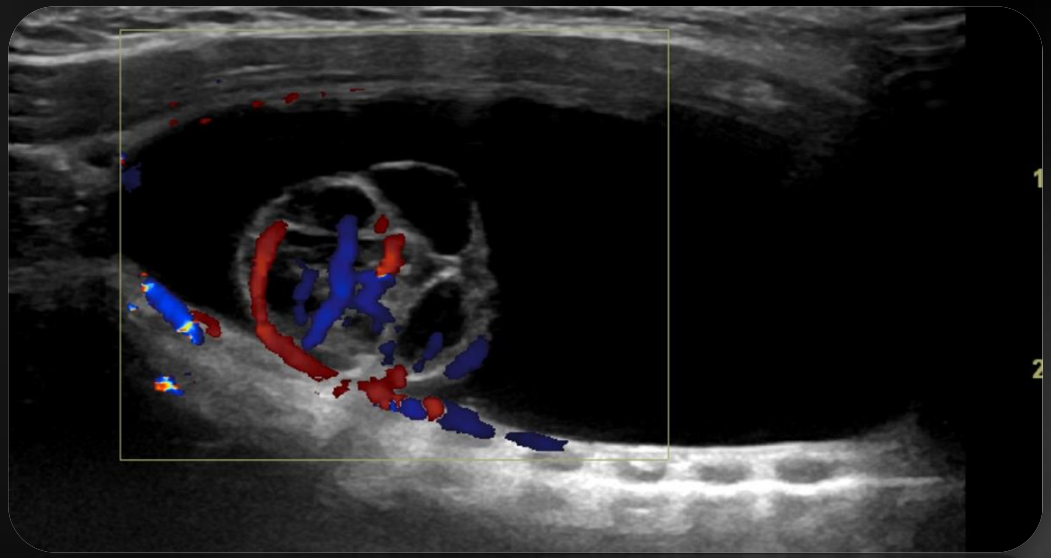


Punção aspirativa com agulha fina de nódulos da tiróide - critérios ecográficos e interpretação dos resultados

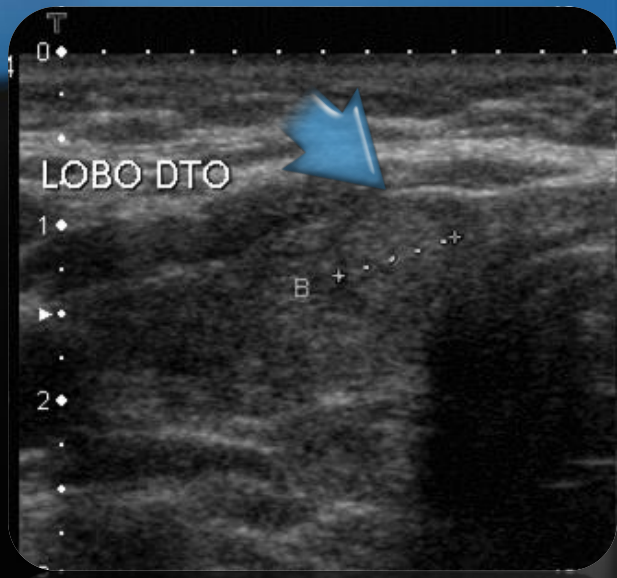
Ana Germano/Maria Gabriela Gasparinho

Sumário

1. Introdução ao problema
   - Nódulo da tiróide - definição
2. Guidelines ATA 2015
3. TIRADS
4. Bethesda
5. E no HFF?

1

- Introdução ao problema



- Nódulos palpáveis em cerca de 1% dos homens e 5% das mulheres

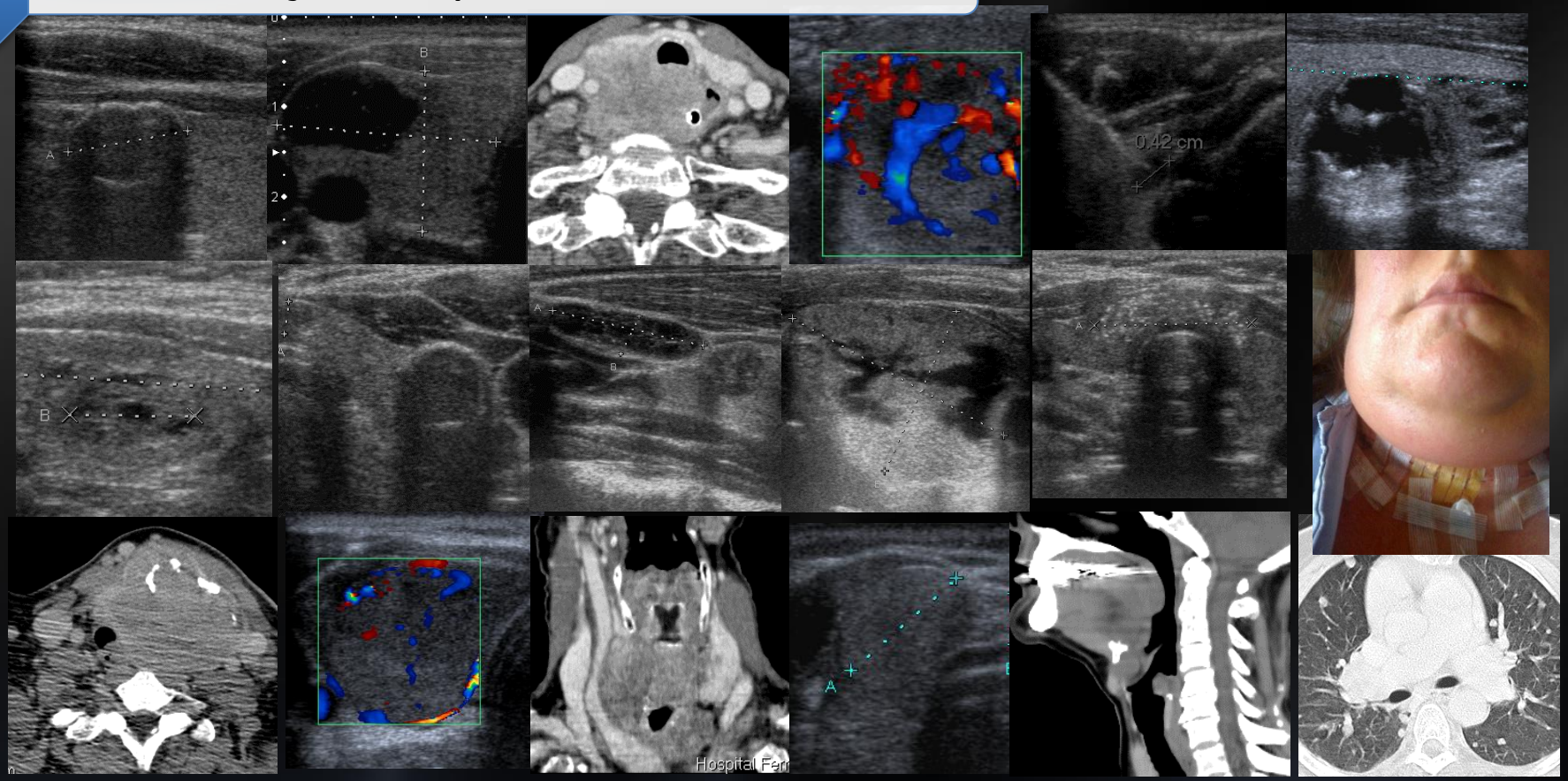
mas

- Ecografia de alta resolução pode detectar nódulos em cerca de 70% dos indivíduos (mais frequentes nas mulheres; mais frequentes nos mais velhos)

• Introdução ao problema

- 7 a 15% dos nódulos serão carcinomas, dos quais cerca de 90% serão papilares, com excelente prognóstico
- A incidência triplicou de 1975 para 2009
- Sem aumento da mortalidade
- Em 1988/89 25% dos carcinomas <1cm
- Em 2008/2009 39% dos carcinomas <1cm
- Prevê-se que em 2019 o carcinoma papilar da tiróide seja o 3º cancro mais frequente nas mulheres

- Introdução ao problema



Nódulo da tiróide: Benigno ou maligno?

1

- Definição de nódulo da tiróide

A thyroid nodule is a discrete lesion within the thyroid gland that is radiologically distinct from the surrounding thyroid parenchyma. Some palpable lesions may not correspond to distinct radiologic abnormalities

- Guidelines ATA 2015

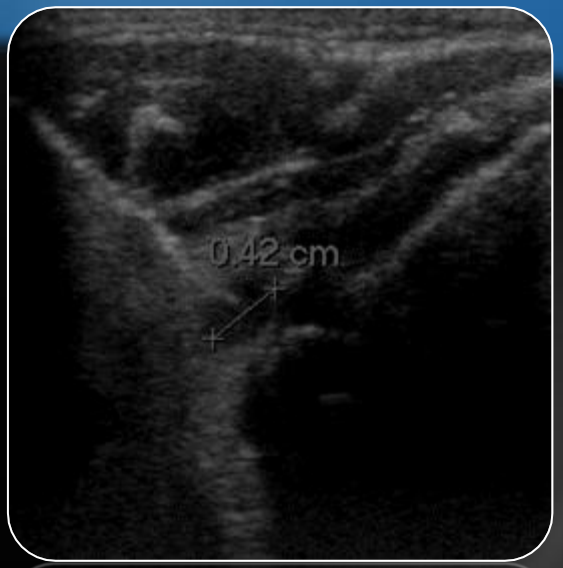
- Guidelines ATA 2015

[A8] Thyroid sonography

■ **RECOMMENDATION 6**

Thyroid sonography with survey of the cervical lymph nodes should be performed in all patients with known or suspected thyroid nodules. **(Strong recommendation, High-quality evidence)**

- Guidelines ATA 2015



[A9] Ultrasound (US) for FNA decision-making.

■ **RECOMMENDATION 7**

FNA is the procedure of choice in the evaluation of thyroid nodules, when clinically indicated (**Strong recommendation, High-quality evidence**)

- Guidelines ATA 2015

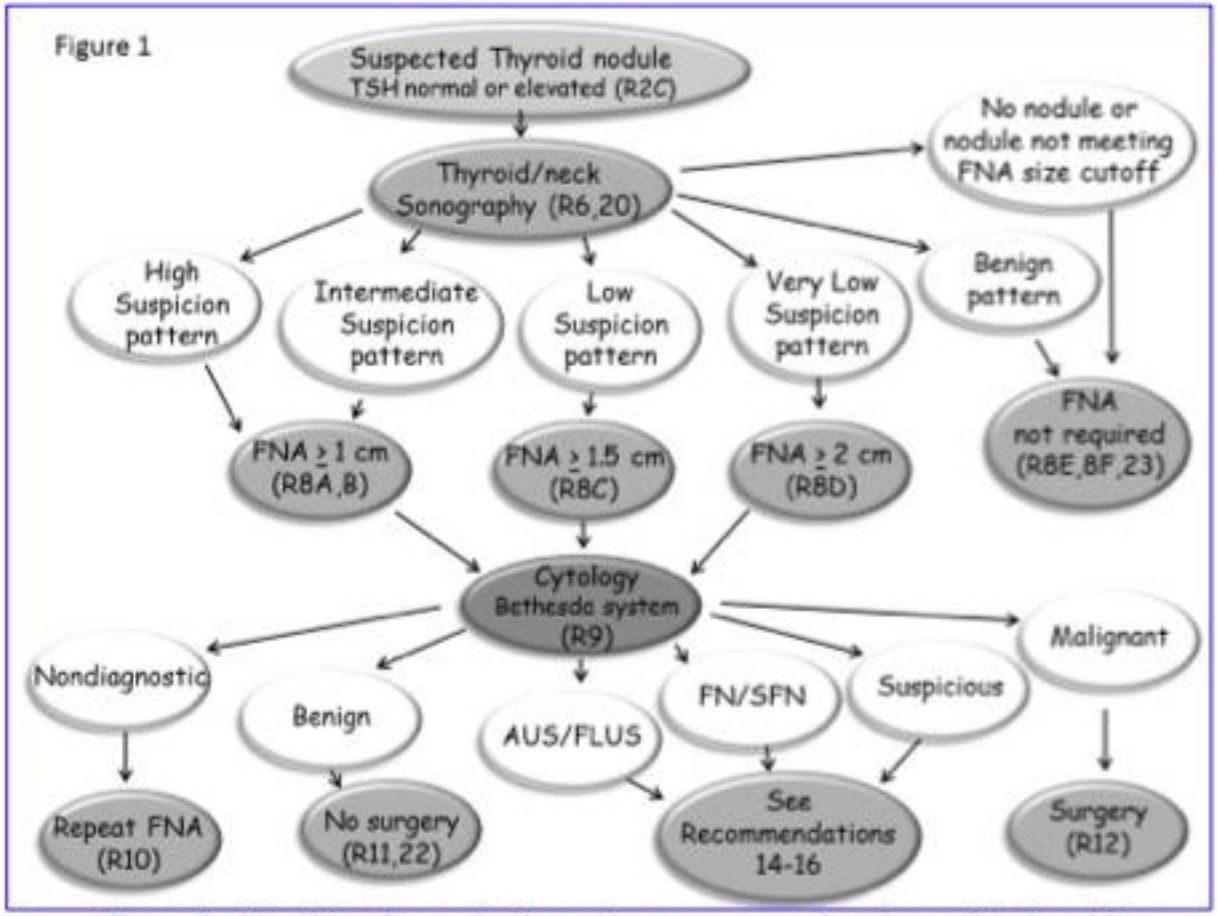


Figure 1. Algorithm for evaluation and management of patients with thyroid nodules based on US pattern and FNA cytology. R – Recommendation in text.

• Guidelines ATA 2015

Table 6. Sonographic patterns, estimated risk of malignancy and FNA guidance for thyroid nodules.

Sonographic Pattern	US features	Estimated risk of malignancy	Consider biopsyFNA size cutoff (largest dimension)
High suspicion	Solid hypoechoic nodule or solid hypoechoic component of a partially cystic nodule ***with*** one or more of the following features: irregular margins (infiltrative, microlobulated), microcalcifications, taller than wide shape, rim calcifications with small extrusive soft tissue component, evidence of extrathyroidal extension	>70-90%*	Recommend FNA at > 1 cm
Intermediate suspicion	Hypoechoic solid nodule with smooth margins ***without*** microcalcifications, extrathyroidal extension, or taller than wide shape	10-20%	Recommend FNA at > 1 cm
Low suspicion	Isoechoic or hyperechoic solid nodule, or partially cystic nodule with eccentric solid areas, ***without*** microcalcification, irregular margin or extrathyroidal extension, or taller than wide shape.	5-10%	Recommend FNA at > 1.5 cm
Very low suspicion	Spongiform or partially cystic nodules ***without*** any of the sonographic features described in low, intermediate or high suspicion patterns	< 3%	Consider FNA at > 2 cm Observation without FNA is also a reasonable option
Benign	Purely cystic nodules (no solid component)	< 1%	No biopsy**

- Guidelines ATA 2015

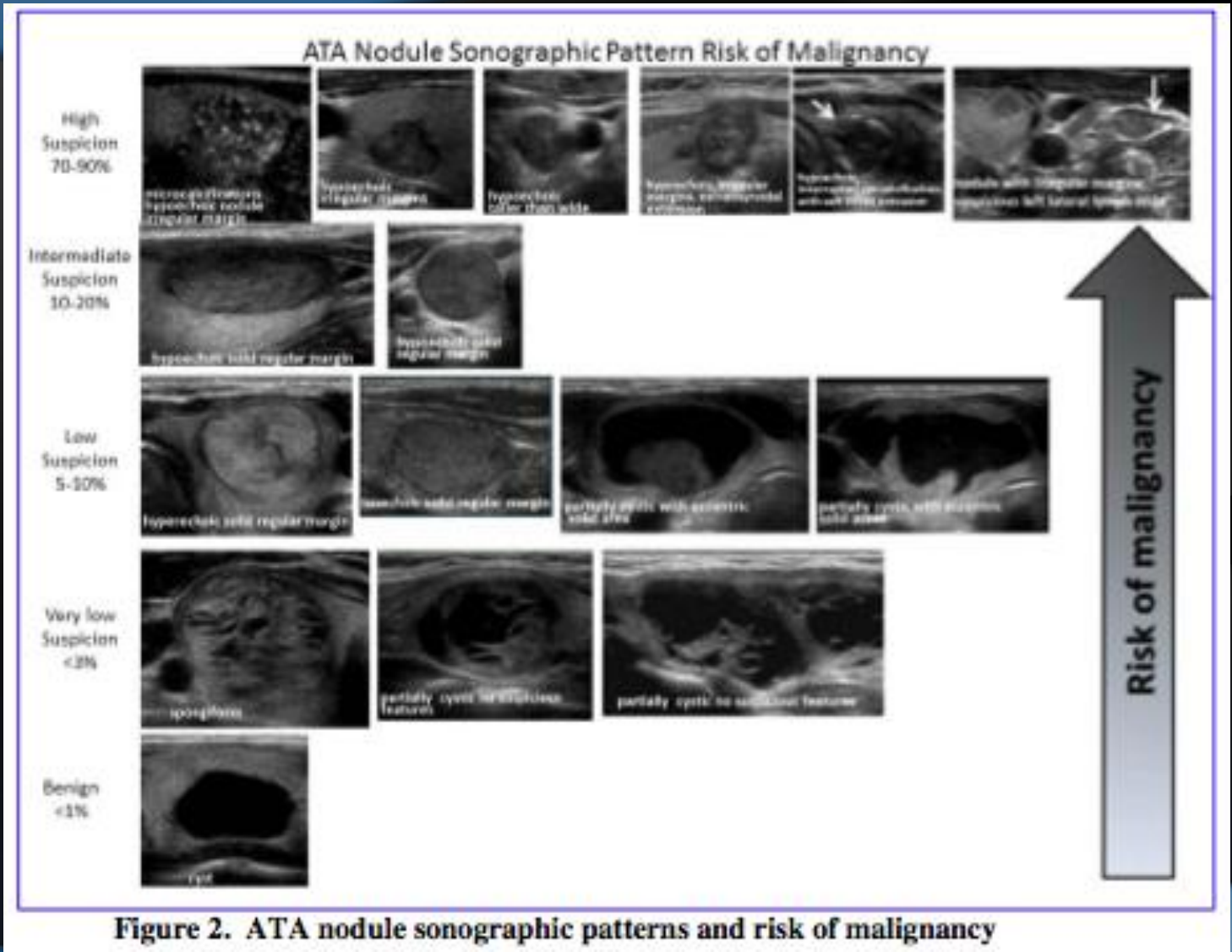
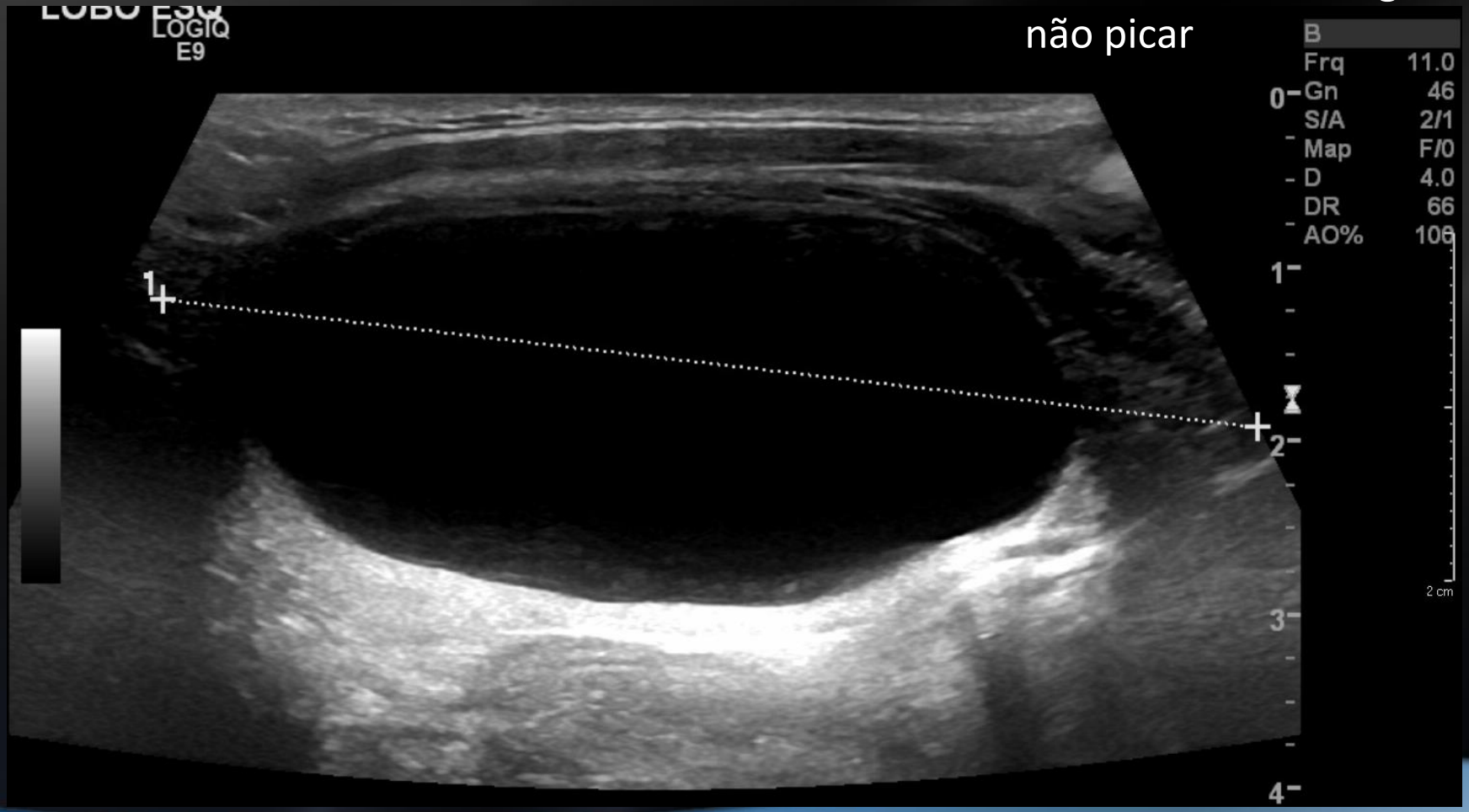


Figure 2. ATA nodule sonographic patterns and risk of malignancy

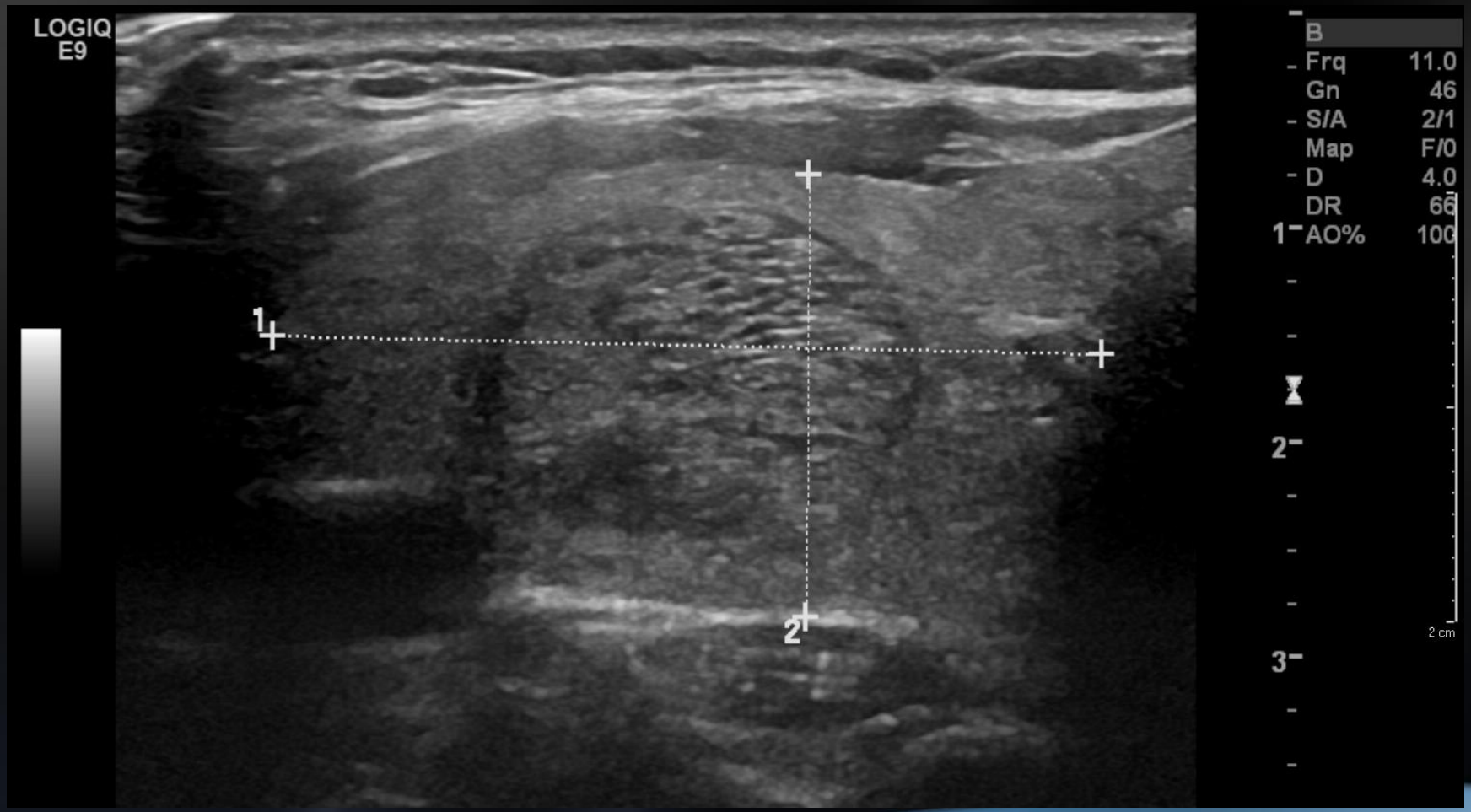
- Guidelines ATA 2015

Quisto colóide benigno
não picar



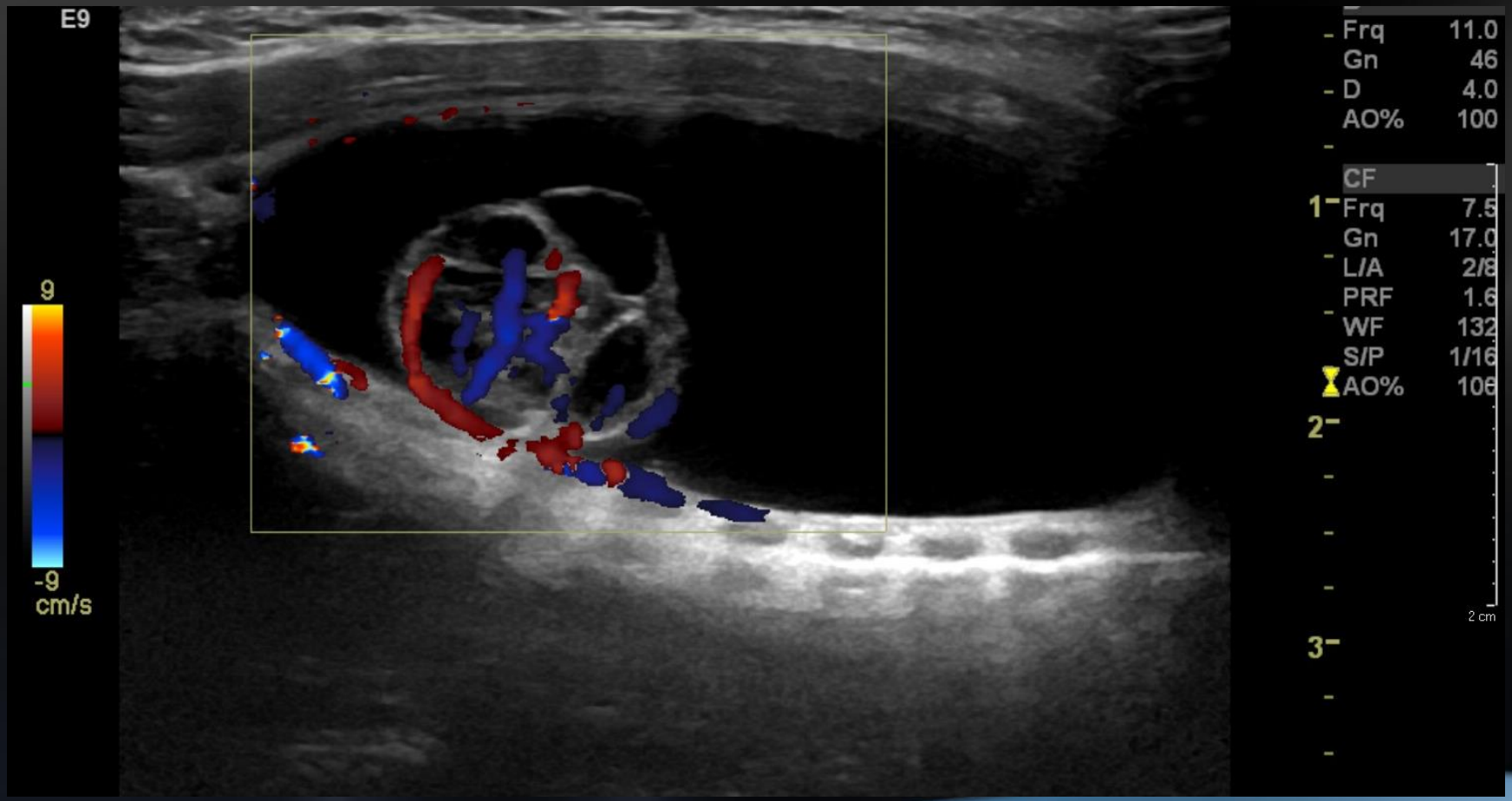
- Guidelines ATA 2015

Espongiforme
Muito baixa suspeição
Considerar CAAF >2cm



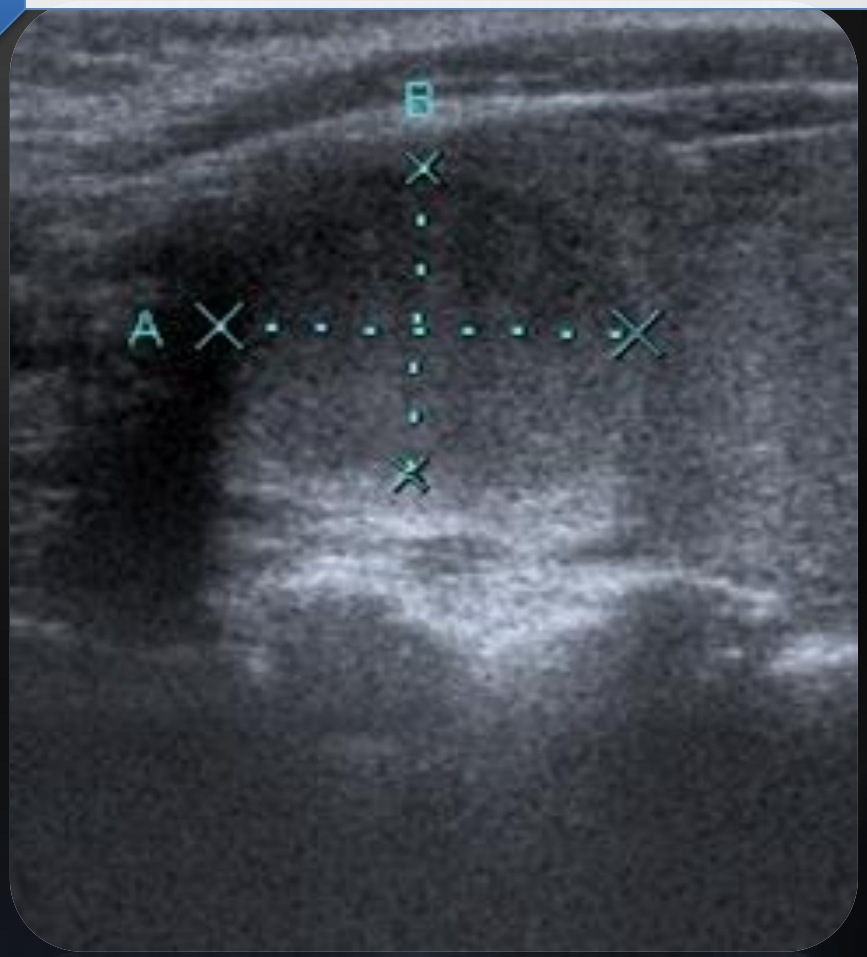
- Guidelines ATA 2015

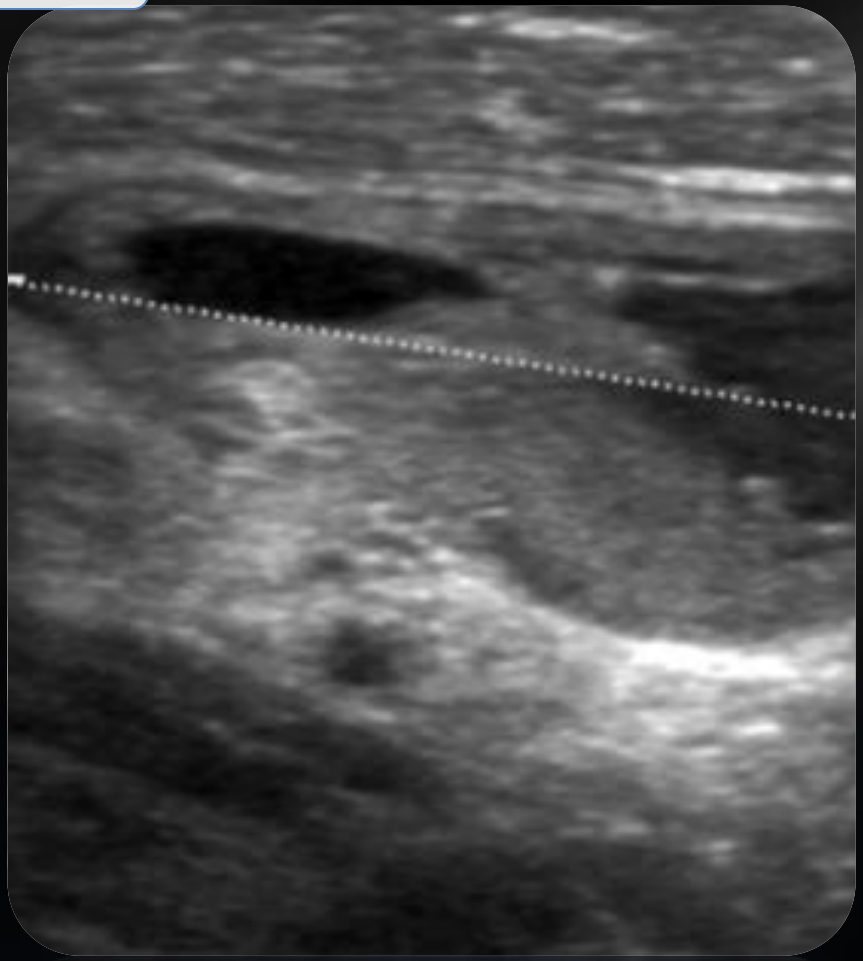
Quisto com nódulo mural sem caract suspeitas
baixa suspeição
CAAF >1,5cm



- Guidelines ATA 2015

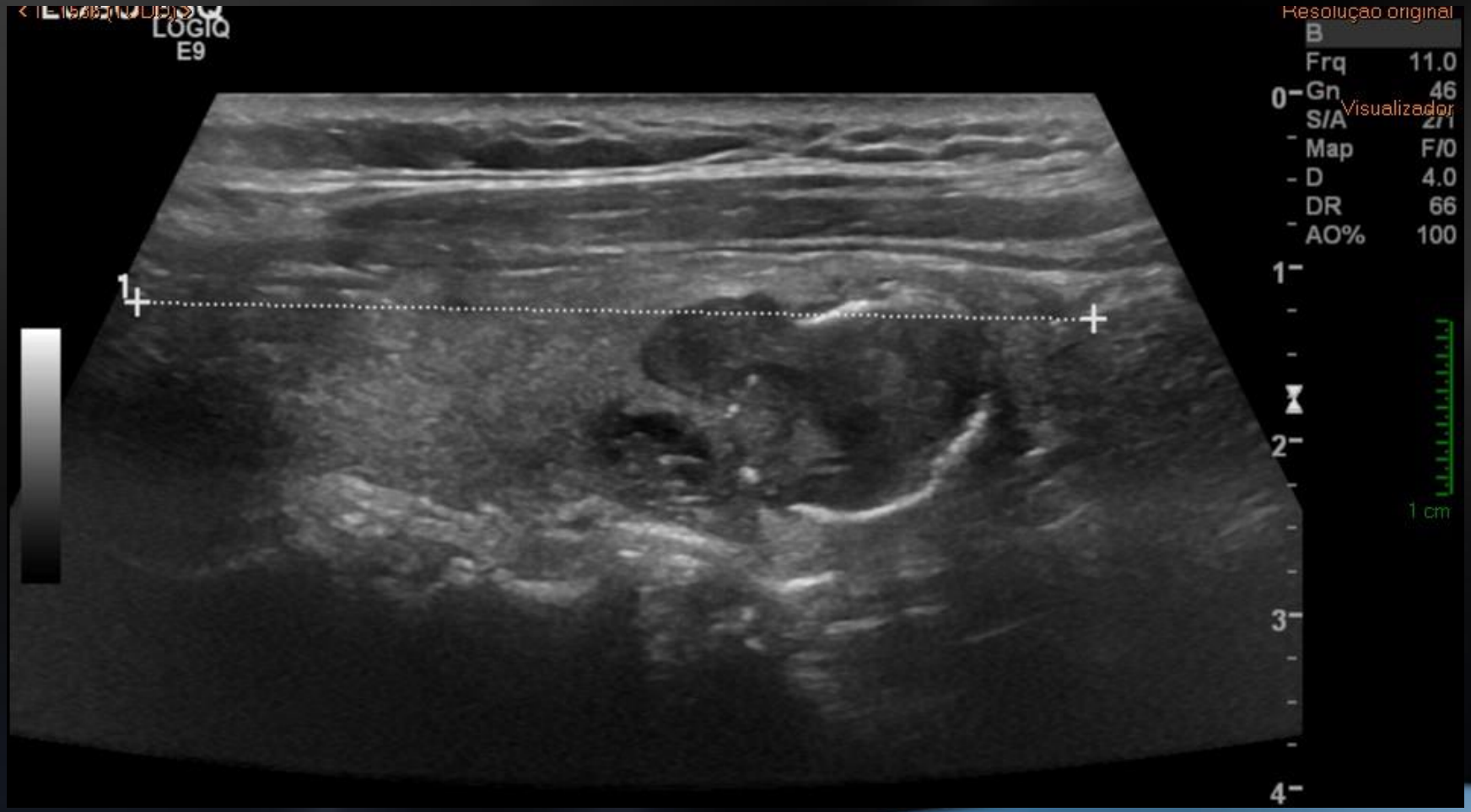
Hipoecogénico sem caract suspeitas
suspeição intermédia
CAAF >1,0cm





- Guidelines ATA 2015

"Casca de ovo" com extrusão partes moles
Suspeição elevada
CAAF >1cm



- TIRADS

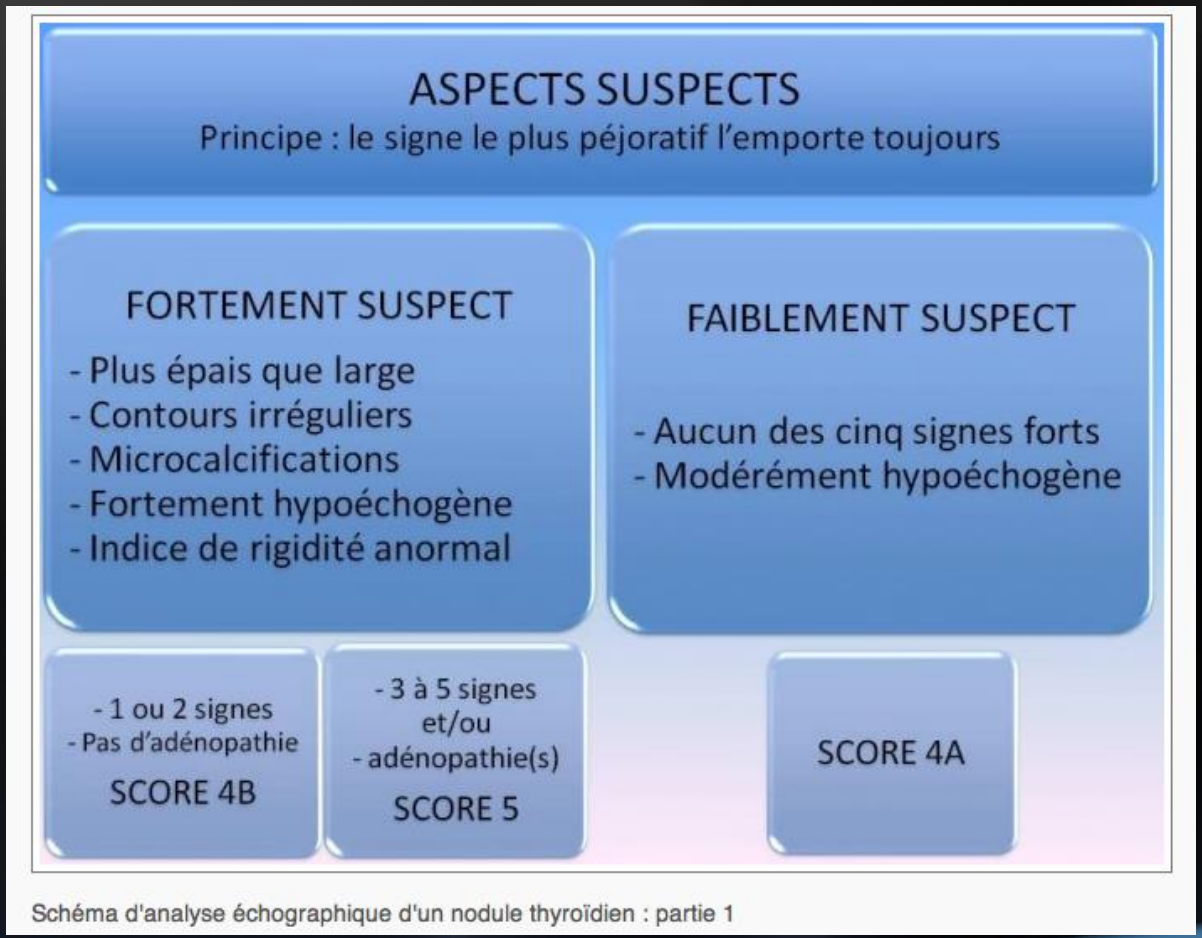


Schéma d'analyse échographique d'un nodule thyroïdien : partie 1

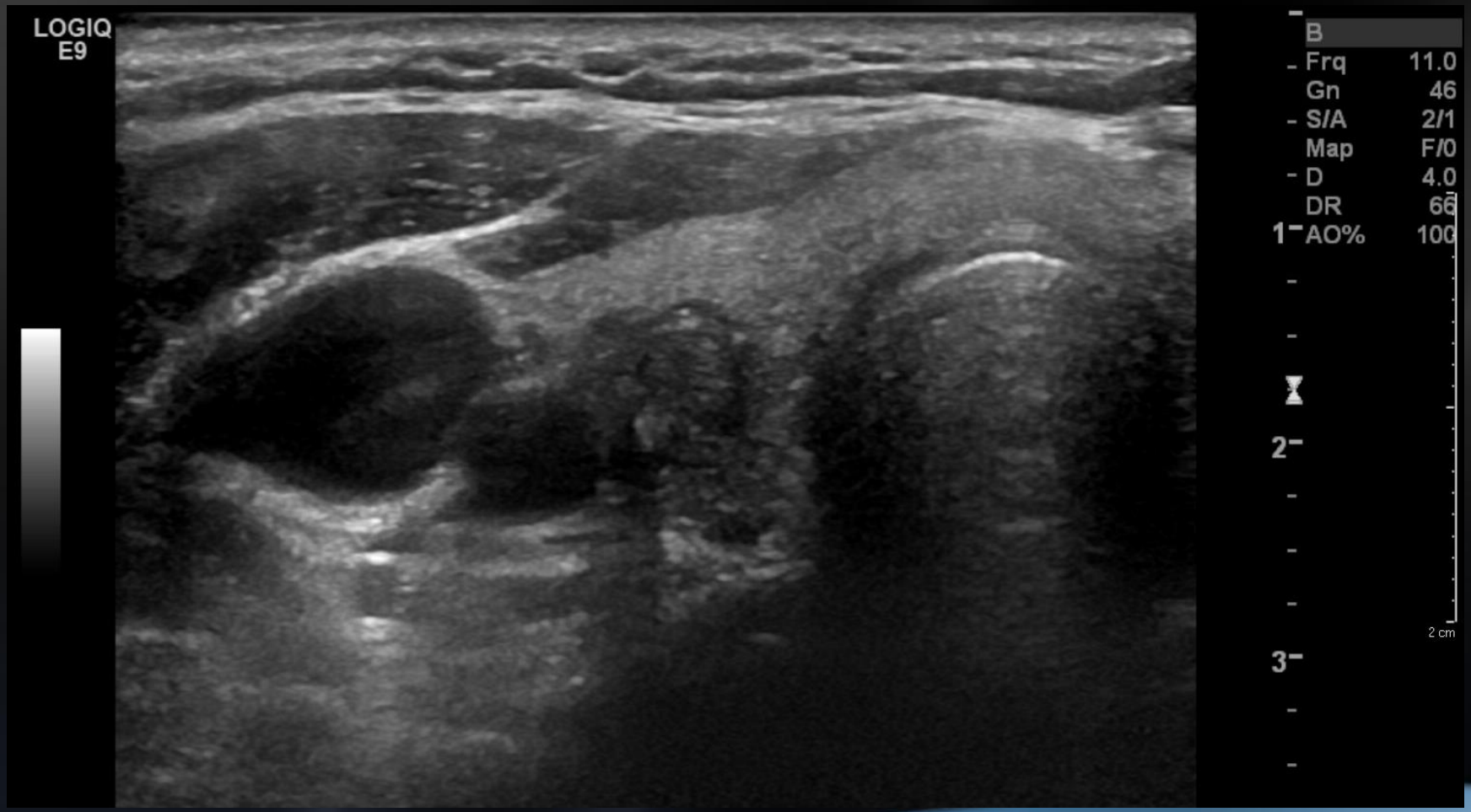
>20mm – picar todos menos o 2, excepto se quisto compressivo

>=10mm picar se 4a, 4b ou 5

<10 se pesquisa de primitivo, PET +, risco clínico ou 4b e 5 juxta-capsular, polar superior, suspeiçao de multifocalidade, idade <40(?)

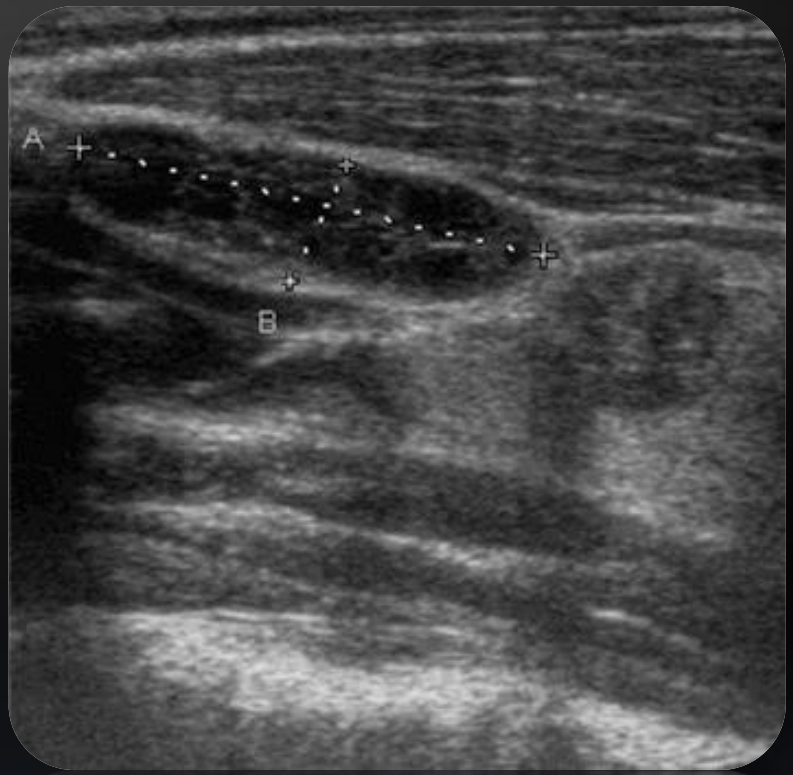
- TIRADS

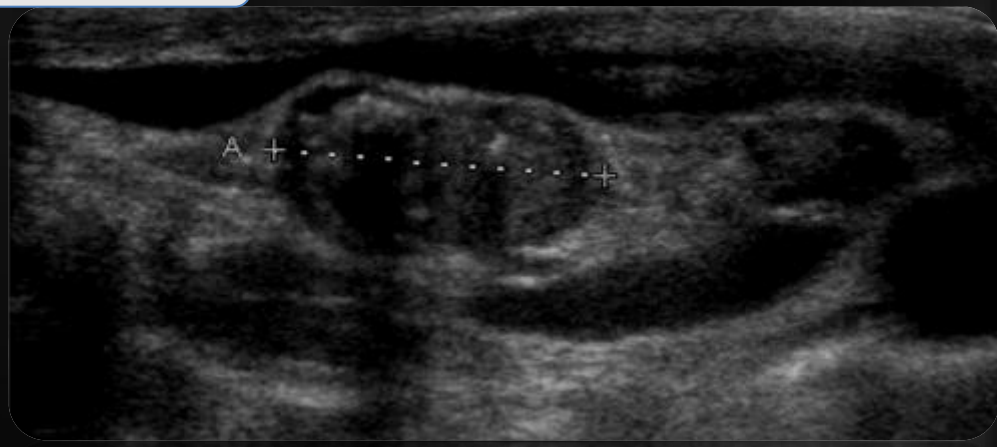
3 sinais de suspeição
TIRADS5
CAAF>10mm

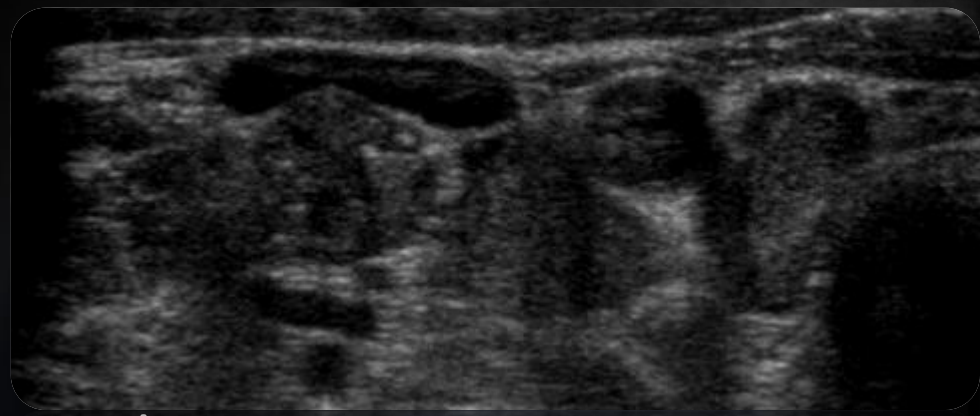


- TIRADS

Adenopatias suspeitas
TIRADS5
CAAF >7mm +
CAAF gg com doseamento de TG







Associado a gânglios suspeitos

- TIRADS

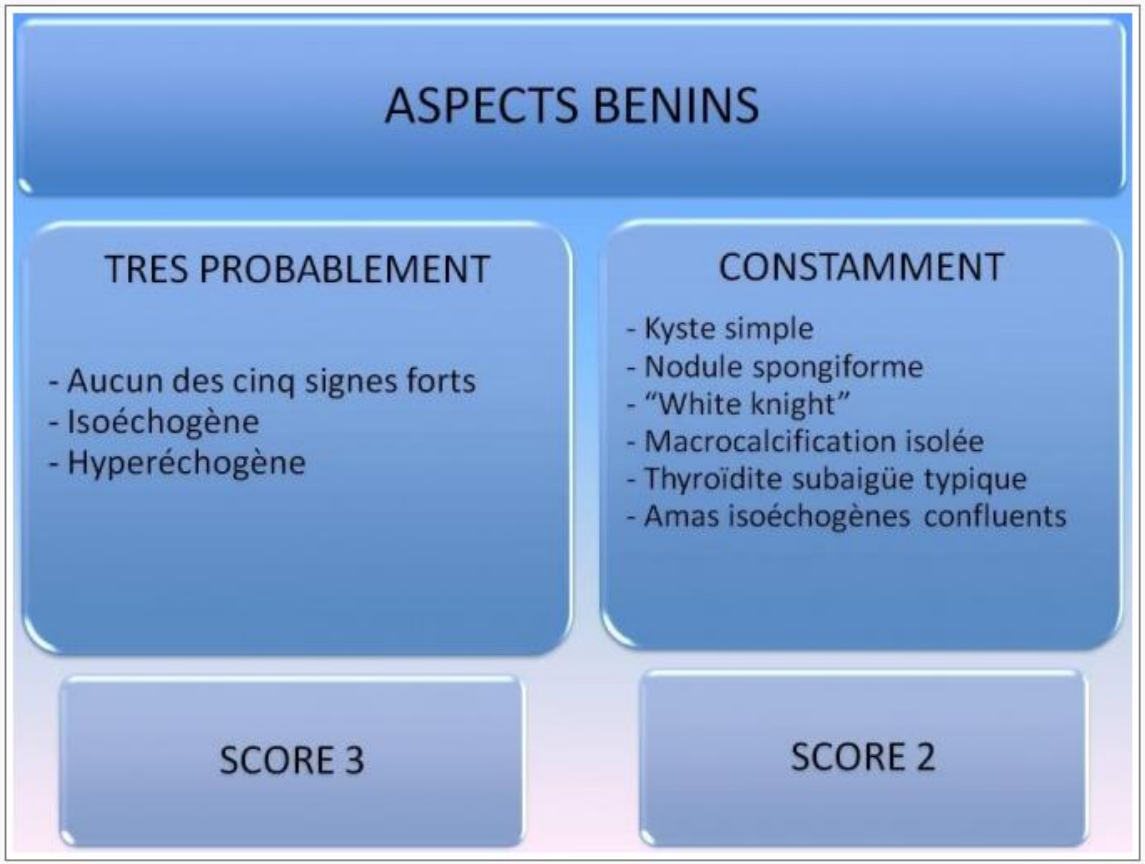


Schéma d'analyse échographique d'un nodule thyroïdien : partie 2

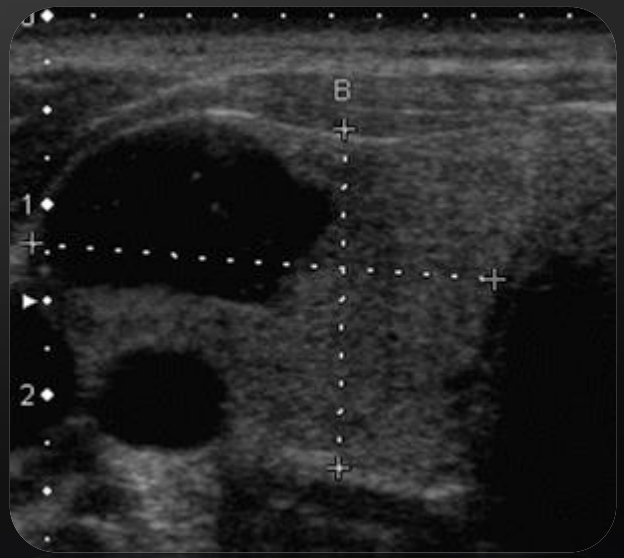
>20mm – picar todos menos o 2, excepto se quisto compressivo

>=10mm picar se 4a, 4b ou 5

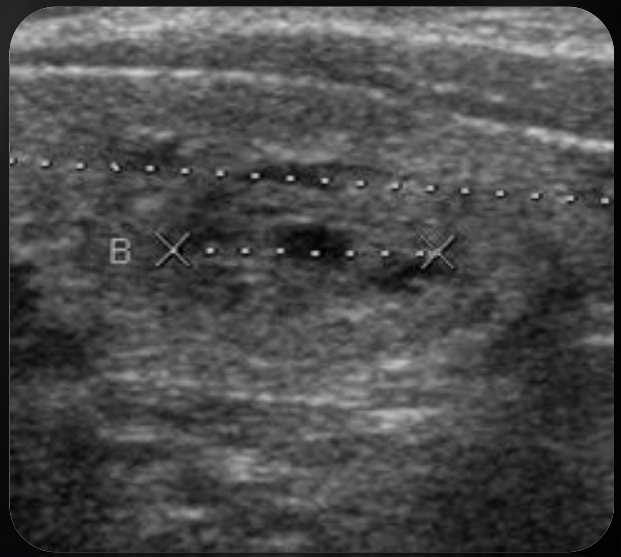
<10 se pesquisa de primitivo, PET +, risco clínico ou 4b e 5 juxta-capsular, polar superior, suspeiçao de multifocalidade, idade <40(?)

- TIRADS

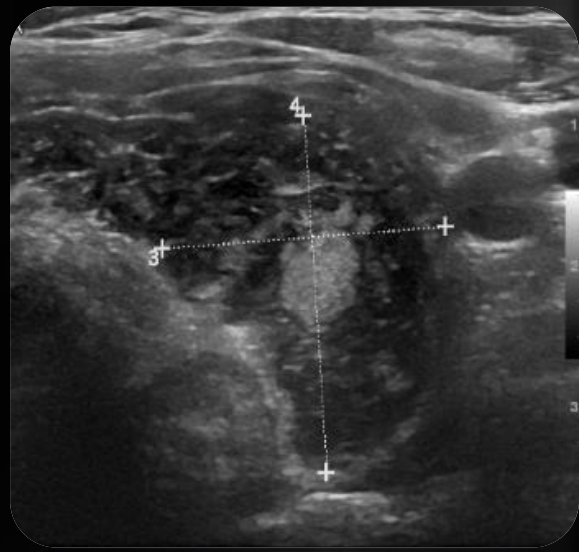
TIRADS2
Sem indicação para CAAF



Quisto colóide



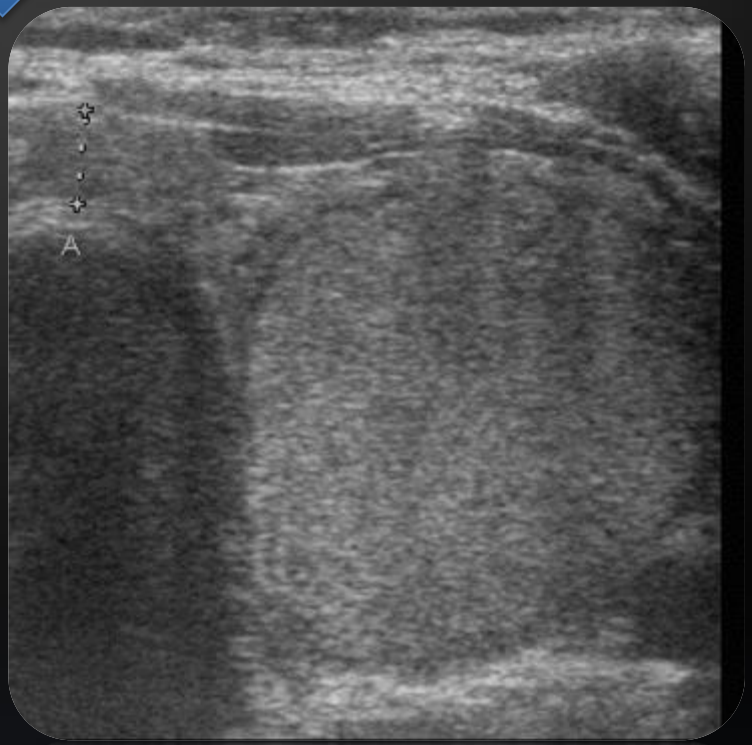
espongiforme



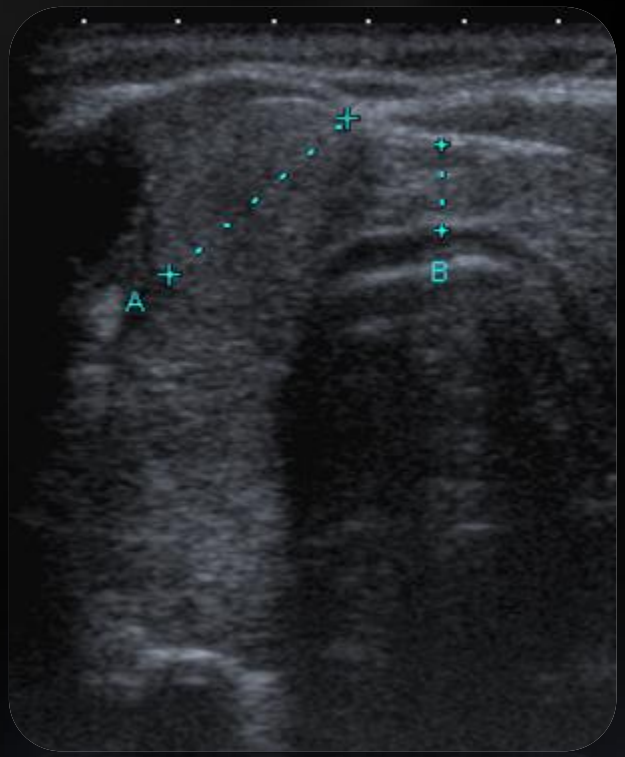
tiroidite “white knight”

- TIRADS

TIRADS3
CAAF se >20mm



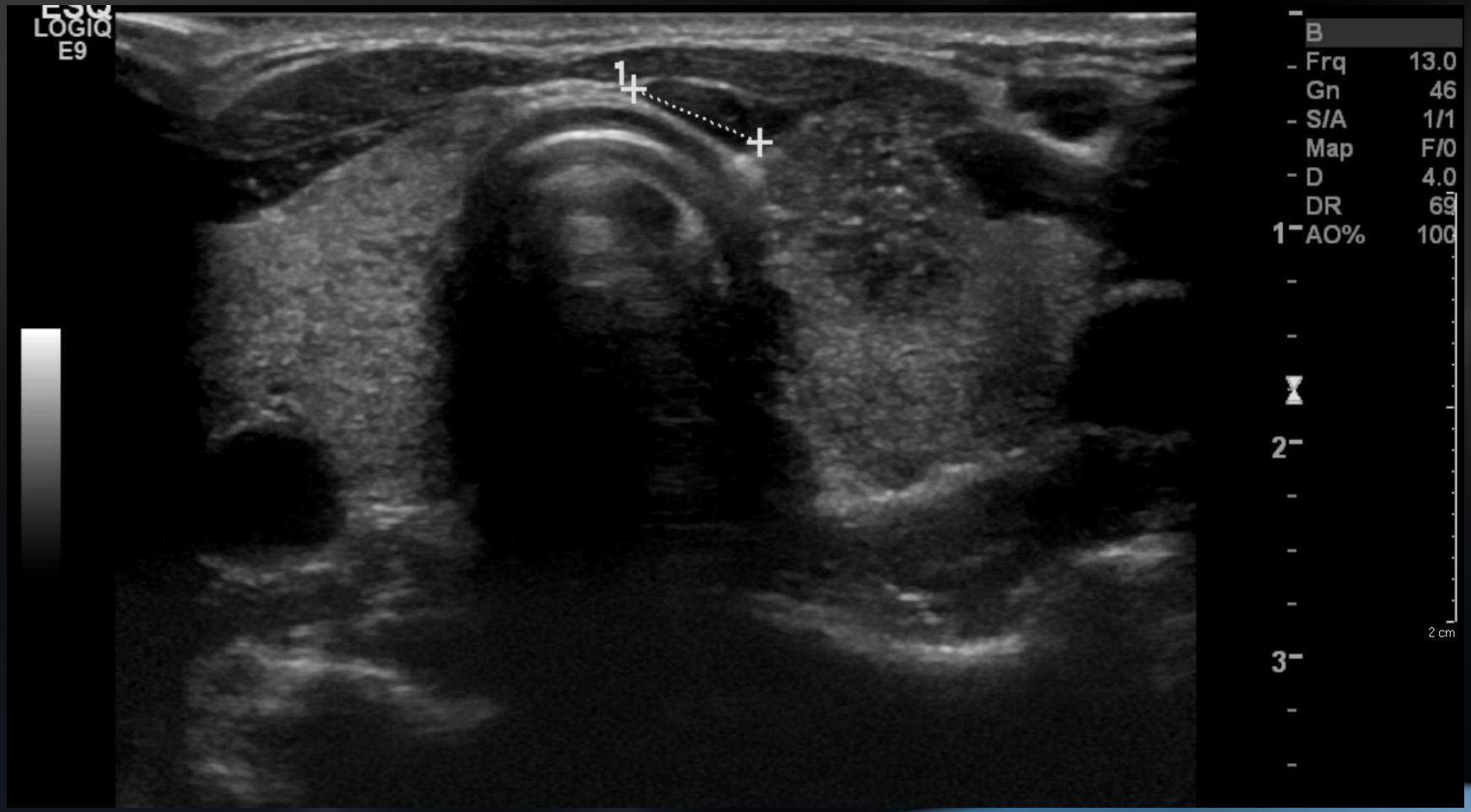
hiperecóico



isoecóico

- TIRADS

TIRADS4b
CAAF se >10mm



- TIRADS

SCORE TI-RADS	SIGNIFICATION	RISQUE DE MALIGNITE	% DES NODULES ÉCHOGRAPHIÉS
2	BÉNIN	≈0%	3%
3	TRÈS PROBABLEMENT BÉNIN	0,25%	60%
4A	FAIBLE RISQUE DE MALIGNITÉ	6%	33%
4B	HAUT RISQUE DE MALIGNITÉ	69%	3,5%
5	PRESQUE CERTAINEMENT MALIN	≈100%	0,5%

- Bethesda

■ **RECOMMENDATION 9**

Thyroid nodule FNA cytology should be reported using diagnostic groups outlined in the Bethesda System for Reporting Thyroid Cytopathology (**Strong recommendation, Moderate-quality evidence**)

Table 2

The Bethesda System for Reporting Thyroid Cytopathology: Implied Risk of Malignancy and Recommended Clinical Management

Diagnostic Category	Risk of Malignancy (%)	Usual Management[†]
Nondiagnostic or Unsatisfactory	1-4	Repeat FNA with ultrasound guidance
Benign	0-3	Clinical follow-up
Atypia of Undetermined Significance or Follicular Lesion of Undetermined Significance	~5-15[‡]	Repeat FNA
Follicular Neoplasm or Suspicious for a Follicular Neoplasm	15-30	Surgical lobectomy
Suspicious for Malignancy	60-75	Near-total thyroidectomy or surgical lobectomy[§]
Malignant	97-99	Near-total thyroidectomy[§]

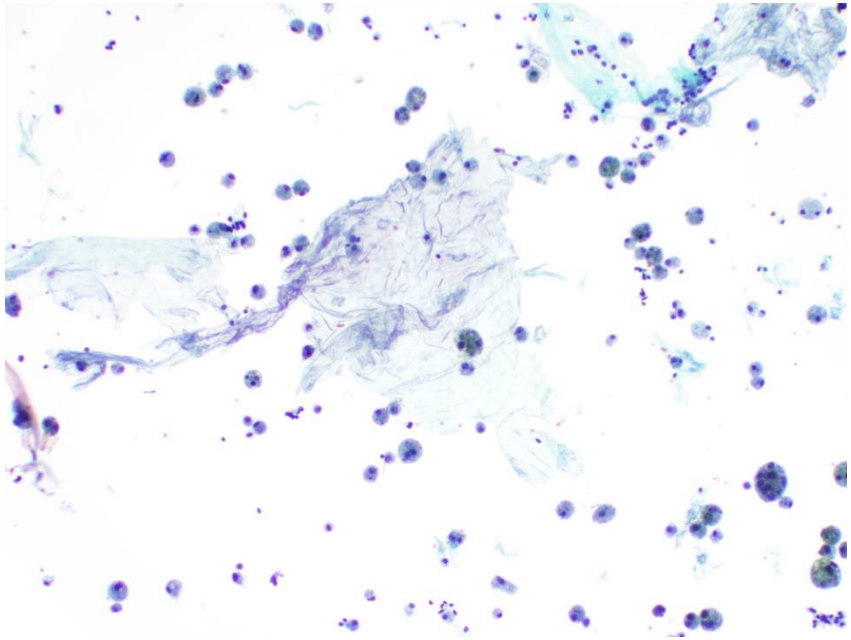
FNA, fine-needle aspiration.

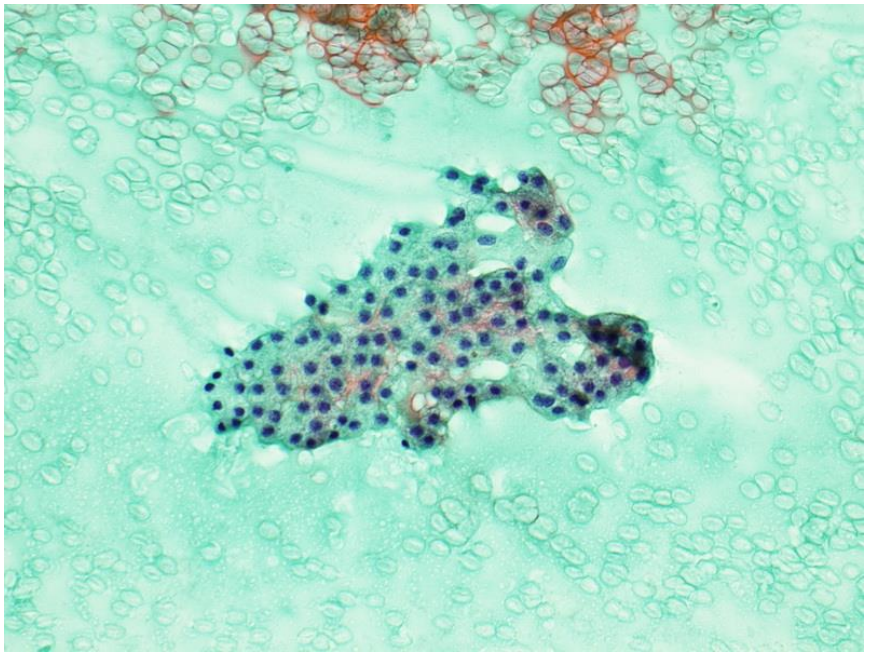
[*] Adapted with permission from Ali and Cibas.[3]

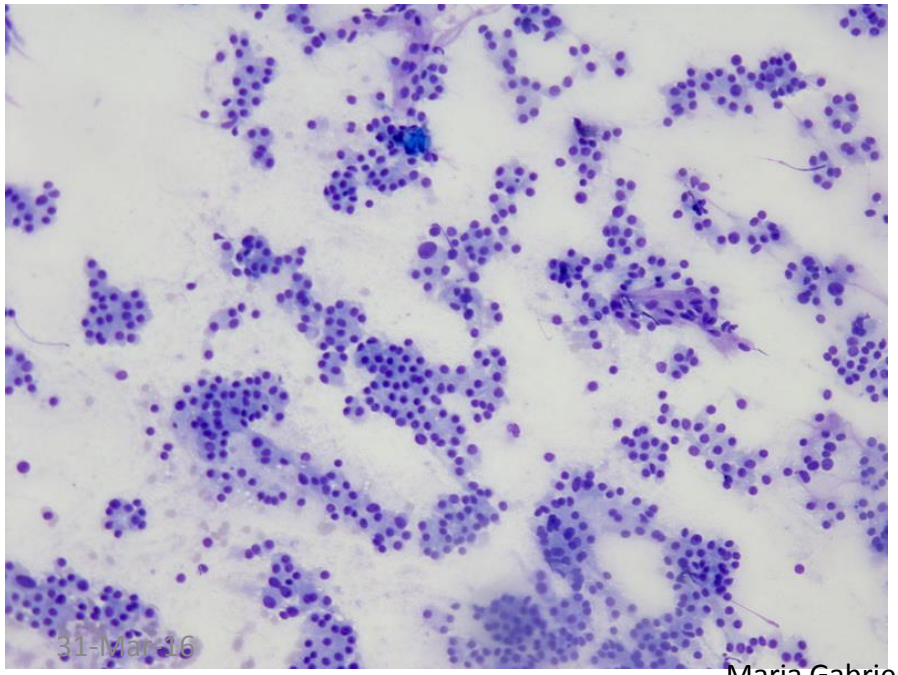
[†] Actual management may depend on other factors (eg, clinical, sonographic) besides the FNA interpretation.

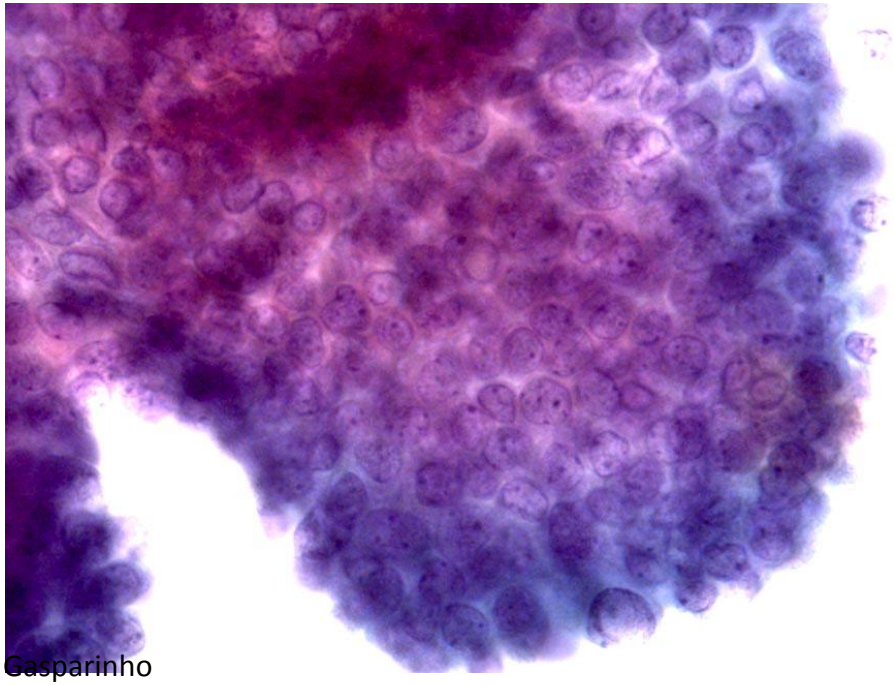
[‡] Estimate extrapolated from histopathologic data from patients with "repeated atypicals."

[§] In the case of "Suspicious for metastatic tumor" or a "Malignant" interpretation indicating metastatic tumor rather than a primary thyroid malignancy, surgery may not be indicated.









- Bethesda

[A12] Nondiagnostic cytology

■ **RECOMMENDATION 10**

A) For a nodule with an initial nondiagnostic cytology result, FNA should be repeated with US guidance and, if available, on-site cytologic evaluation (**Strong recommendation, Moderate-quality evidence**)

- Bethesda

[A13] Benign cytology

■ **RECOMMENDATION 11**

If the nodule is benign on cytology, further immediate diagnostic studies or treatment are not required (**Strong recommendation, High-quality evidence**)

- Bethesda

[A24] Recommendations for initial follow-up of nodules with benign FNA cytology

■ **RECOMMENDATION 23**

Given the low false negative rate of US-guided FNA cytology and the higher yield of missed malignancies based upon nodule sonographic pattern rather than growth, the follow up of thyroid nodules with benign cytology diagnoses should be determined by risk stratification based upon ultrasound pattern.

A) Nodules with high suspicion US pattern: repeat US and US-guided FNA within 12 months (**Strong recommendation, Moderate-quality evidence**)

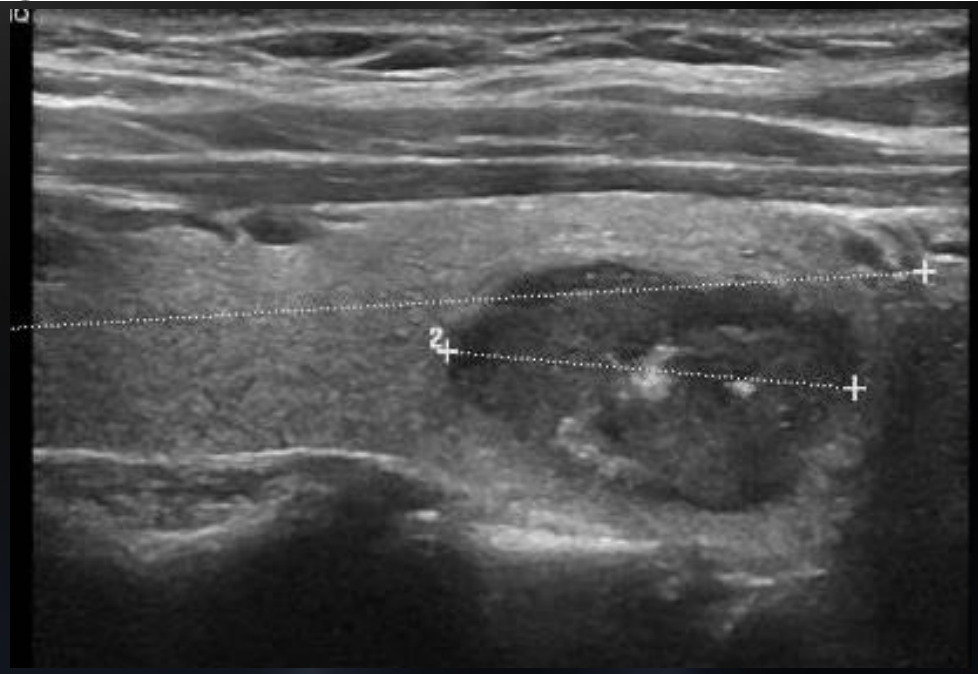
- Bethesda

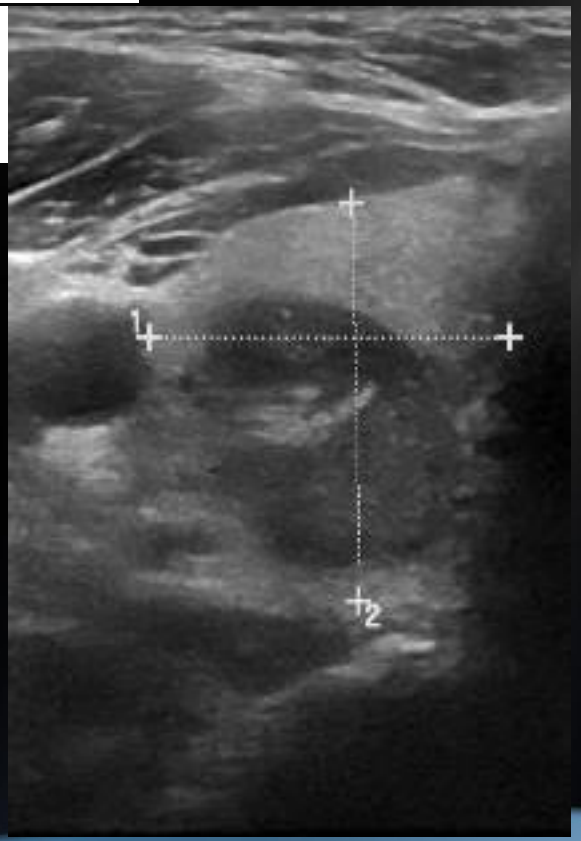
Discordância ecografia/citologia repetir CAAF

Diagnóstico clínico: NÓDULO SÓLIDO, COM 22 MM NO LOBO DTO. TIRADS4B

Diagnóstico:

Os aspectos citológicos observados são sugestivos de NÓDULO COLÓIDE.
Classificação de Bethesda: BENIGNO.





- Bethesda

[A17] AUS/FLUS Cytology

■ **RECOMMENDATION 15**

(A) For nodules with AUS/FLUS cytology, after consideration of worrisome clinical and sonographic features, investigations such as repeat FNA or molecular testing may be used to supplement malignancy risk assessment in lieu of proceeding directly with a strategy of either surveillance or diagnostic surgery. Informed patient preference and feasibility should be considered in clinical decision-making. **(Weak recommendation, Moderate-quality evidence)**

- Bethesda

(B) If repeat FNA cytology and/or molecular testing are not performed or inconclusive, either surveillance or diagnostic surgical excision may be performed for an AUS/FLUS thyroid nodule, depending on clinical risk factors, sonographic pattern, and patient preference. **(Strong recommendation, Low-quality evidence)**

- Bethesda

[A18] Follicular Neoplasm/Suspicious for Follicular Neoplasm (FN/SFN) Cytology

■ **RECOMMENDATION 16**

(A) Diagnostic surgical excision is the long-established standard of care for the management of follicular neoplasm/suspicious for follicular neoplasm (FN/SFN) cytology nodules. However, after consideration of clinical and sonographic features, molecular testing may be used to supplement malignancy risk assessment data, in lieu of proceeding directly with surgery. Informed patient preference and feasibility should be considered in clinical decision-making. **(Weak recommendation, Moderate-quality evidence)**

- Bethesda

[A19] Suspicious for Malignancy (SUSP) Cytology

■ **RECOMMENDATION 17**

(A) If the cytology is reported as suspicious for papillary carcinoma (SUSP), surgical management should be similar to that of malignant cytology, depending on clinical risk factors, sonographic features, patient preference, and possibly results of mutational testing (if performed). (**Strong recommendation, Low-quality evidence**)

- Bethesda

[A14] Malignant Cytology

■ **RECOMMENDATION 12**

If a cytology result is diagnostic for primary thyroid malignancy, surgery is generally recommended. **(Strong recommendation, Moderate-quality evidence)**

- E no HFF?

[redacted] Ideally, the

The risk of malignancy in each of the six diagnostic categories should be independently defined at each cytology center or institution to guide clinicians on risk estimates and help choose appropriate molecular testing for patients with indeterminate cytology.

- E no HFF?

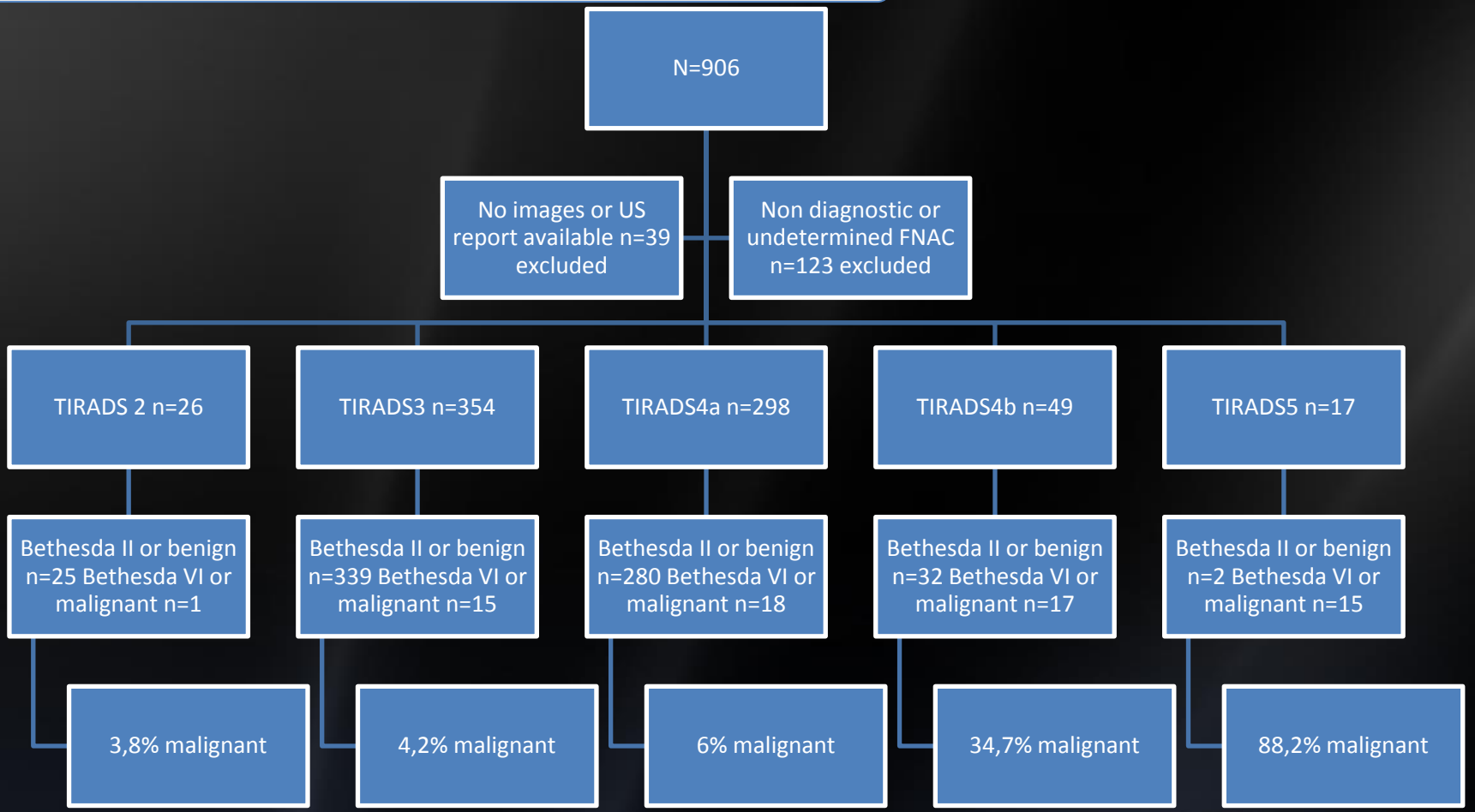
Risco de malignidade dos nódulos da tiróide submetidos a CAAF no HFF

- Objectivos
- Comparar o risco de malignidade dos nódulos da tiróide puncionados nesta instituição com o da categorização TIRADS
- Avaliar a proporção de nódulos e o risco de cada uma das categorias da classificação de Bethesda nas citologias efectuadas no HFF e comparar esse risco com o atribuído pelo NCI

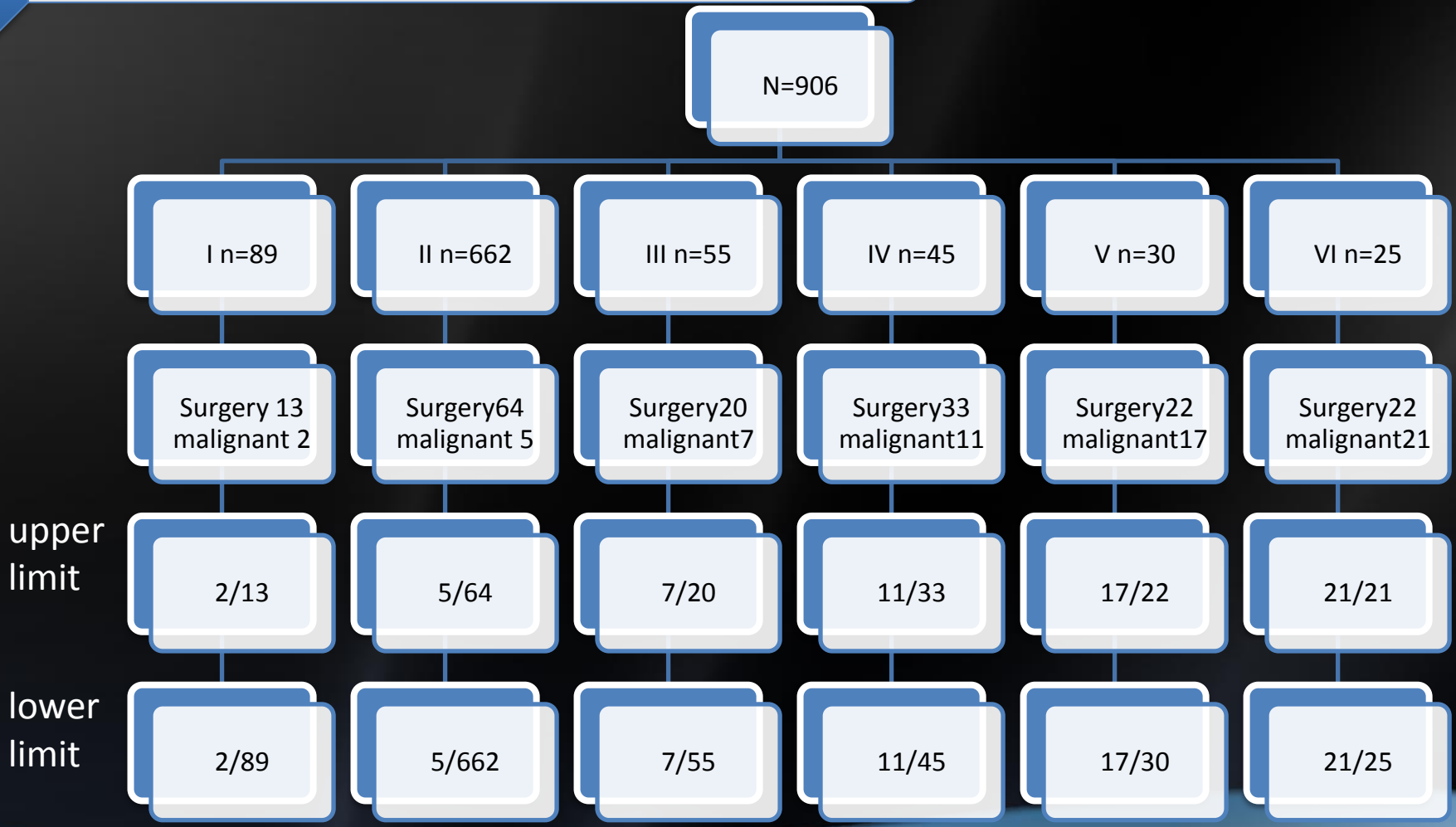
• E no HFF?

- Estudo retrospectivo
- Entre 1 de janeiro de 2012 e 31 de dezembro de 2014
- Reviram-se os relatórios de todas as CAAF efectuadas e os diagnósticos histológicos disponíveis
- Reviram-se independentemente as imagens de ecografia da tiróide e categorizaram-se os nódulos segundo a classificação TIRADS

• E no HFF? TIRADS métodos



- E no HFF? Bethesda métodos



- E no HFF? Resultados

		Todos (n=906)	Cirurgia (n=273)			Valor p
			todos	**benignos**	**malignos**	
Idade (anos) mediana(min-max)		59(7-90)	55(16-81)	55(26-80)	53(16-81)	0,835[1]
Género	masculino	116	21	13	8	0,522[2]
	feminino	790	152	97	55	
Dimensões(mm) mediana(min-max)		22 (6-100)	30 (7-100)	32 (7-100)	23 (7-70)	0,099[1]
lobo	direito	392	50	20		0,237[3]
	esquerdo	432	52	37		
	istmo	75	8	5		
	missing	7				
Punção por eco	sim	784	141	85	56	0.043[2]
	Não	122	32	25	7	
microcarcinomas	sim	NA	46	26	20	0,107[2]
	Não	NA	123	84	39	
	missing		4[4]			

Tabela 1 – características clínico-patológicas

- E no HFF? Resultados/discussão

Categ TIRA	Bethesda II ou benigno na histologia	Bethesda VI ou maligno na histologia	total	Risco TIRADS HFF	Risco TIRADS G.Russ	Odds Ratio (IC 95%)	p-Value[1]
2	25	1	26	3,8%	0%		
3	339	15	354	4,2%	0,25%		
4a	280	18	298	6%	6%		
4b	32	17	49	34,7%	69%		
5	2	15	17	88,2%	100%		
total	678	66	744				
2, 3 e 4a	644	34	678	5%		1,000 (referência)	<0,001
4b e 5	34	32	66	48,5%		17,827 (9,850-32,625)	
total	678	66	744				

Tabela 2- Risco TIRADS.

[1] exacto de Fisher; (P=<0.001),

- E no HFF? discussão

SCORE TI-RADS	SIGNIFICATION	RISQUE DE MALIGNITE	% DES NODULES ÉCHOGRAPHIÉS
2	BÉNIN	≈0%	3%
3	TRÈS PROBABLEMENT BÉNIN	0,25%	60%
4A	FAIBLE RISQUE DE MALIGNITÉ	6%	33%
4B	HAUT RISQUE DE MALIGNITÉ	69%	3,5%
5	PRESQUE CERTAINEMENT MALIN	≈100%	0,5%

Risco HFF	%HFF
3,8%	3,5%
4,2%	47,6%
6%	40, 1%
34,7%	6,5%
88,2%	2,%

- E no HFF? Resultados/discussão

Categorias Bethesda	HFF % (nº)	NCI Bethesda (%)	Cirurgia (nº)	Malignos (nº)	Risco (inf)	Risco (sup)	Risco (HFF)	Odds Ratio (IC 95%)	P-Value[1]	Risco (Bethesda)
I	9,8 (89)	<10	13	2	2,3(2/89)	15,4(2/13)	2-15			1-4
II	73,1(662)	60-70	64	5	0,8(5/662)	7,8(5/64)	1-8			0-3
III	6,1(55)	<7	20	7	12,7(7/55)	35,0(7/20)	13-35			5-15
IV	5(45)	NA	33	11	24,4(11/45)	33,0(11/33)	24-33			15-30
V	3,3(30)	NA	22	17	56,7(17/30)	77,3(17/20)	57-77			60-75
VI	2,8(25)	3-7	21	21	84(21/25)	100(21/21)	84-100			97-99
total	100(906)		173	63						
I, II e III	89(806)		97	14	1,7(14/806)	14,4(14/97)	1,7-14,4	1,000 (referência)		
IV, V e VI	11(100)		76	49	49(49/100)	64,5(49/76)	49-64,5	10,759 (5,155-22,455)	<0,001	
total	100(906)		173	63						

Tabela 3- Prevalência e risco Bethesda

[1] **exacto de Fisher**

• E no HFF? discussão

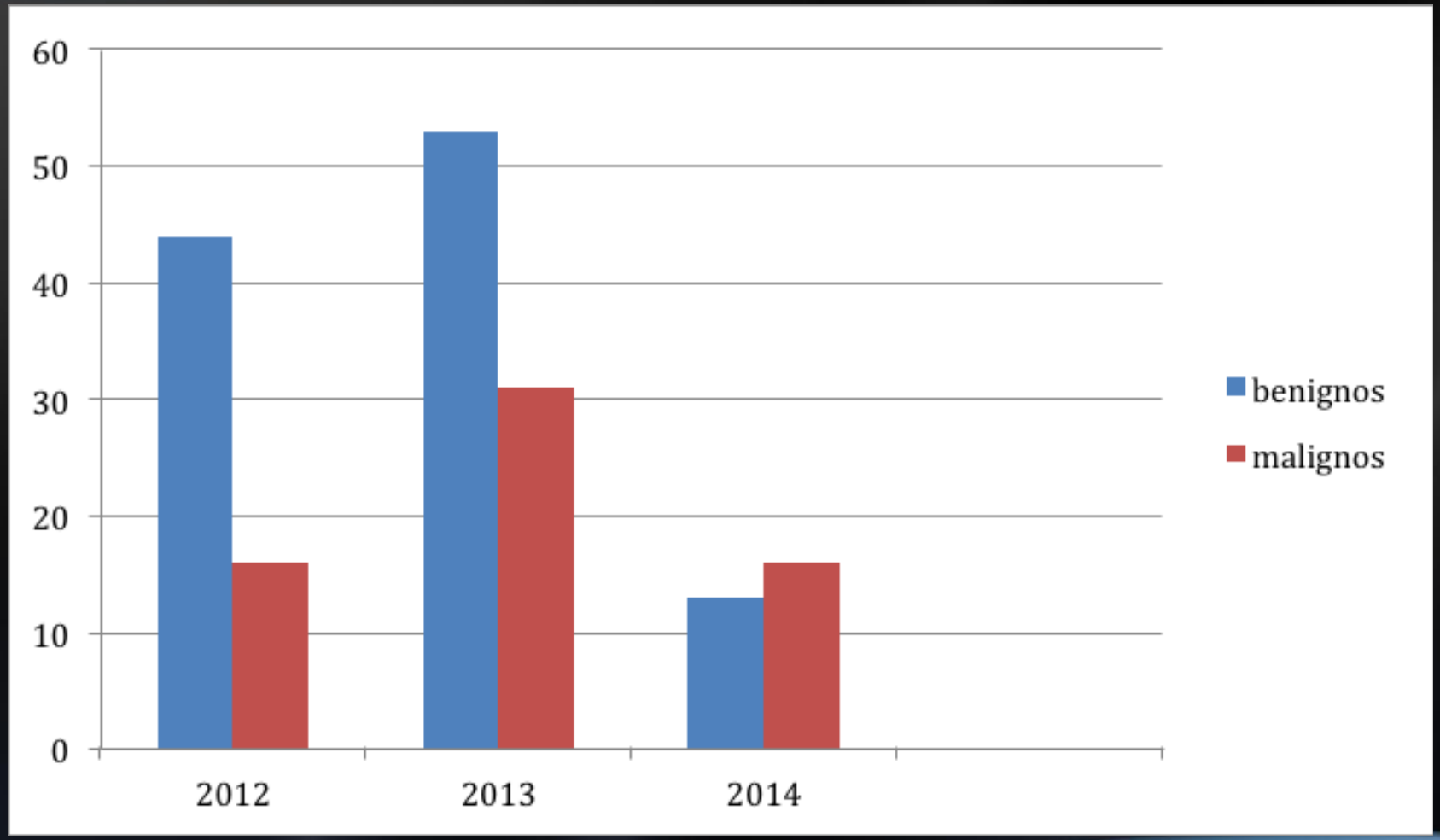
Table 7. The Bethesda system for reporting thyroid cytopathology: Diagnostic categories and risk of malignancy[1]

Diagnostic category	Estimated/predicted risk of malignancy by the Bethesda system (%)[1]	Actual risk of malignancy in nodules surgically excised (%, median (range))[2]
Nondiagnostic or Unsatisfactory	1-4	20 (9-32)
Benign	0-3	2.5 (1-10)
Atypia of Undetermined Significance or Follicular Lesion of Undetermined Significance (AUS/FLUS)	5-15	14 (6-48)
Follicular Neoplasm or Suspicious for a Follicular Neoplasm (FN/SFN)	15-30	25 (14-34)
Suspicious for Malignancy (SUSP)	60-75	70 (53-97)
Malignant	97-99	99 (94-100)

[1]As reported in The Bethesda System by Ali &Cibas, 2009 (1076)
[2]Based on the meta-analysis of 8 studies reported by Bongiovanni et al. (103). The risk was calculated based on the portion of nodules in each diagnostic category that underwent surgical excision and likely is not representative of the entire population, particularly of non-diagnostic and benign diagnostic categories.

Risco HFF	%HFF	% bethesda
2-15	9,8	I <10
1-8	73,1	II 60-70
13-35	6,1	III <7
24-33	5	IV NA
57-77	3,3	V NA
84-100	2,8	VI 3-7

• E no HFF? Resultados/discussão



• E no HFF? conclusão

- Em conclusão, os dados obtidos neste estudo revelam uma prevalência institucional superior à esperada de nódulos malignos nas categorias benignas e indeterminadas, quer na classificação ecográfica TIRADS, quer na categorização citológica de Bethesda.

- No entanto o conjunto destas duas técnicas tem sido benéfico na triagem pré-cirúrgica dos pacientes com nódulos da tiroide, como se verifica no aumento progressivo da percentagem de nódulos malignos entre os tumores operados de 2012 a 2014.