Macro, but not micrometastases, detected by OSNA technique are related with more aggressive papillary thyroid cancer features

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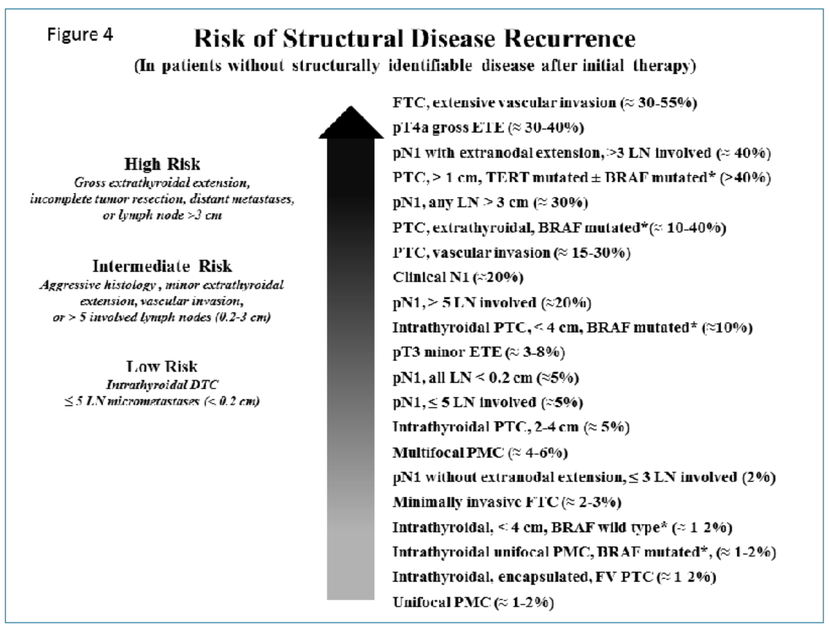
Introduction

Stratification in papillary thyroid carcinoma (PTC) assigned the same magnitude of risk to all patients with regional lymph node involvement (N1 disease). However, specific lymph node characteristics (such as size, number, extension, etc) will allow individualizing treatment and follow-up. One-Step Nucleic Acid Amplification (OSNA) measures the number of copies of mRNA of cytokeratin 19 (CK19) as a marker of lymph node metastasis.



Haugen BR et al. Thyroid 2016;26:1-133.

Aim

To analyze the influence of OSNA lymph node metastasis classification in the histological characteristics of PTC in patients submitted to lymph node dissection (LND).

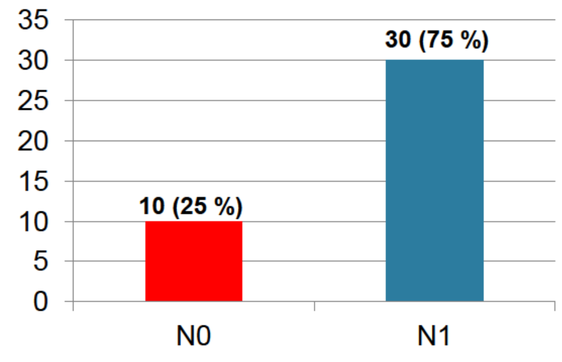
Patients and methods

Clinico-histological v.	N = 40
Gender (female), n (%)	28 (60)
Age (years), mean (SD)	49 (15)
Size (cm), mean (SD)	2.2 (1.6)
Histological Var.(classical), (yes), n (%)	29 (72.5)
Multifocality (yes), n (%)	17 (42.5)
Vascular invasion (yes), n (%)	13 (32.5)
Extrathyroid invasion (yes), n (%)	17 (42.5)
BRAF mutation (yes), n (%)	29 (72.5)
Total lymph nodes removed, n	513
Lymph nodes per LND, mean (SD)	12.8 (9.5)

Lymph node metastases variables	
TTL	Total tumor load
TLNW	Total lymph node weight
TTL/TLNW	TTL/TLNW
Type of M1	micro vs macrometastasis

CK 19 copy number	result	definition
< 100	-	Negative absolute
100 – 250	-	Isolated tumor cells
250 – 5000	+	Micrometastases
> 5000	++	Macrometastases

Results



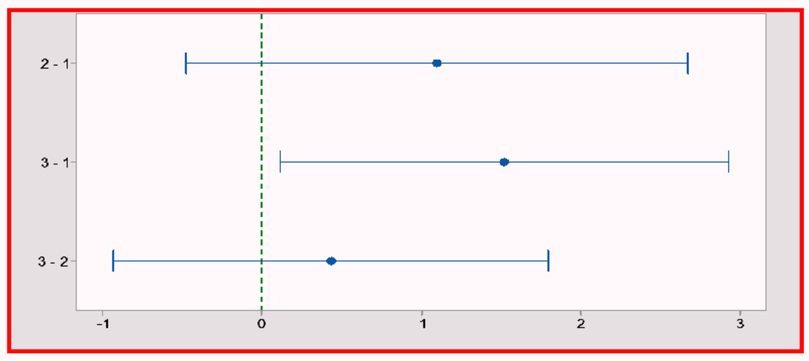
Osna-LND status classification

Lymph node metastases v.	
TTL (*), median (IQR)	33150 (3150-149505)
TLNW (g), median (IQR)	1.1 (0.4-2.4)
TTL/TLNW (g/*), median (IQR)	18978 (3039-55456)

* CK19 mRNA copy number

Lymph node metastases v.	Clinico-histological v.	statistic	P-value
TTL	size	R = 0.11	0.53
TTL	Vascular invasion	T = -1.3	0.20
TTL	Extrathyroid invasion	T=-0.22	0.82
TTL	multifocality	T=-0.54	0.59
TTL/TLNW	size	R=0.01	0.95
TTL/TLNW	Vascular invasion	T=0.17	0.86
TTL/TLNW	Extrathyroid invasion	T=-0.46	0.64
TTL/TLNW	multifocality	T=-0.06	0.94
TTL	BRAF	T=0.57	0.57
TTL/TLNW	BRAF	T=0.92	0.37

Lymph node metastases v.	
GROUP 1 (n = 10)	Negative LND
GROUP 2 (n = 11)	LND with only microM1
GROUP 3 (n = 19)	LND with macroM1



Differences in size between three groups

variable	Clinico-histological v.	statistic	P-value
3 GROUPS	**Vascular invasion**	**Chi^2=6.86**	**0.03**
3 GROUPS	**Extrathyroid invasion**	**Chi^2=6.2**	**0.04**
3 GROUPS	multifocality.	Chi^2=3.52	0.17
3 GROUPS	BRAF	Chi^2=0.04	0.97

Conclusions

Lymph node macrometastases detected by OSNA are related with more aggressive PTC. OSNA could be a useful technique to improve lymph node metastases characterization.

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