

Differentiated thyroid carcinoma: a 5-years survival study at a referral hospital in Rio de Janeiro

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† In memoriam

BACKGROUND

Although the prognosis of differentiated thyroid carcinoma (DTC) therapy is considered excellent over time, a small number of cases have a poorer prognosis and evolve into death.

OBJECTIVES

This study aimed to estimate the 5-year specific survival and to identify risk factors in a cohort of DTC adult subjects. Methods: Survival probability was estimated by the non-parametric Kaplan-Meier method in a retrospective hospital-based cohort study. Comparisons were done by means of the log rank test. Risk factors were sought using Cox risk modeling and crude and adjusted Hazard Ratio measures were obtained.

RESULTS

Specific 5-year survival in the cohort was 98.5% (95% CI: 94.2-97.5%). However, poorer survival was observed for those diagnosed at stage IVC (47.1%; 95% CI: 30.4-73.0%), with a distant metastasis (54.8%; 95% CI: 39.2-76.4%) and submitted to radiotherapy (70.5%; 95% CI: 54.3-91.6%). The main factors associated with risk of death stratified by gender were age ≥ 45 years old (aHR 9.88; 95% CI: 1.67-58.33), distant metastasis (aHR 18.87; 95% CI: 7.38-48.29) and lymphadenectomy (aHR 6.36; 95% CI: 2.26-17.91). On the other hand, radioiodine therapy diminished the risk of death (aHR 0.16; 95% CI: 0.06-0.43).

Table 1 – Conditional 5-year survival probability estimated by Kaplan-Meier, mean survival time according to sociodemographic, tumor characteristics and treatment for patients with differentiated thyroid cancer.

Variables ^a	Cases		Deaths		Conditional 5-year survival probabilities		Log-rank ^d	Mean survival time ^e
	N	%	N	%	S(t) ^b	CI 95% ^c		
Gender								
Male	118	21.0	10	43.5	91.5	86.6 – 96.7	0.009	57.5
Female	444	79.0	13	56.5	97.0	95.5 – 98.6		
Total	562	100	23	100				
Age at diagnosis - TNM 7th edition								
20-44	265	47.2	2	8.7	99.2	98.2 – 100	< 0.001	59.1
≥ 45	297	52.8	21	91.3	92.8	89.8 – 95.8		
Total	562	100	23	100				
Age at diagnosis - TNM 8th edition								
20-54	414	73.7	3	13.0	99.3	98.5 – 100	< 0.001	59.1
≥ 55	148	26.3	20	87.0	85.9	80.4 – 91.9		
Total	562	100	23	100				
Staging - TNM 7th edition								
I/II	386	70.1	2	8.7	99.5	98.8 – 100	< 0.001	59.1
III	72	13.1	3	13.0	95.8	91.2 – 100		
IVA/IVB	70	12.7	6	26.1	90.8	84.0 – 98.1		
IVC	23	4.2	12	52.2	47.1	30.4 – 73.0		
Total	551	100	23	100				
Staging - TNM 8th edition								
I/II	491	89.1	7	30.4	98.6	97.5 – 99.6	< 0.001	58.8
III/IVA	37	6.7	4	17.4	87.3	76.4 – 99.7		
IVB	23	4.2	12	52.2	47.1	30.4 – 73.0		
Total	551	100	23	100				
Tumor size								
< 4.0 cm	394	81.6	10	47.6	97.4	95.9 – 99.0	< 0.001	58.1
≥ 4.0 cm	89	18.4	11	52.4	87.1	80.3 – 94.5		
Total	483	100	21	100				
Distant metastasis								
No	532	94.7	10	43.5	98.1	96.9 – 99.3	< 0.001	58.4
Yes	30	5.3	13	56.5	54.8	39.2 – 76.4		
Total	562	100	23	100				
Lymphadenectomy								
No	381	67.8	11	47.8	97.1	95.4 – 98.8	0.031	58.3
Yes	181	32.2	12	52.2	93.2	89.5 – 97.0		
Total	562	100	23	100				
Radioiodine therapy								
No	122	21.7	13	56.5	88.8	83.2 – 94.7	< 0.001	53.1
Yes	440	78.3	10	43.5	97.7	96.3 – 99.1		
Total	562	100	23	100				
Radiotherapy								
No	536	95.4	16	69.6	97.0	95.5 – 98.4	< 0.001	58.0
Yes	26	4.6	7	30.4	70.5	54.3 – 91.6		
Total	562	100	23	100				

^a Missing: staging (N= 11; 2.0%) and tumor size (N=79; 14.1%).
^b Conditional 5-year survival probabilities.
^c 95% confidence interval.
^d p value of log-rank test, being in bold when p<0.05.
^e Mean survival time in months.
^f There were no statistically significant differences between the survival curves of histological type, multifocal lesions and regional lymph node metastases.

Table 2 – Crude and adjusted Hazard ratios for differentiated thyroid cancer patients, using the Cox test.

Variables	CrudeHR ^a	95%CI ^b	p value ^c	Multivariate model using age grouping of the TNM 7th edition		Multivariate model using age grouping of the TNM 8th edition	
				adjusted HR ^a	95%CI ^b	adjusted HR ^a	95%CI ^b
Gender							
Female	1.00						
Male	2.75	1.16 – 6.52	0.022				
Multivariate Cox model stratified by gender							
Age at diagnosis - TNM 7th edition							
20-44	1.00			1.00			
≥ 45	8.68	2.02 – 37.27	0.004	9.88	1.67 – 58.33	0.011	
Age at diagnosis - TNM 8th edition							
20-54	1.00					1.00	
≥ 55	17.60	5.18 – 59.76	< 0.001			10.12	2.05 – 50.09
Distant metastasis							
No	1.00			1.00		1.00	
Yes	28.61	12.08 – 67.77	< 0.001	18.87	7.38 – 48.29	< 0.001	12.43
Radioiodine therapy							
No	1.00			1.00		1.00	
Yes	0.22	0.09 – 0.52	0.001	0.16	0.06 – 0.43	< 0.001	0.19
Lymphadenectomy							
No	1.00			1.00		1.00	
Yes	2.57	1.10 – 6.02	0.035	6.36	2.26 – 17.91	0.001	5.06
Tumor size							
< 4.0 cm	1.00						
≥ 4.0 cm	5.18	2.20 – 12.2	< 0.001				
Microcarcinoma							
Yes	1.00						
No	2.71	0.80 – 9.20	0.110				
Radiotherapy							
No	1.00						
Yes	8.96	3.47 – 23.13	< 0.001				

^aHR= hazard ratio; ^bCI= confidence interval; ^cWald test p value, being in bold when p<0.05.
 Histological type and regional lymph nodes metastasis variables presented p>0.20 in univariate Cox model

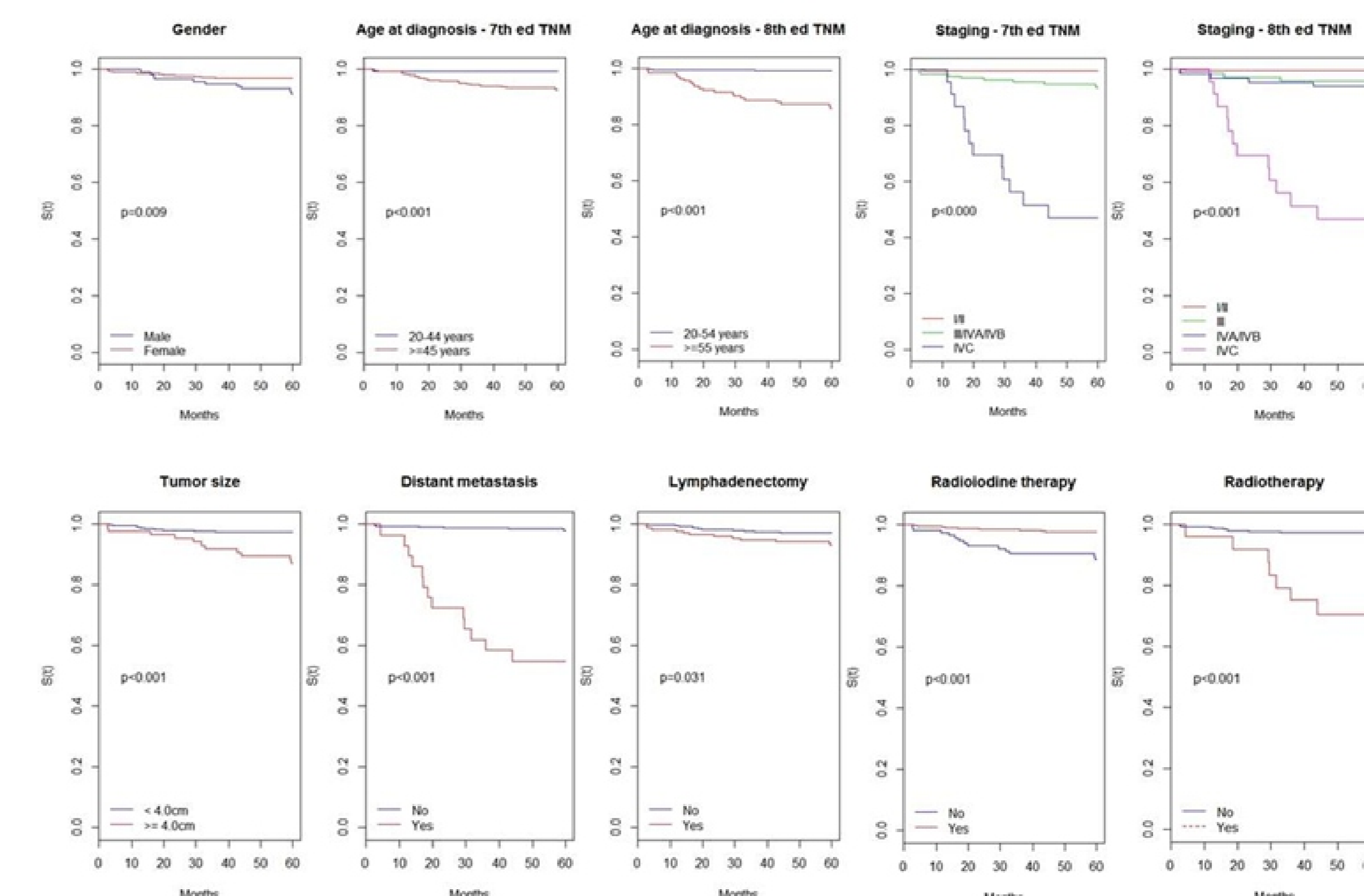


Figure 1 – Kaplan-Meier plot of 5-year specific survival in differentiated thyroid cancer patients by sociodemographic, treatment and tumor-related covariates.

CONCLUSION

This cohort had a very high survival over a 5-year period. The prognosis was negatively influenced by age ≥ 45 years old, distant metastasis and lymphadenectomy, whereas radioiodine therapy was found to be protective.