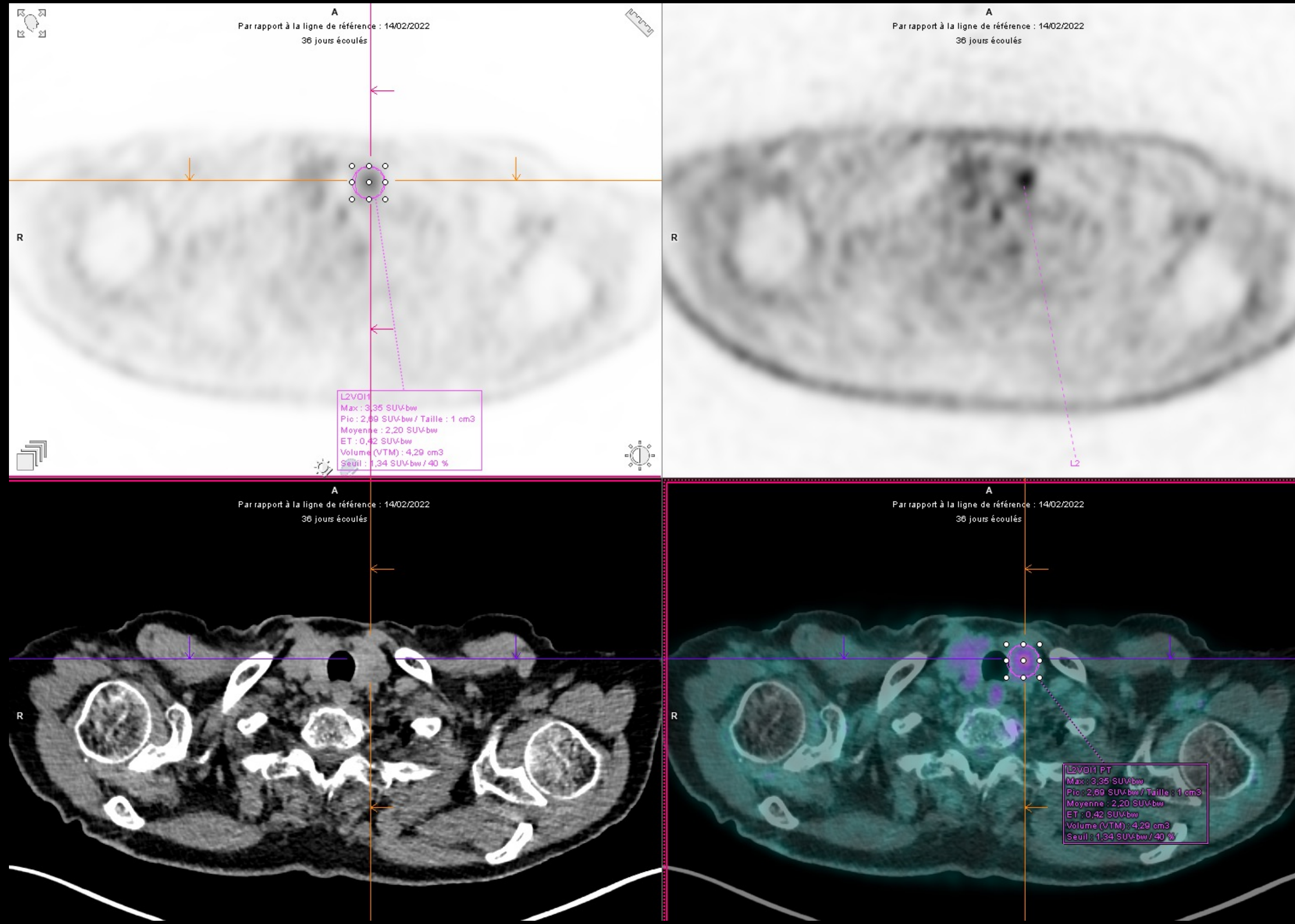
Thyroïde

TEP 18F-FDG



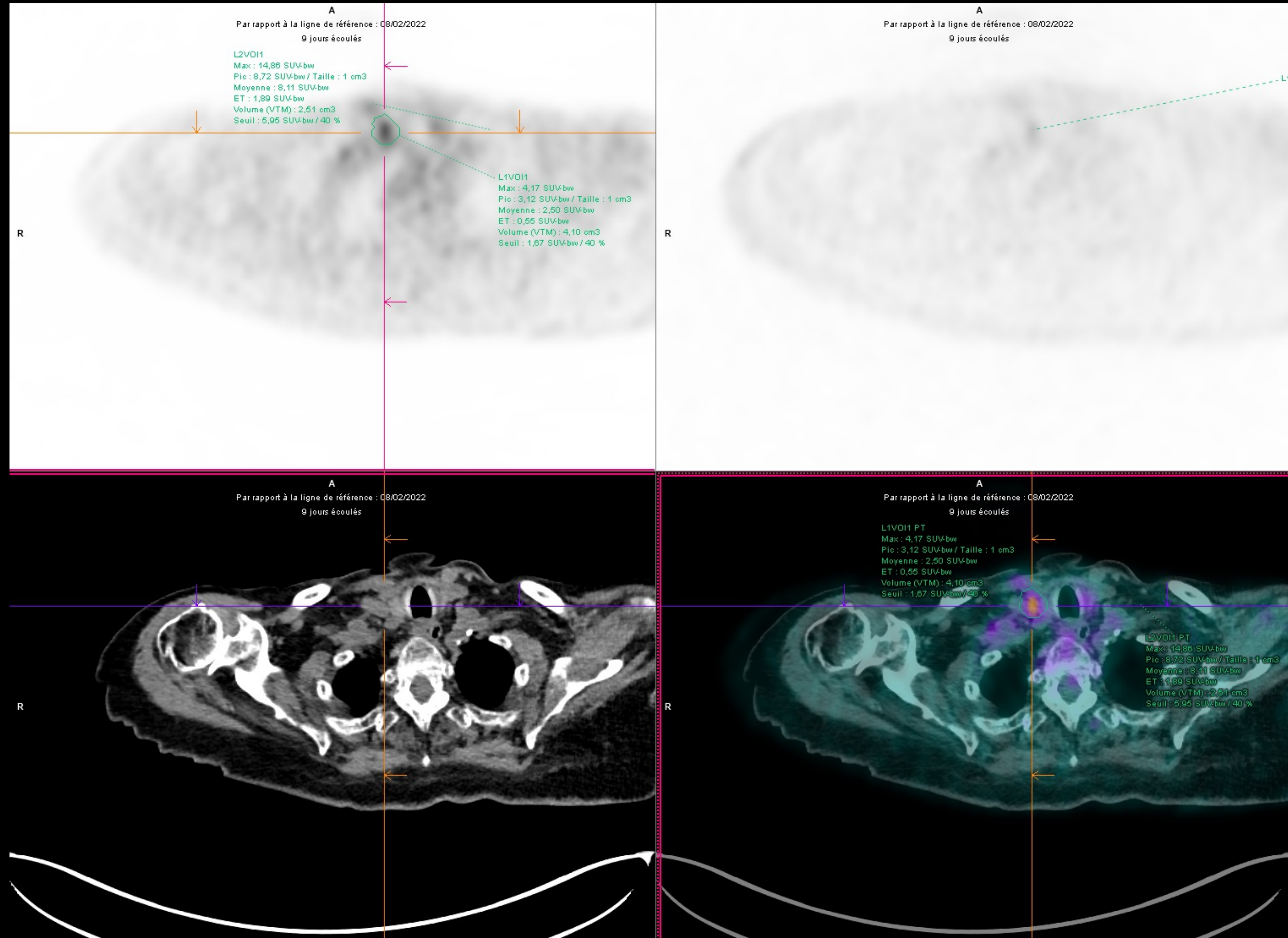
Thyroïde

TEP 18F-FDG



Thyroïde

TEP 18F-FDG



Thyroïde

TEP 18F-FDG

- Hypermétabolisme diffus
 - **4,2% malin**
 - 46,4% thyroïdite chronique
 - 49,4% bénin (indéterminé)
- Hypermétabolisme focal
 - **34,8% malin**
 - 62,7% bénin
 - 2,5% indéterminé

Thyroïde

TEP 18F-FDG

- Hypermétabolisme focal : 36,2% malin
- Absence de différence selon : géographie, apport en iode

Thyroïde

TEP 18F-FDG

- Etude prospective
- Prévalence : 1,3%
- Taux de malignité : 16,6%

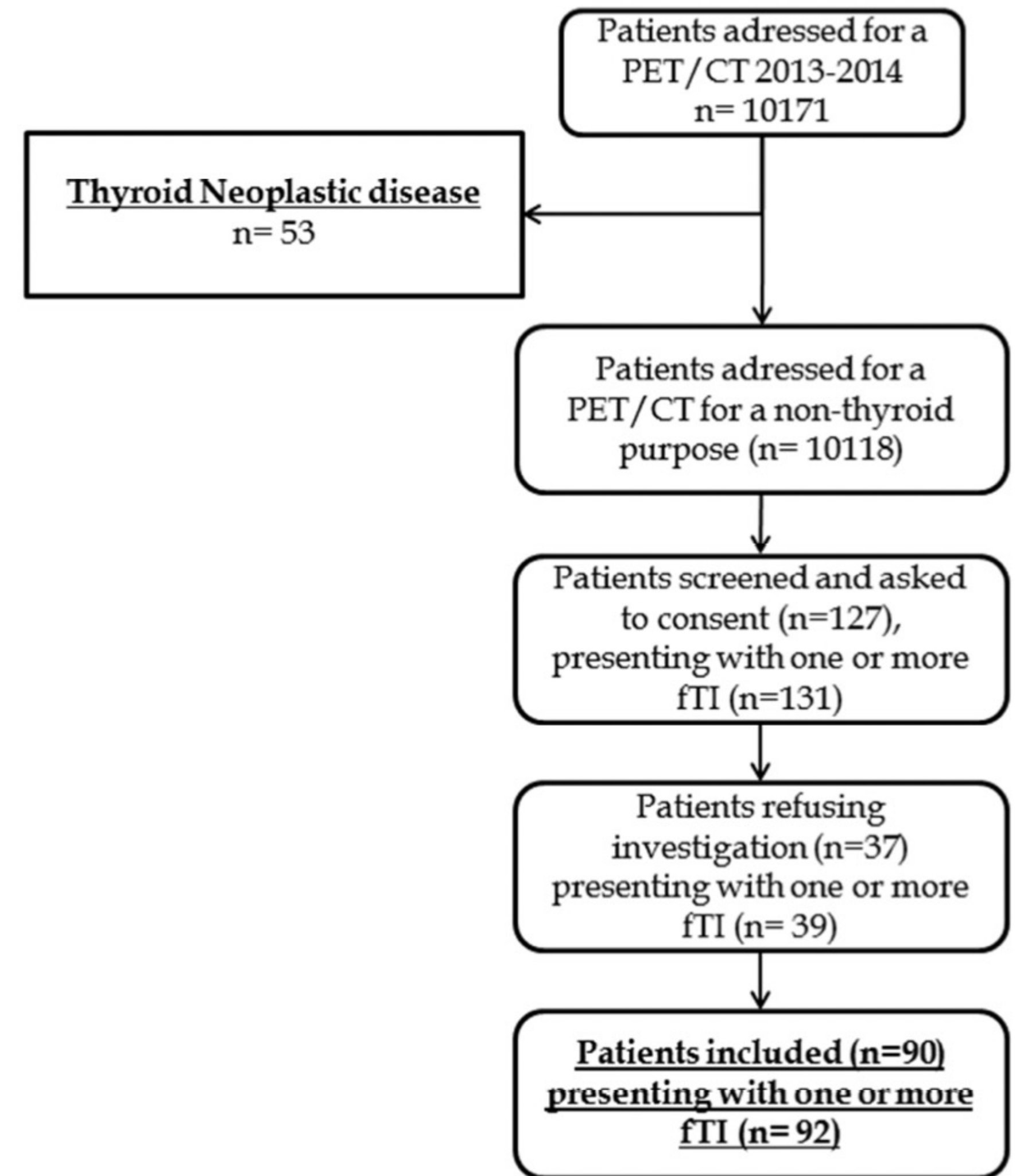


Figure 1

Thyroïde Echographie

Table 2

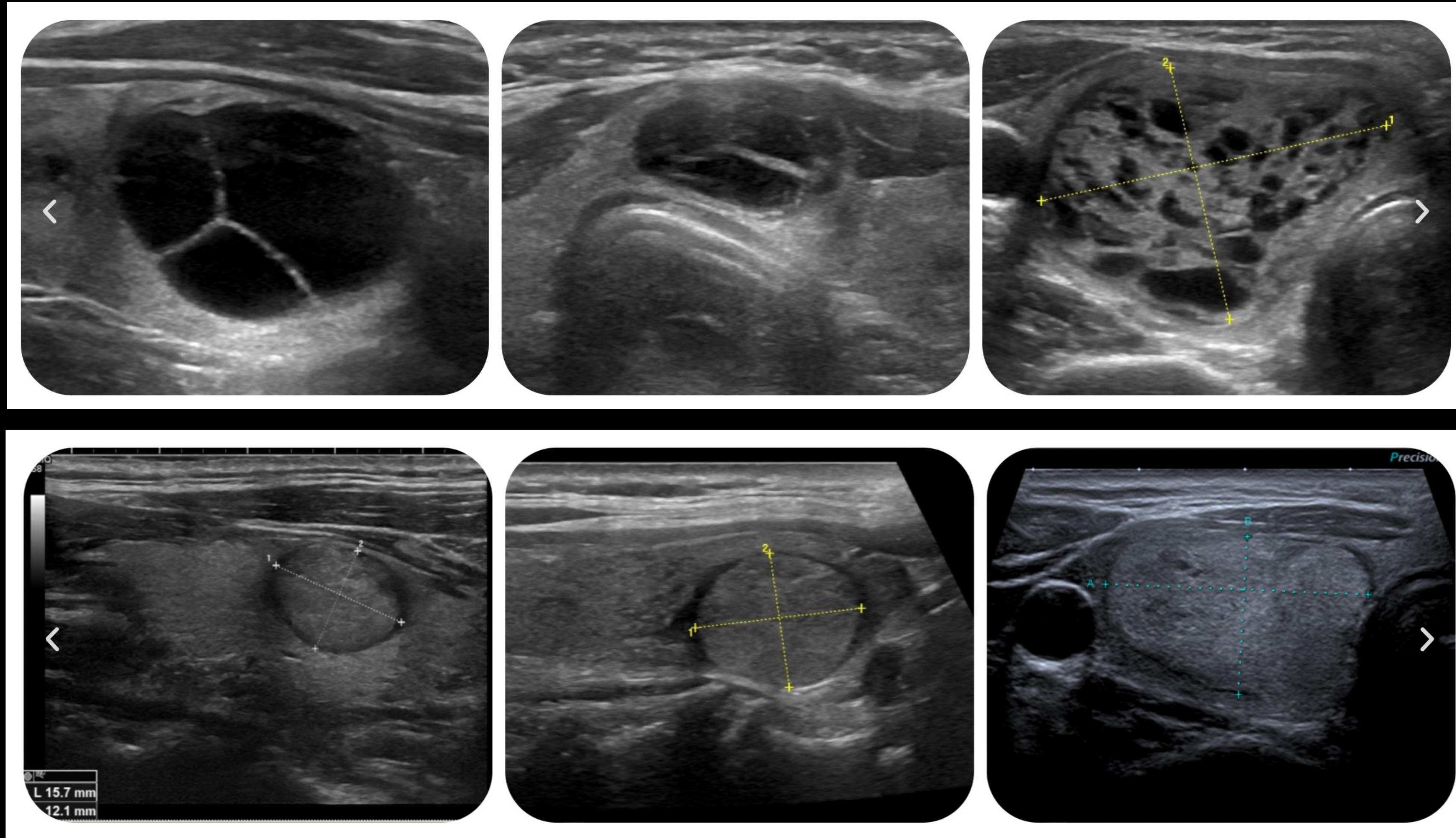
EU-TIRADS categories and risk of malignancy

Category	US features	Malignancy risk, %
EU-TIRADS 1: normal	No nodules	None
EU-TIRADS 2: benign	Pure cyst Entirely spongiform	0
EU-TIRADS 3: low risk	Ovoid, smooth isoechoic/hyperechoic No features of high suspicion	2–4
EU-TIRADS 4: intermediate risk	Ovoid, smooth, mildly hypoechoic No features of high suspicion	6–17
EU-TIRADS 5: high risk	At least 1 of the following features of high suspicion: – Irregular shape – Irregular margins – Microcalcifications – Marked hypoechoogenicity (and solid)	26–87

EU-TIRADS, European Thyroid Imaging Reporting and Data System; US, ultrasound.

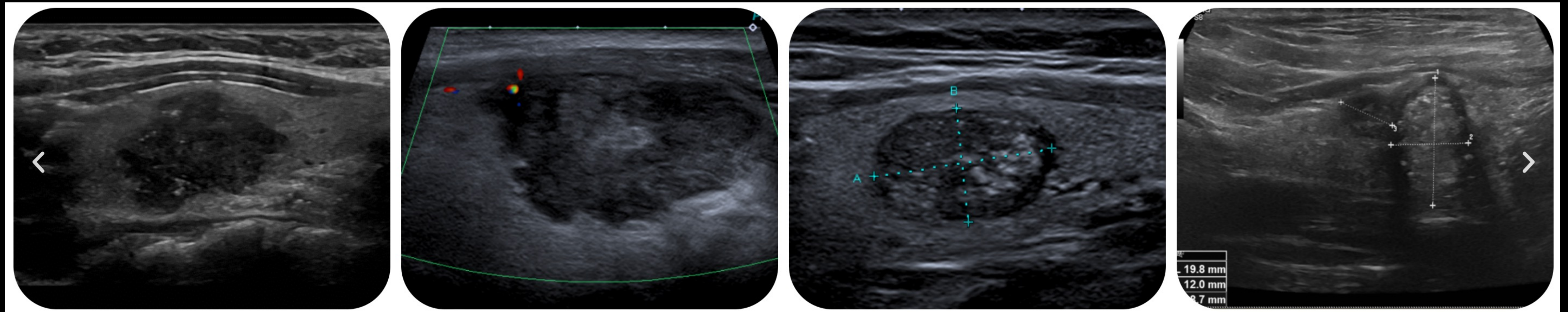
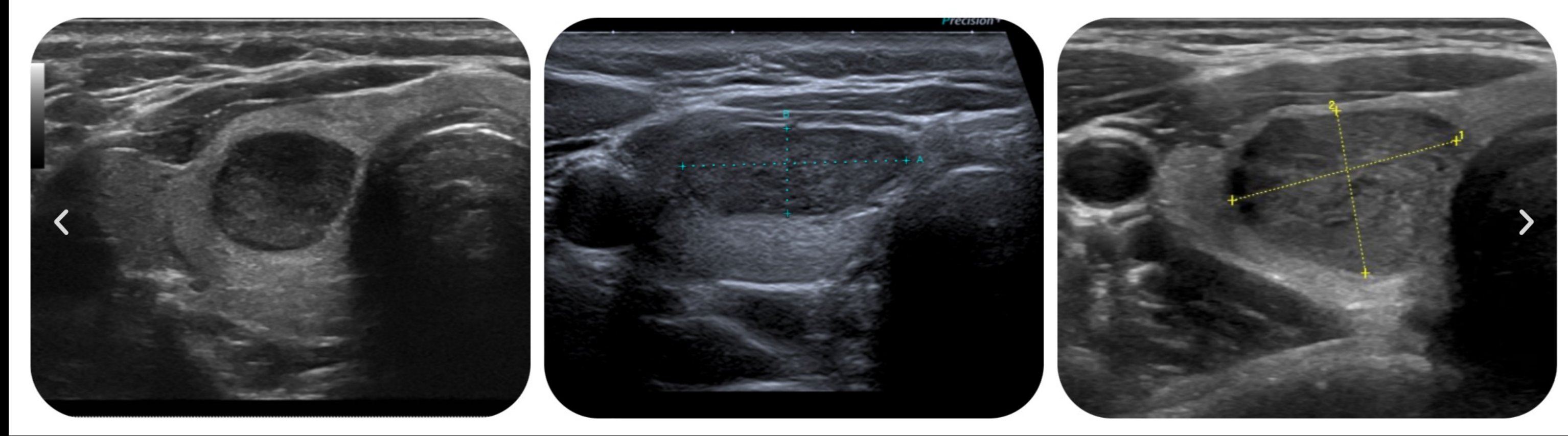
Thyroïde

Echographie



Thyroïde

Echographie



Thyroïde

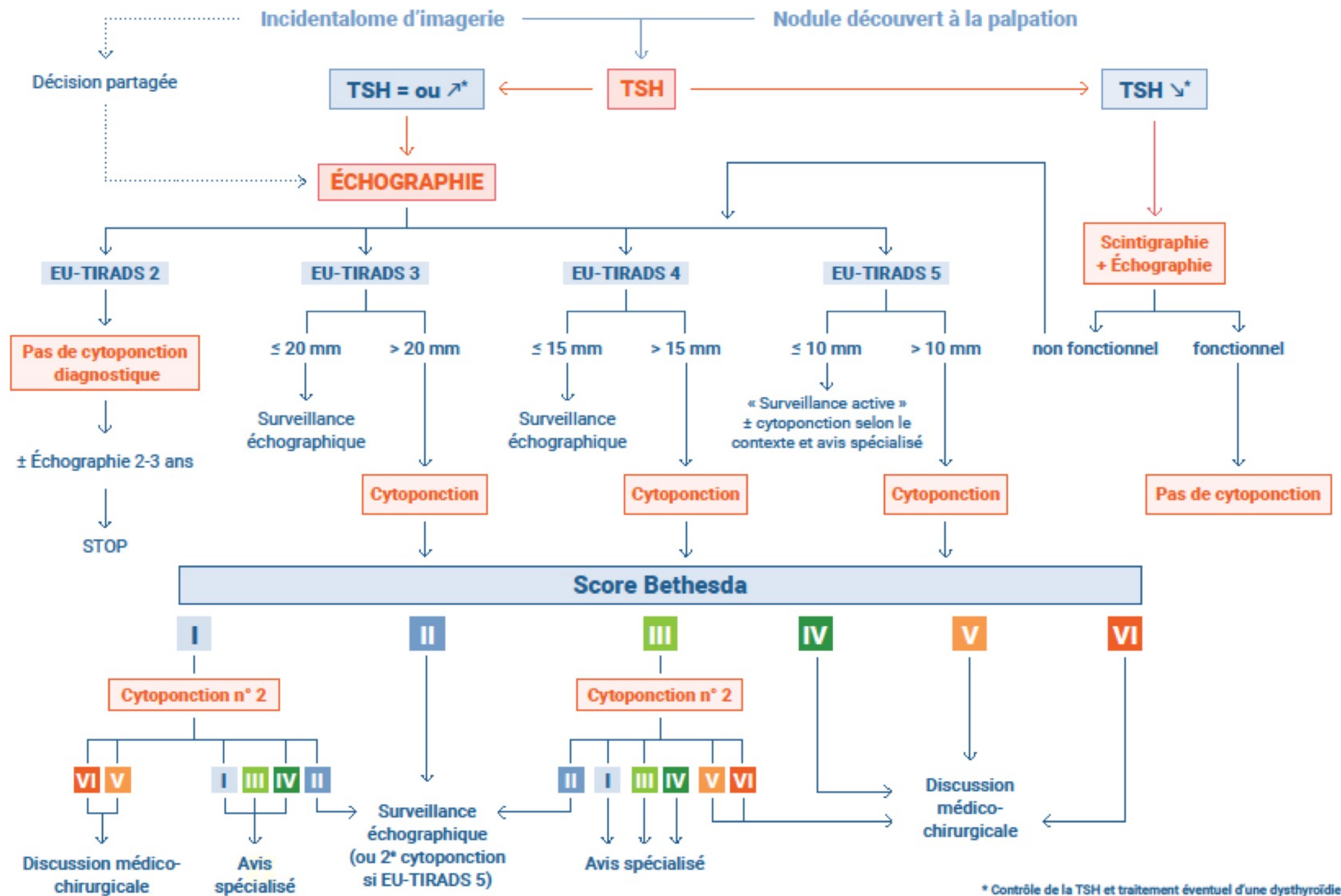
Conduite à tenir

- Selon la taille du nodule
- Selon EU-TIRADS
- Apport de la TEP 18F-FDG

Thyroïde

Conduite à tenir

Figure 1. Stratégie d'exploration d'un nodule thyroïdien



Thyroïde

Conduite à tenir

Tableau 1 – Classification de Bethesda 2017²

Catégorie diagnostique	Risque de malignité (%) ³
<ul style="list-style-type: none"> – I. Non diagnostique : – Colloïde kystique pure Prélèvement paucicellulaire Autres (gêne à l'analyse...) 	5-10
<ul style="list-style-type: none"> – II. Bénin : – En faveur d'un nodule vésiculaire bénin En faveur d'une thyroïdite lymphocytaire, cf. contexte En faveur d'une thyroïdite granulomateuse (subaiguë) Autres 	0-3
<ul style="list-style-type: none"> – III. Atypies de signification indéterminée/lésion folliculaire de signification indéterminée 	6-18
<ul style="list-style-type: none"> – IV. Néoplasme folliculaire – Préciser si néoplasme folliculaire à cellules oncocytaires 	10-40
<ul style="list-style-type: none"> – V. Suspect de malignité : – Suspect de carcinome papillaire Suspect de carcinome médullaire Suspect de métastase Suspect de lymphome Autres 	45-60
<ul style="list-style-type: none"> – VI. Malin : – Carcinome papillaire Carcinome peu différencié Carcinome médullaire Carcinome indifférencié (anaplasique) Métastase Lymphome Autres 	94-96

Thyroïde

TEP Choline

- TEP 11C-Choline ou 18F-Choline pour exploration oncologique
- Plusieurs causes :
 - Bénin
 - Carcinome papillaire
 - Métastase (changement de traitement)
 - Lymphome

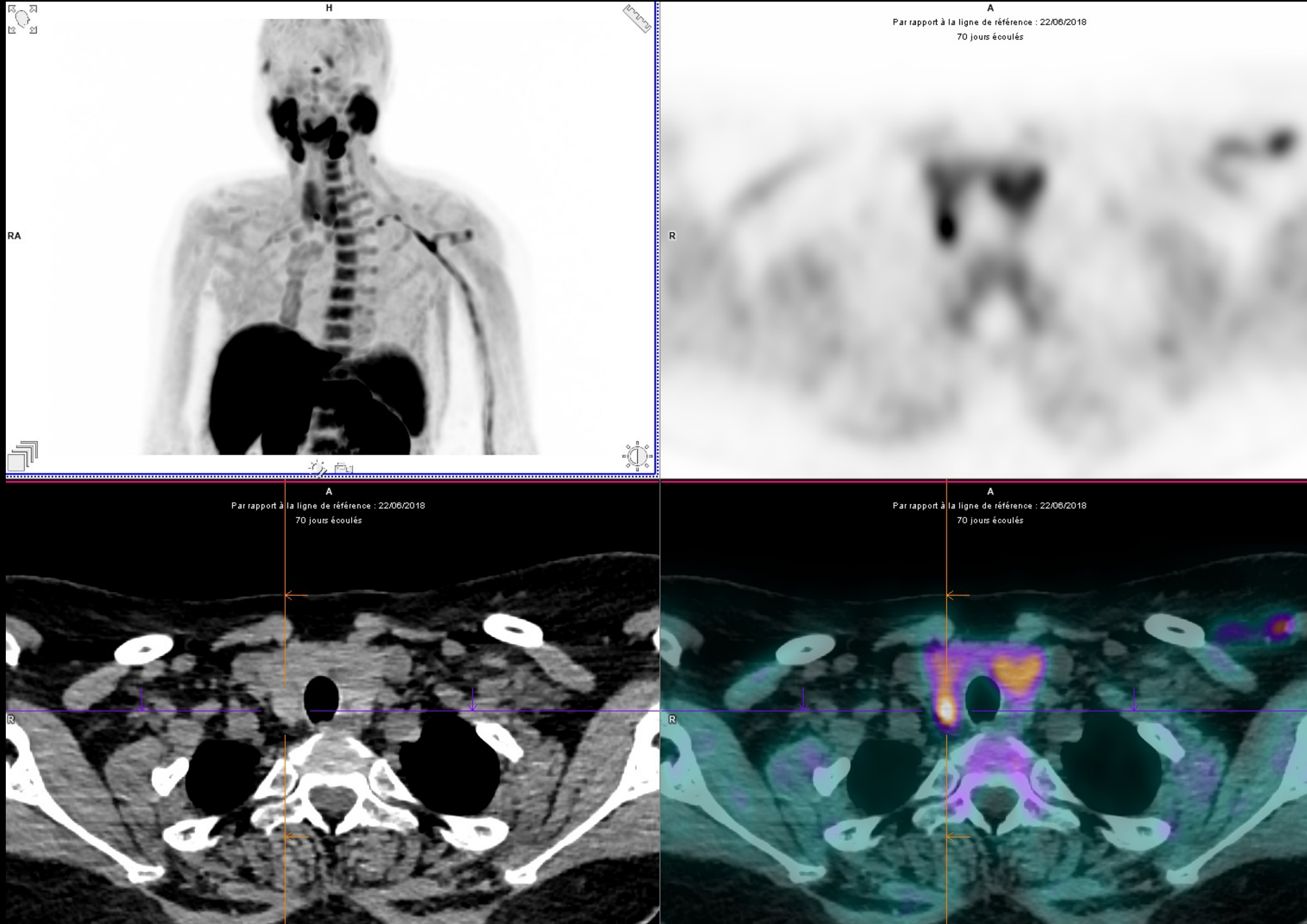
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Thyroïde

TEP Choline



Thyroïde

TEP 68Ga-PSMA

- Etude rétrospective
- Taux de malignité en cas d'hyperfixation focale : 15%

Table 1. Characteristics of patients with thyroid incidental findings on ⁶⁸Ga-PSMA PET/CT.

Patient no.	Pattern of PSMA uptake	Age (years)	SUVmax	TSH level	Thyroid scintigraphy	Ultra-sound	FNA (cytology)	Pathology (histology)	Final Diagnosis
1	Focal	74	5.0	Elevated	-	Indeterminate	Indeterminate	Benign	Benign
2	Focal	74	9.8	-	-	Malignant	Malignant	Metastases from renal cell carcinoma	Malignant
3	Focal	52	8.7	Normal	-	Malignant	Malignant	Papillary thyroid carcinoma	Malignant
4	Focal	73	5.0	Normal	-	Benign	Benign	Benign	Benign
5	Focal	62	7.0	Low	Hot nodule	-	-	-	Benign
6	Focal	68	4.8	Normal	-	Benign	Benign	-	Benign
7	Focal	72	5.0	-	-	-	-	-	Benign
8	Diffuse	73	2.6	Normal	-	Benign	Benign	-	Benign
9	Diffuse	48	7.8	Normal	-	-	-	-	Benign
10	Diffuse	65	5.8	-	-	-	-	-	Benign
11	Diffuse	72	5.2	-	-	-	-	-	Benign
12	Diffuse	62	6.6	-	-	-	-	-	Benign
13	Mixed (Diffuse + Focal)	77	5.2 + 9.6	Normal	Cold nodule	Indeterminate	Benign	Benign	Benign

⁶⁸Ga PSMA PET/CT: Gallium-68 prostate-specific membrane antigen (PSMA)-based positron emission tomography/computed tomography (PET/CT); FNA: fine-needle aspiration; SUVmax: maximum standardized uptake value; TSH: thyroid-stimulating hormone; '-' means not conducted

Thyroïde

TEP 68Ga-PSMA

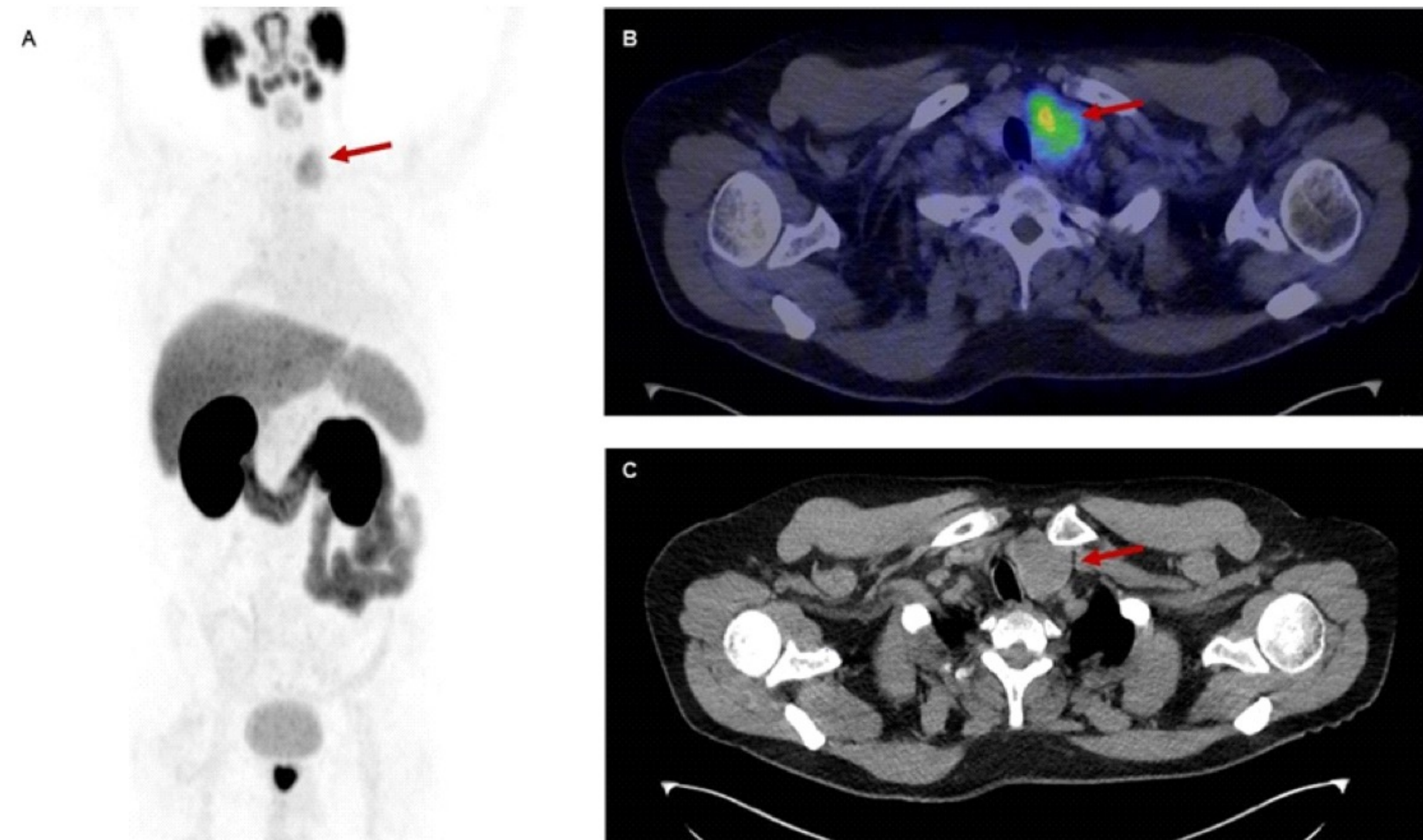


Figure 1. A 52-year-old man underwent a ^{68}Ga -PSMA PET/CT scan for staging of a high-risk cancer. Maximum-intensity projection (A) and fused axial PET/CT (B) showed an incidental finding in the left thyroid lobe (arrows) with increased ^{68}Ga -PSMA uptake (SUVmax 8.7) and no evidence of PSMA-positive lymph nodes. Computed tomography (C) showed left-sided enlargement of the thyroid. The patient underwent total thyroidectomy, and the diagnosis of papillary thyroid cancer was confirmed. Total thyroidectomy found metastasis of the right thyroid lobe as well as cervical lymph node level 6 (T3aN1aM0).

Thyroïde

TEP 68Ga-PSMA

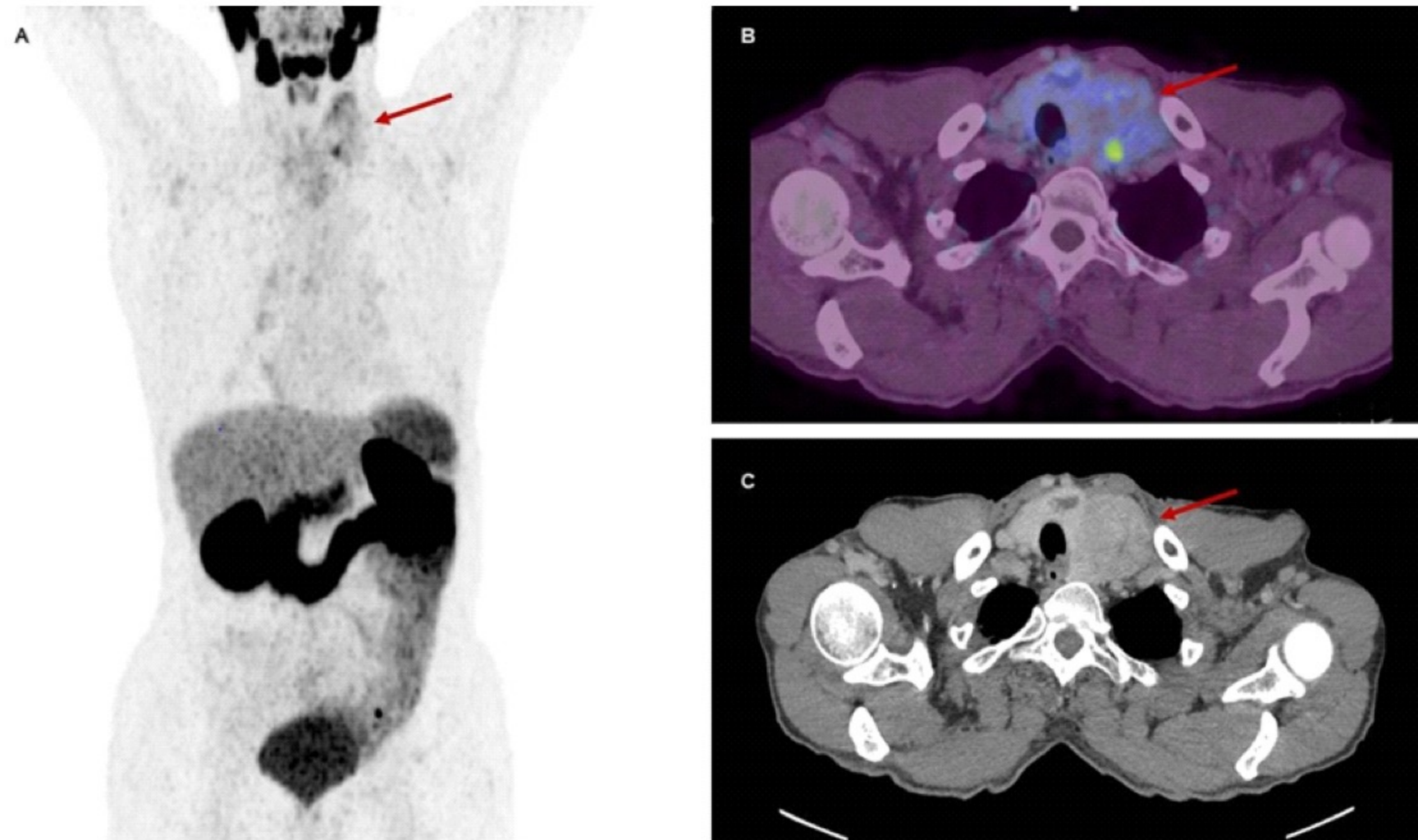
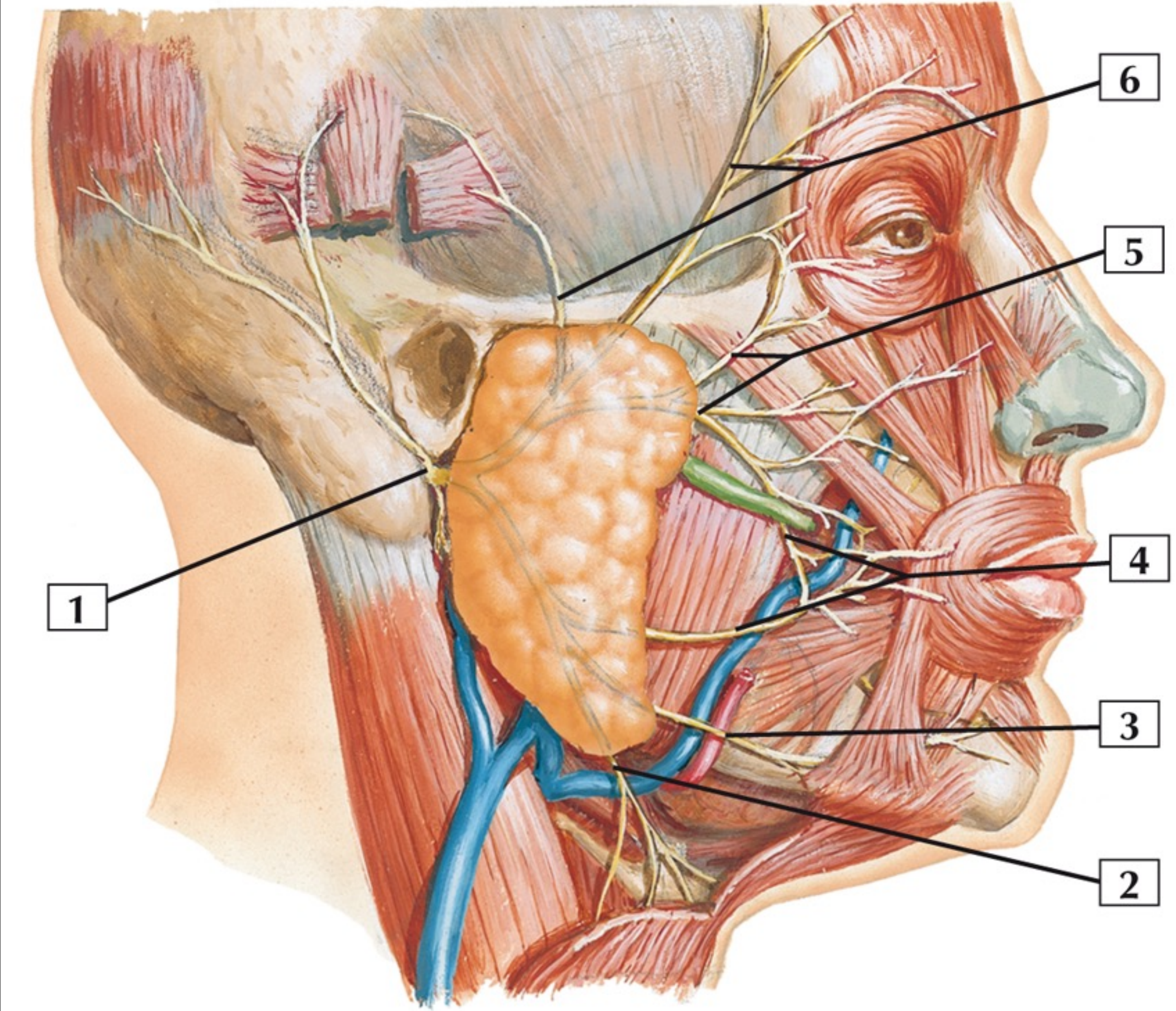


Figure 2. A 77-year-old man with biochemical recurrence of prostate cancer and incidental mixed (focal and diffuse) thyroïdal uptake of PSMA. Maximum-intensity projection of ⁶⁸Ga-PSMA PET/CT (A) and fused axial PET/CT (B) and CT (C) showed focal PSMA uptake posteriorly and mild-moderate PSMA uptake in the rest of the left thyroïd lobe (arrows). The patient underwent left-sided thyroïdectomy. Histopathology showed a nodular goiter.

Parotide

Rappels



Parotide

Rappels

- **Tumeur épithéliales**
 - Tumeurs bénignes
 - **Adénome pléomorphe**
 - **Cystadénolymphome**
 - Autres
 - Tumeurs malignes
 - Malignité atténuée
 - Carcinome mucoépidermoïde
 - Carcinome à cellules acineuses
 - Adénocarcinome
 - Carcinome adénoïde kystique
 - Autres
- Tumeur non épithéliales
 - Tumeurs vraies
 - Nerveuses
 - Vasculaires
 - Graisseuses
 - Pseudotumeurs

Parotide

Conduite à tenir

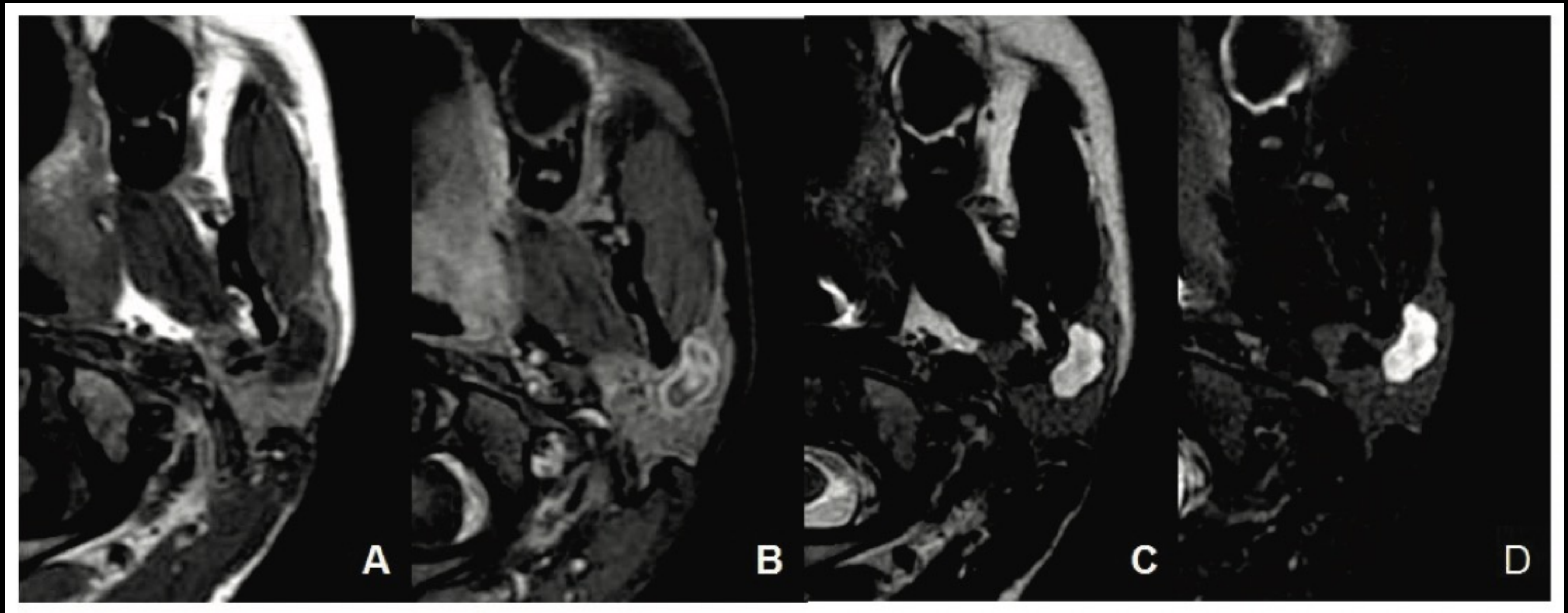
- Examen ORL
- IRM
- Ponction écho-guidée

Tableau 1 : CARACTERISTIQUES DES PRINCIPALES TUMEURS DE LA GLANDE PAROTIDE EN IRM

	T1	T2	Prise de contraste	Autres
Tumeur de Warthin kystique	Hyper	Hyper	Non	Bilatérale Pôle inférieur > 50 ans
Tumeur de Warthin non kystique	Hyper	Hypo ou Iso	Non Ou très faible	Tabac
Adénome Pléomorphe myxoïde	Hypo	Hyper	Oui	Contours lobulés
Adénome pléomorphe cellulaire	Hypo	Iso	Oui	Contours lobulés
Tumeur de malignité intermédiaire	Hypo	Iso ou Hypo	Oui	Bien limitée
Tumeur de haut grade de malignité	Hypo	Hypo	Oui	Mal limitée Adénopathie

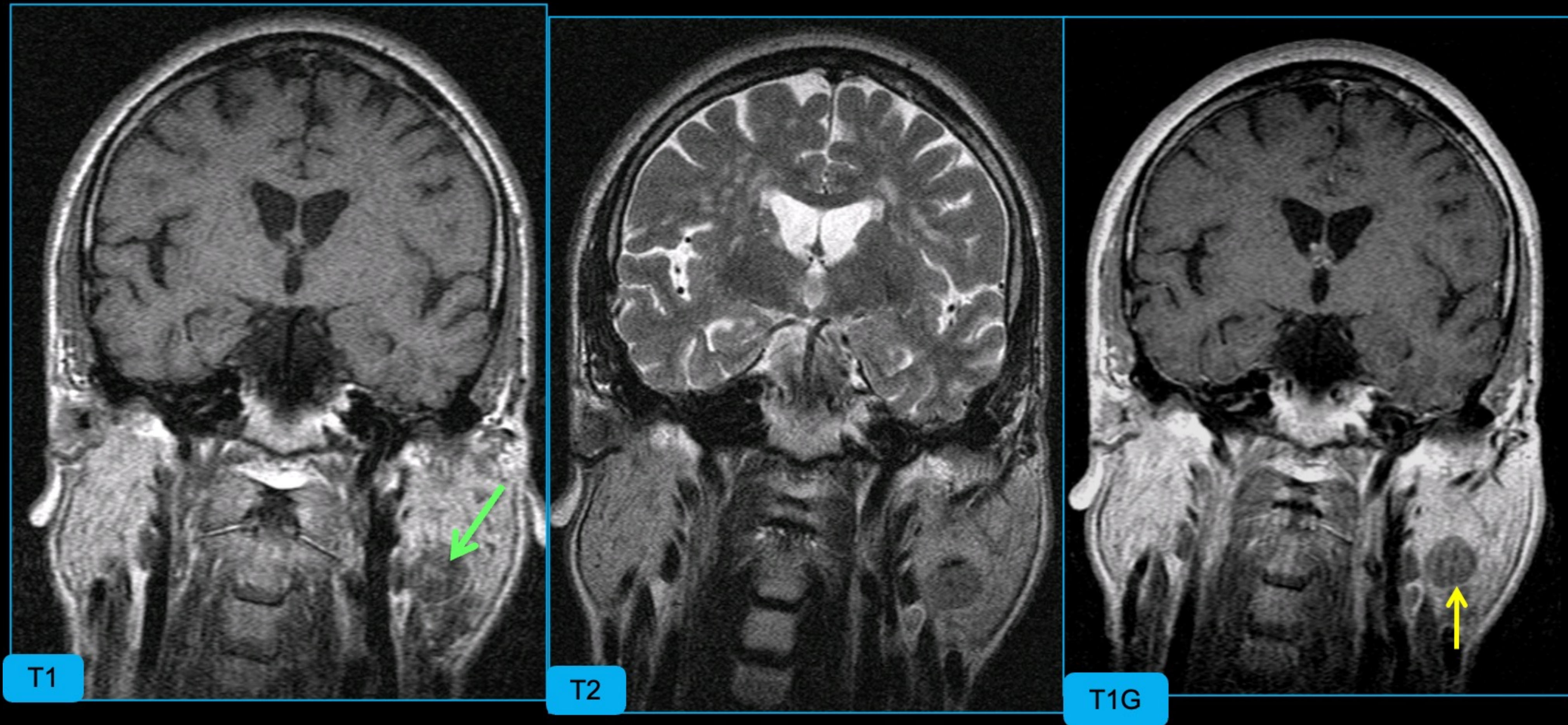
Parotide

IRM



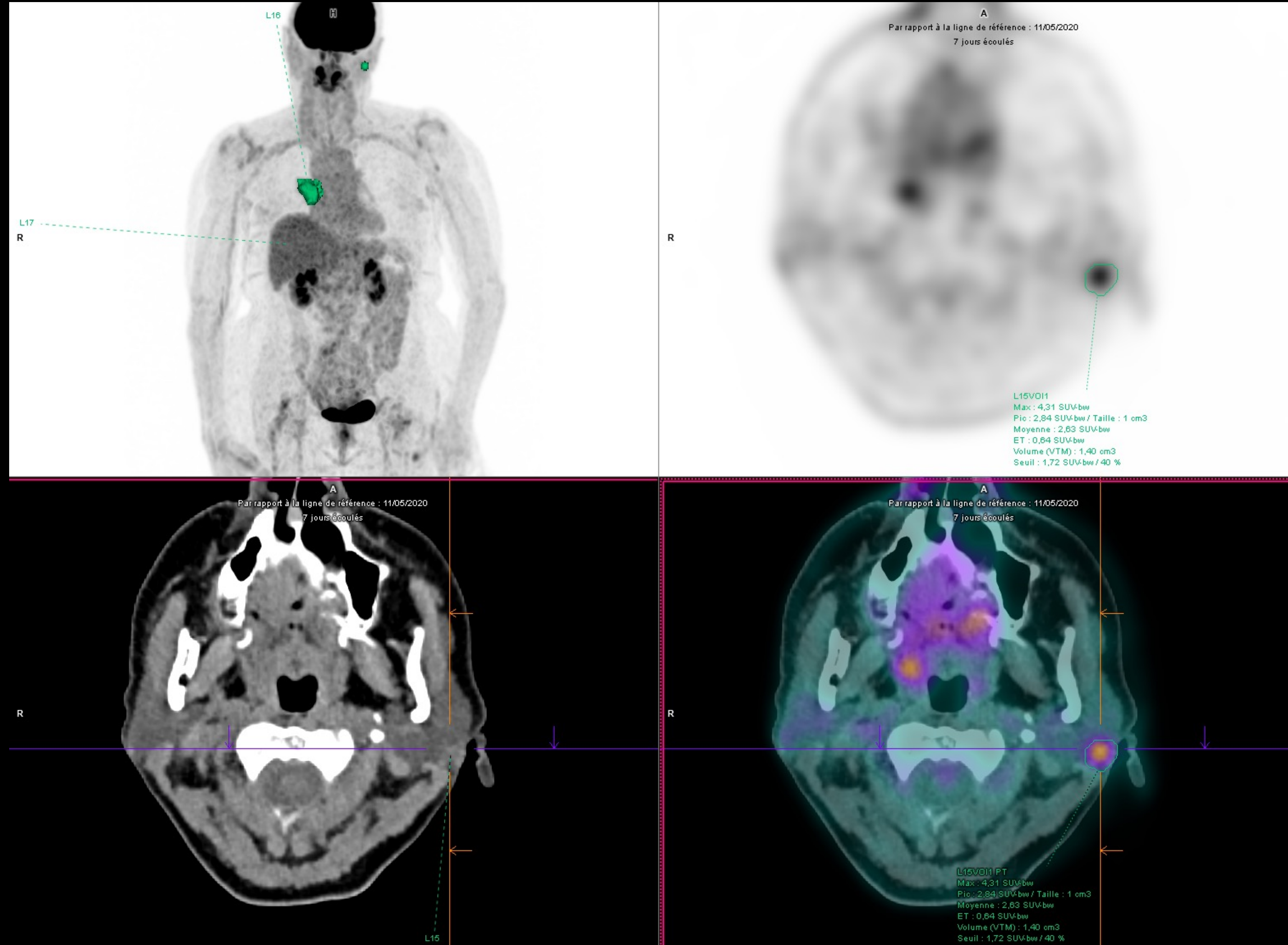
Parotide

IRM



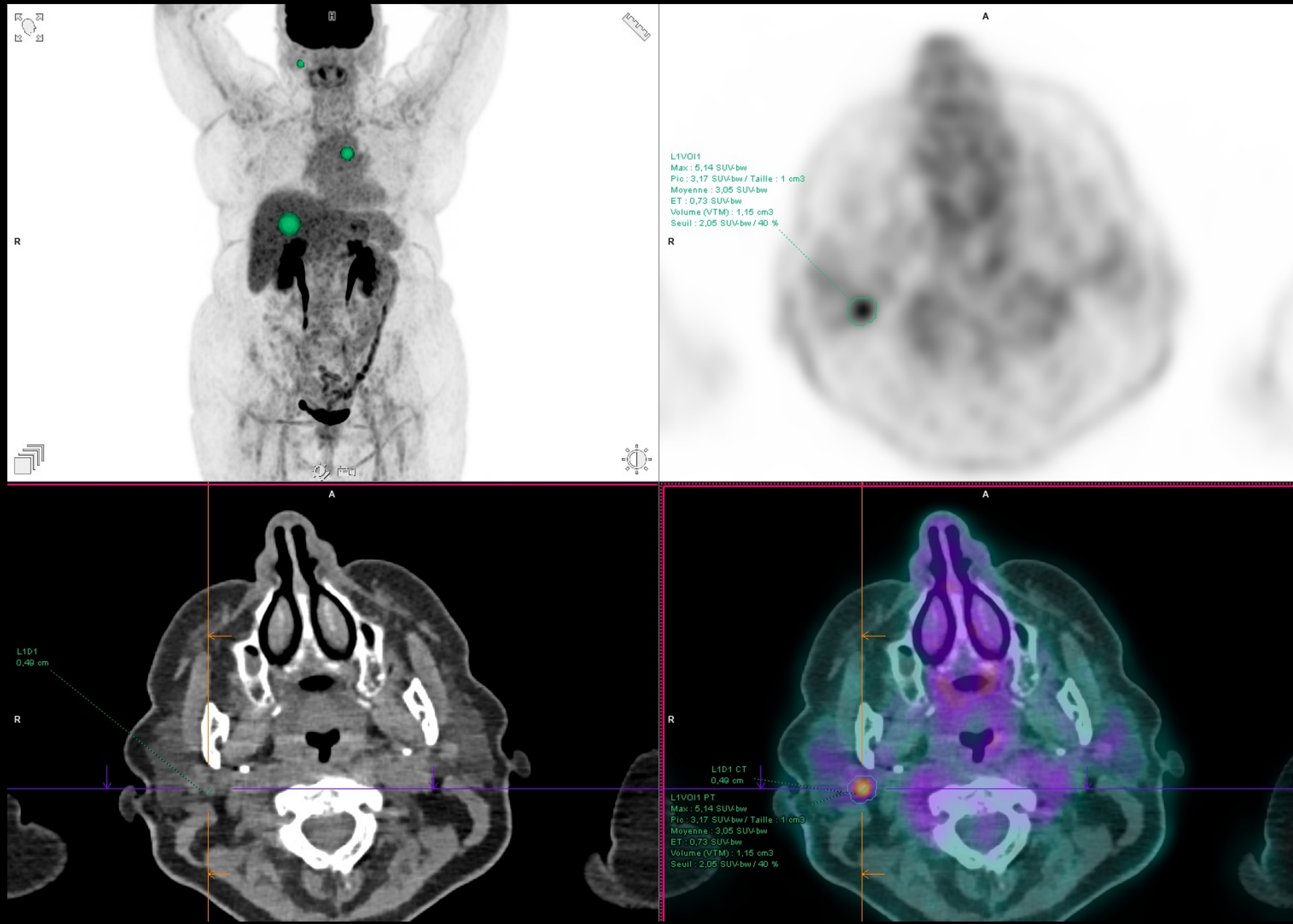
Parotide

TEP 18F-FDG



Parotide

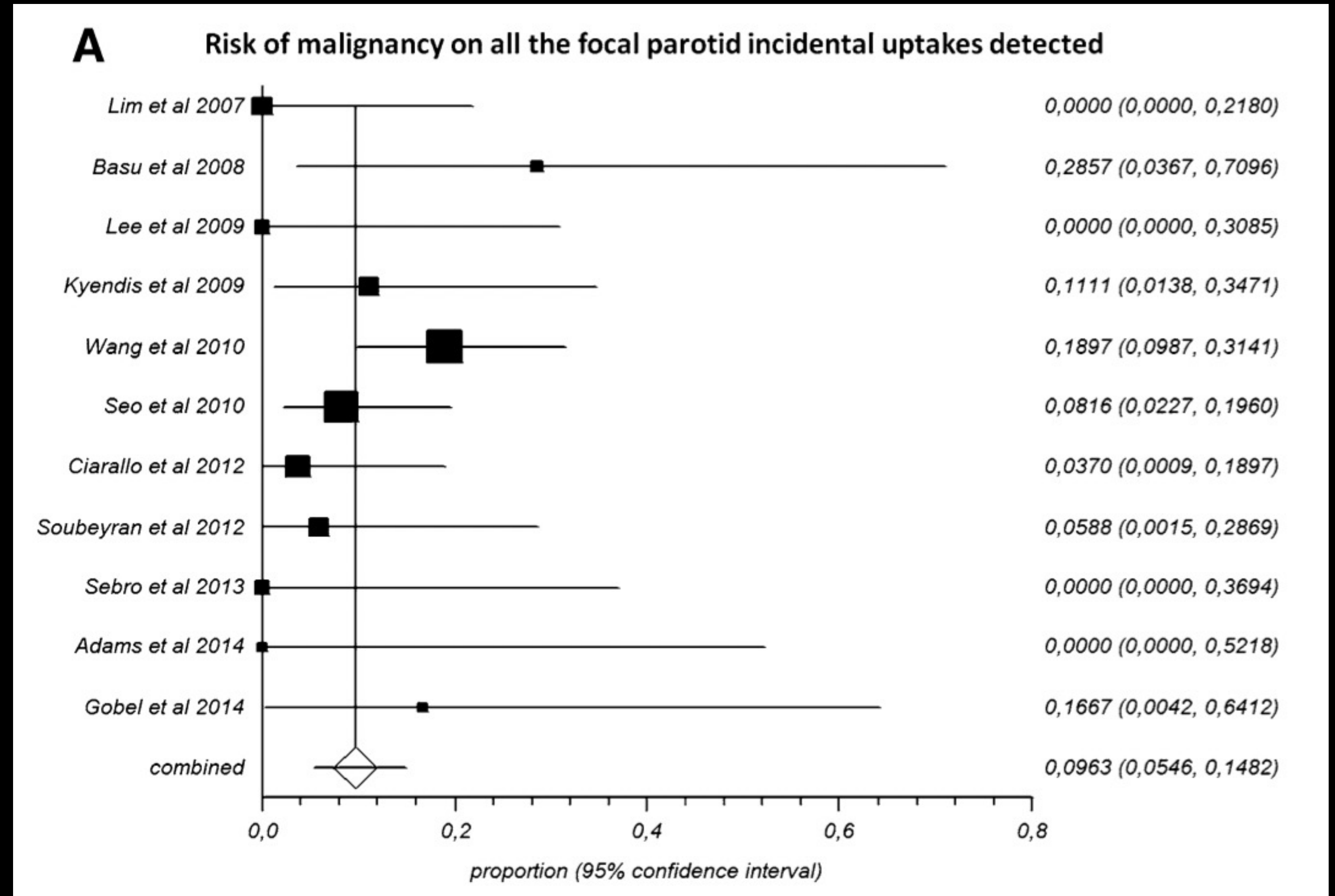
TEP 18F-FDG



Parotide TEP 18F-FDG

Fig. 3 Plot of individual studies and pooled malignancy risk of focal parotid incidental uptake detected by ¹⁸F-FDG PET or PET/CT considering all cases (a), only those which underwent further evaluation (b) and only those pathologically proven (c)

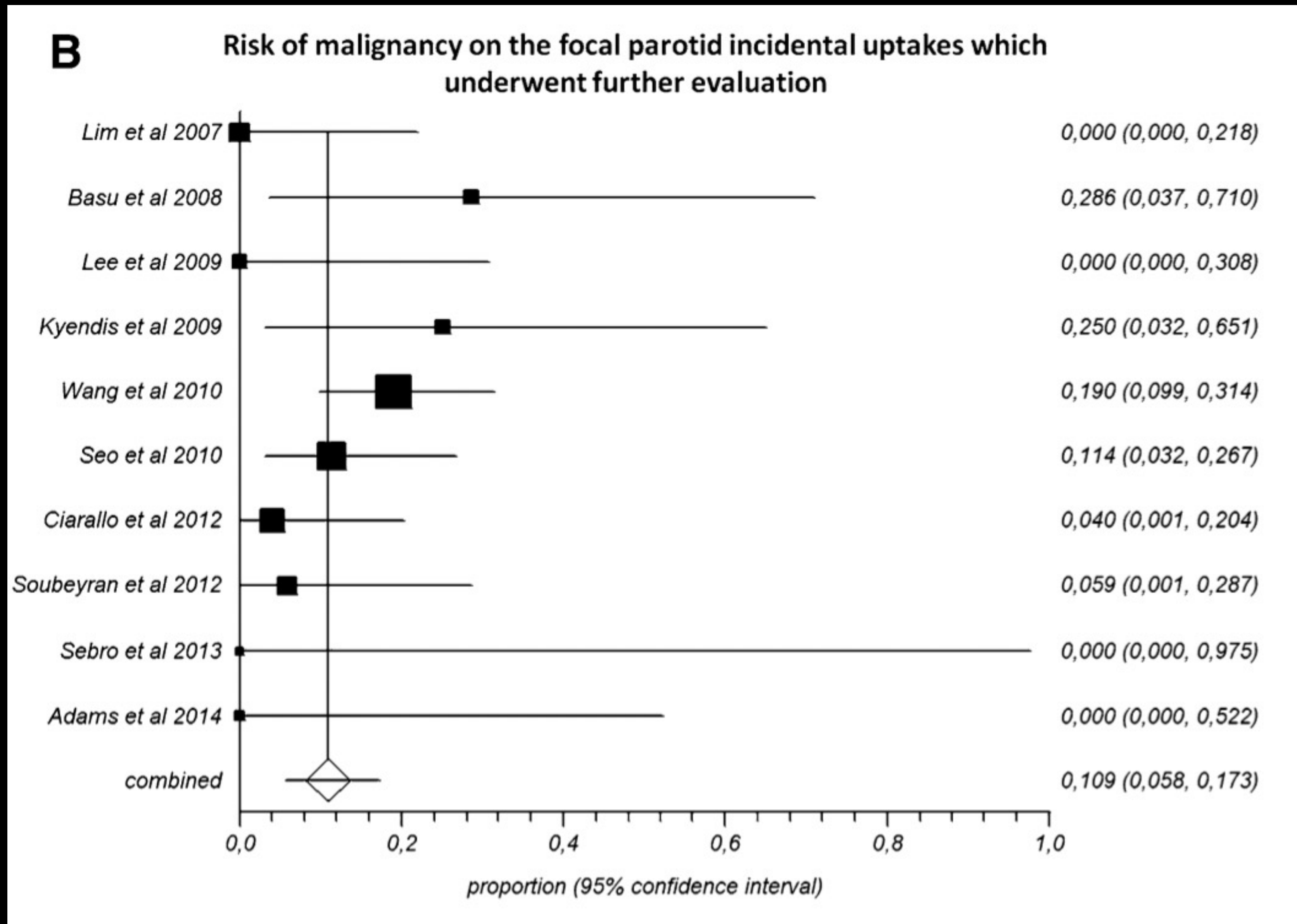
- Taux de malignité : 9,6%



Parotide TEP 18F-FDG

Fig. 3 Plot of individual studies and pooled malignancy risk of focal parotid incidental uptake detected by ¹⁸F-FDG PET or PET/CT considering all cases (a), only those which underwent further evaluation (b) and only those pathologically proven (c)

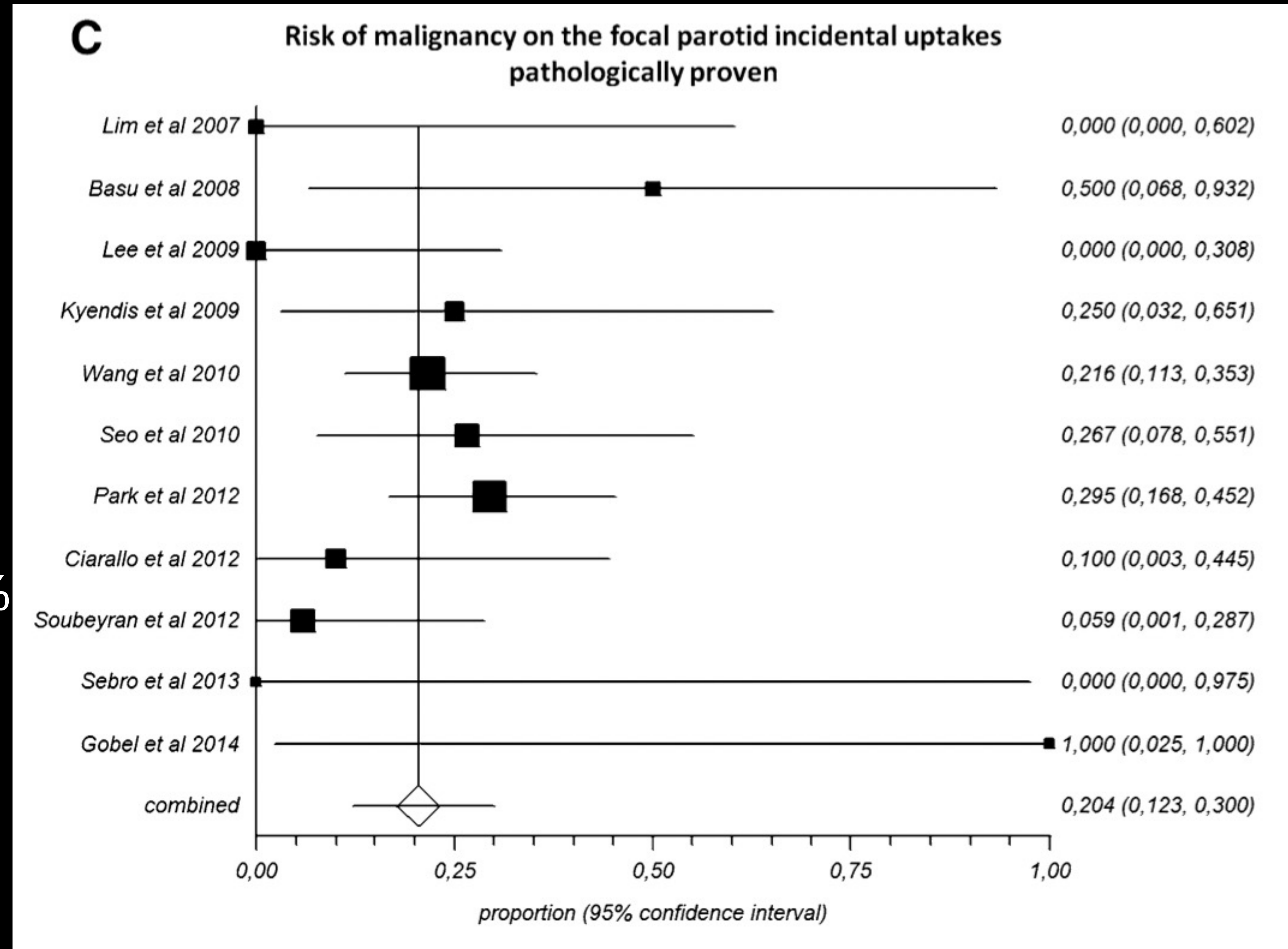
- Taux de malignité : 10,9%



Parotide TEP 18F-FDG

Fig. 3 Plot of individual studies and pooled malignancy risk of focal parotid incidental uptake detected by ¹⁸F-FDG PET or PET/CT considering all cases (a), only those which underwent further evaluation (b) and only those pathologically proven (c)

- Taux de malignité : 20,4%



Parotide

TEP 18F-FDG

TABLE 2

ROC Analysis and Logistic Regression for Benign Primary Parotid Tumor, Malignant Primary Parotid Tumor, and Primary Nonparotid Tumor Versus Metastatic Carcinoma, Metastatic Melanoma, Metastatic Merkel Cell Carcinoma, and Metastasis From Other Causes

PET Parameter	AUC	Sensitivity (%)	Specificity (%)	Cut Point	Odds Ratio (95% CI)	<i>p</i>
Maximum SUV	0.679	30	86	14.61	5.57 (0.59–52.70)	0.134
Mean SUV	0.689	40	86	8.37	3.23 (0.56–18.71)	0.191
Peak SUV	0.668	30	86	13.18	5.57 (0.59–52.70)	0.134
Total lesion glycolysis	0.571	15	86	251.75	2.29 (0.21–24.68)	0.493
Metabolic tumor volume	0.52	20	86	21.27	1.06 (0.15–7.34)	0.954
Standardized added metabolic activity	0.579	15	86	225	2.29 (0.21–24.68)	0.493
Normalized standardized added metabolic activity	0.613	25	86	72.1	1.50 (0.24–9.59)	0.668

Note—SUV = standardized uptake value.

Parotide

TEP 18F-FDG

TABLE 3

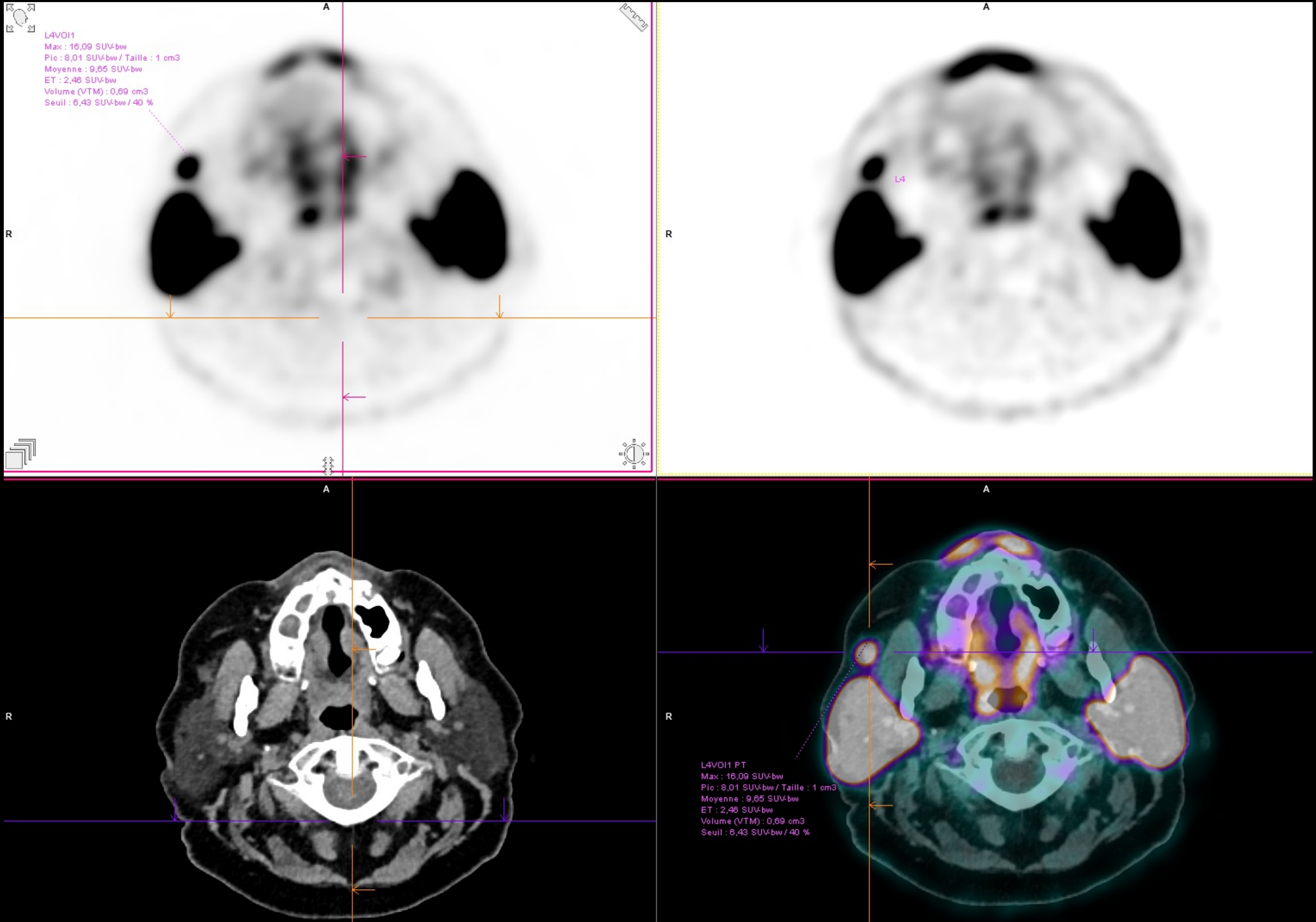
Logistic Regression Analysis for Various Pathologic Abnormalities

PET Parameter	Cut Point	Benign Versus Malignant Tumor		Metastasis From Squamous Cell Carcinoma Versus Metastasis From Melanoma, Merkel Cell Carcinoma, and Other Causes	
		OR (95% CI)	<i>p</i>	OR (95% CI)	<i>p</i>
Maximum SUV	9.370	1.00 (0.09–11.03)	1.00	1.67 (0.27–10.33)	0.583
Mean SUV	5.795	2.50 (0.16–38.59)	0.512	0.71 (0.12–4.32)	0.714
Peak SUV	6.730	1.00 (0.09–11.03)	1.00	2.40 (0.39–14.88)	0.347
Total lesion glycolysis	30.570	2.00 (0.19–20.61)	0.56	1.50 (0.26–8.82)	0.654
Metabolic tumor volume	5.515	2.00 (0.19–20.61)	0.56	1.50 (0.26–8.82)	0.654
Standardized added metabolic activity	23.000	5.00 (0.34–72.77)	0.239	1.04 (0.18–6.12)	0.964
Normalized standardized added metabolic activity	17.200	1.00 (0.09–11.03)	1.00	1.04 (0.18–6.12)	0.964

Note—SUV = standardized uptake value.

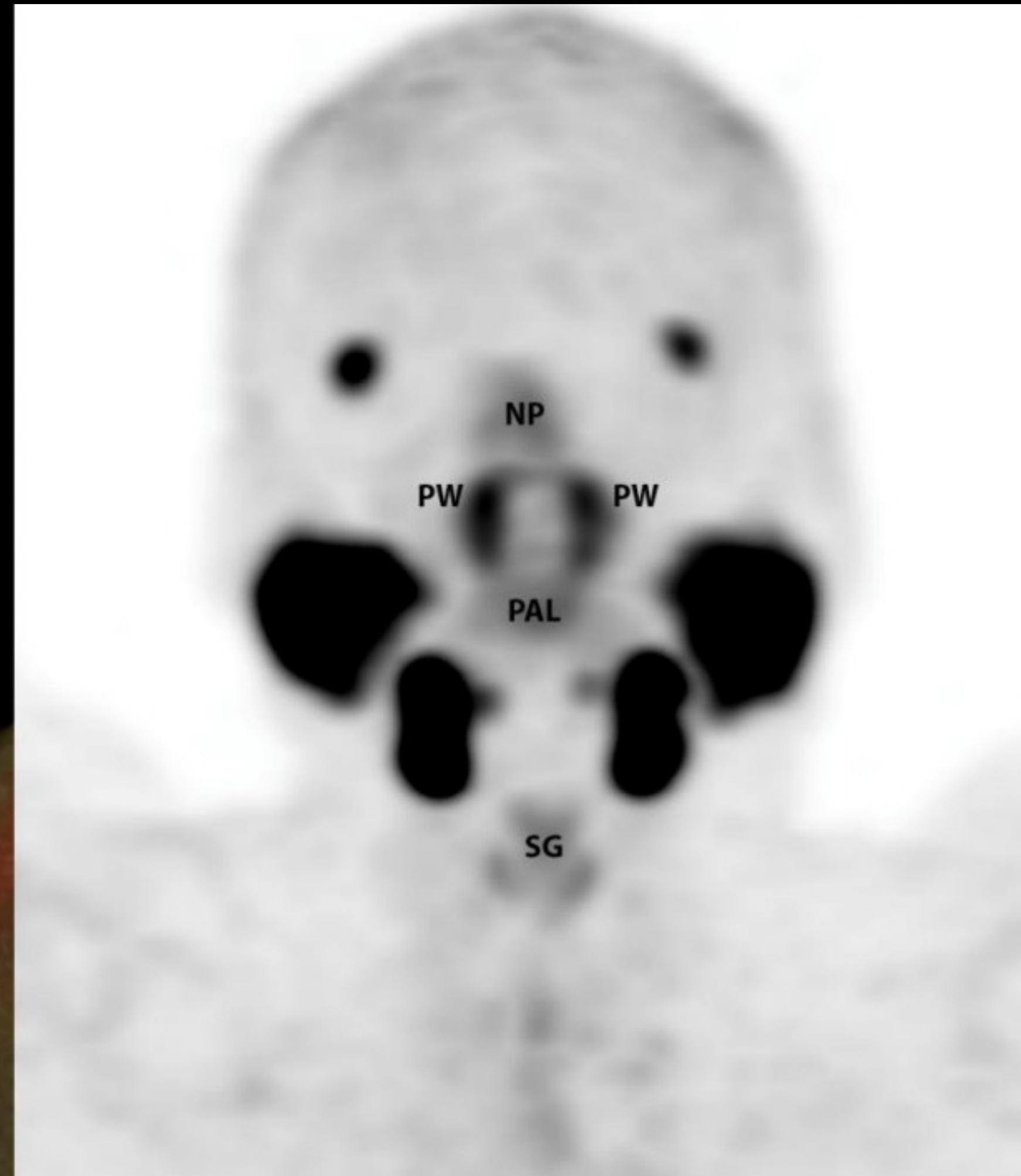
Parotide

TEP 68Ga-PSMA



TEP 68Ga-PSMA

Rappels



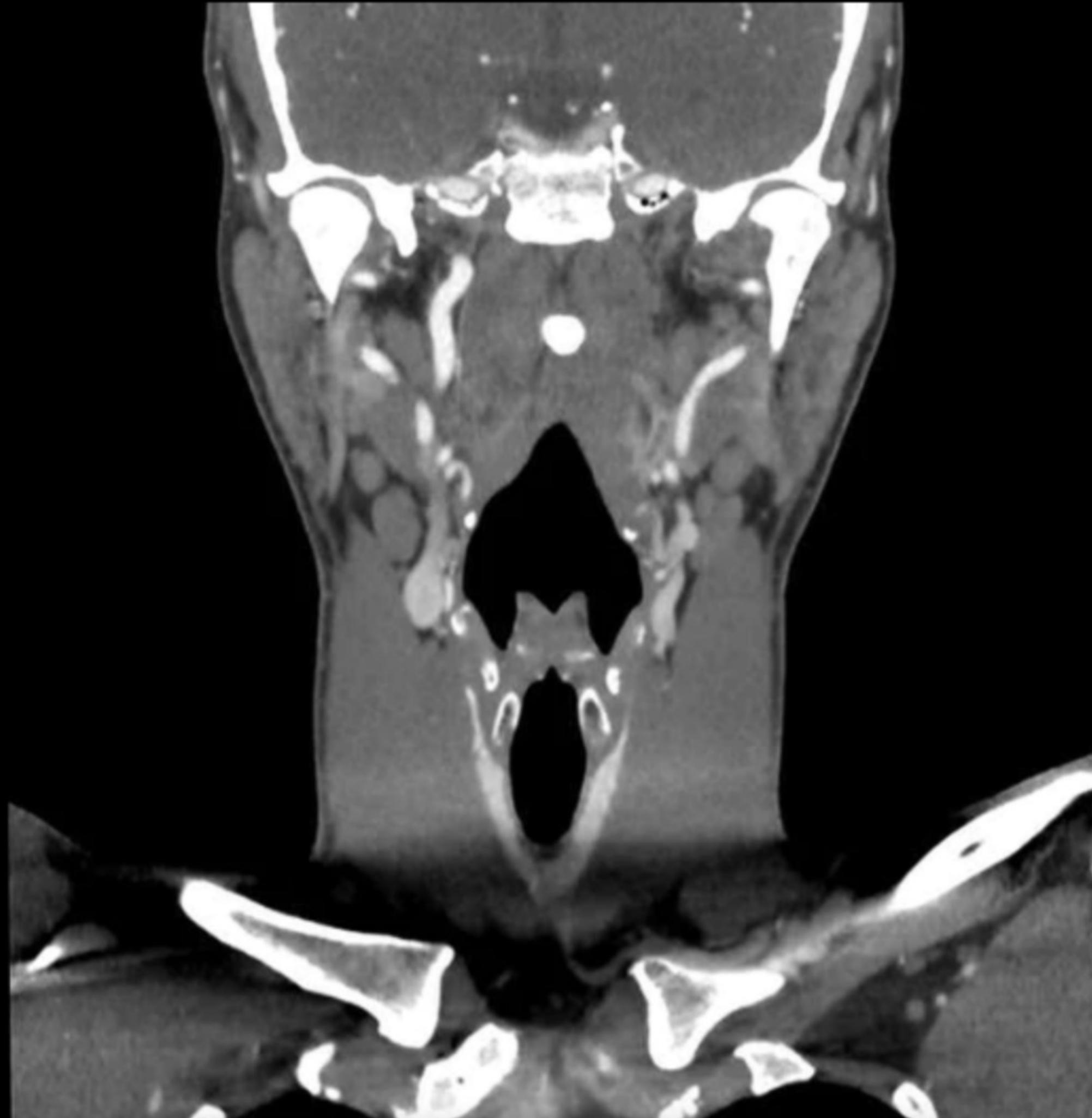
TEP 68Ga-PSMA

Rappels



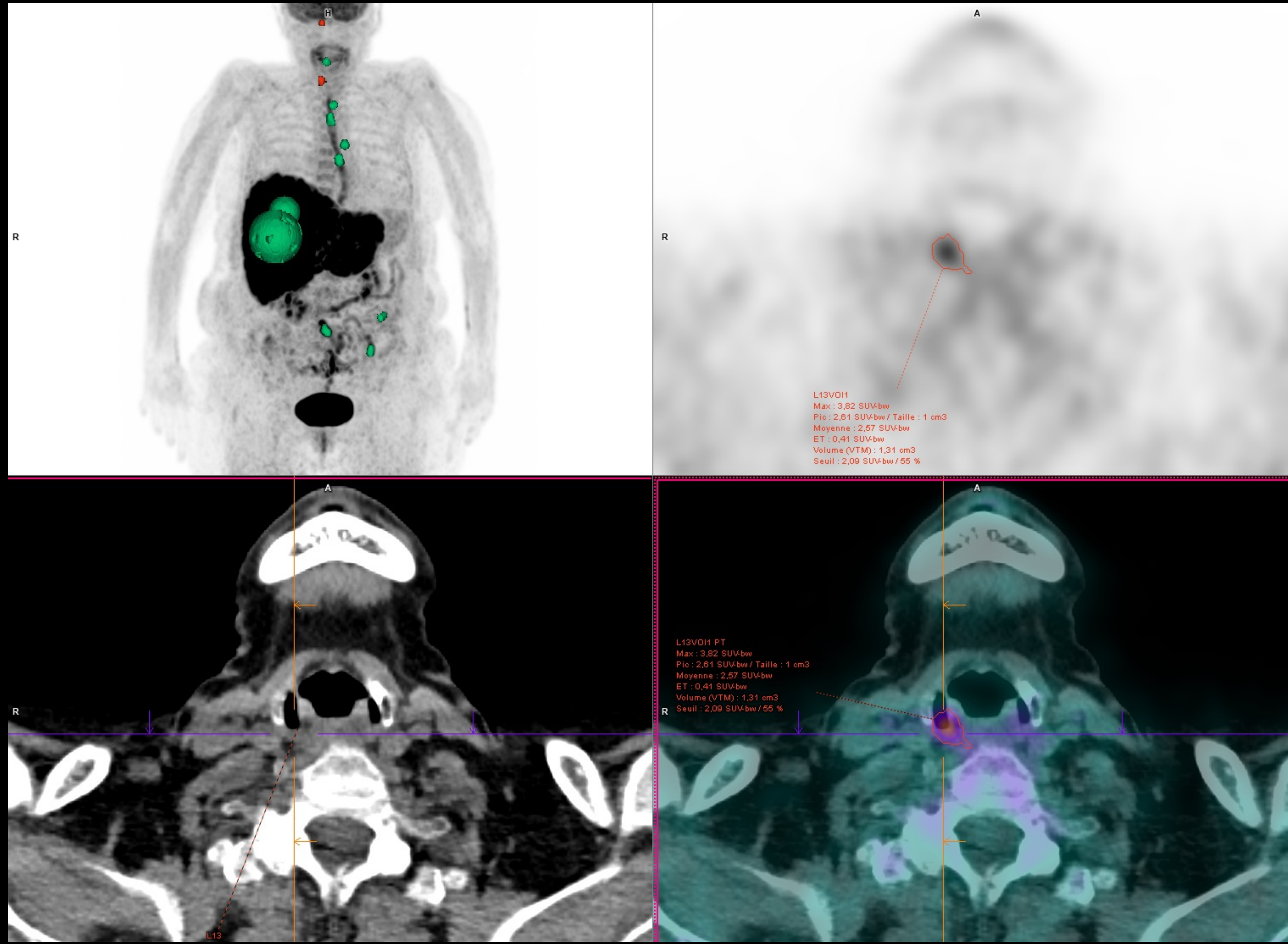
Sinus piriforme

Rappels



Sinus piriforme

TEP 18F-FDG



Sinus piriforme

TEP 18F-FDG

TABLE 2. Parameters Derived from FDG PET/CT in Malignant and Benign Groups

Parameter	Malignant Group (n = 29)	Benign Group (n = 214)	<i>P</i> value
Lesion SUV _{max}			
Mean ± SD	9.13 ± 3.64	3.53 ± 1.01	<0.001
Range	1.85–17.89	1.99–9.27	
Asymmetrical index			
Mean ± SD	4.16 ± 1.81	1.54 ± 0.39	<0.001
Range	1.85–8.60	1.02–4.40	
Cervical LN SUV _{max}			
Mean ± SD	6.86 ± 8.64	2.98 ± 2.23	<0.001
Range	1–47.24	1–23.95	
Contralateral SUV _{max} ,			
Mean ± SD	2.26 ± 0.54	2.32 ± 0.45	0.519
Range	1.38–3.21	1.47–4.03	

LN indicates lymph node; SUV, standard uptake value.

Conclusion

Incidentalomes ORL en TEP

Thyroïde

- Taux de malignité non négligeable pour les hypermétabolismes/hyperfixations focaux
- Apport de la TEP 18F-FDG
- Exploration biologique et échographique

Parotide

- Taux de malignité non négligeable
- Exploration IRM
- Glandes accessoires en PSMA

Sinus piriforme

- Se concentrer essentiellement sur les hypermétabolismes intenses et asymétriques en FDG
- Eventuel intérêt des paramètres TEP (manque d'étude prospective)

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Merci pour votre attention